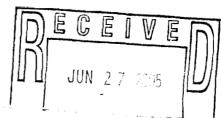
5 OLD FARM ROAD **RED HOOK, NY 12571** Phone: 845-758-5011 . Fax: 845-758-9240

# B/T GENERAL CONTRACTORS, INC.





Re:	CC:	
Phones	Mui Mui	1 WOLE 71563 @ aon Com
Fax: 518-402	2-9819 Dates	
• •	ATRUNUS From: B.	LY COL

MARK

Thunk For your time in this matter. I have

been to 4 meetings in The four, The four beard Like, What I have done to the area (La. Still property), the cleanup, the MGC removal of tires + junk and all are in favor of me petting up storage units. The letter attacked From Mr. Forger States contamination in the water, I am doing new water tests (wanting for results) and Mr. Connengho The owns element therens next to the property also ded tists and they were fine, He was is a lawyer was was Toing to buy property, but wold not close in 2003, hower withy for worky to the own. This property was a car fund of for the provous 40 yes, There are many positive people to want something done to this six because it has been a eyesory the Last 10-12 yes. Thanks her years time Billy Coli

The 5/5-357-2068

# KIMBERLEA SHAW REA, ESQ. ATTORNEY AND COUNSELLOR

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4819

OF COUNCEL, BOSWORTH GRAY & FULLER 116 KRAFT AVENUE BRUNKYILLE NEW YORK 10708-4185 (914) 337-3626 RAX (914) 337-3630

October 3, 2005

By FAX and Regular Mail (518) 537-5324

Hon. William Banks Supervisor Town of Clermont 1795 Route 9 Clermont, NY 12526

Re: LaMunyan Site Compliance Issues

Dear Supervisor Banks:

I just received a telephone call from Steve Schassler, DEC Region 4 Director, in response to my written inquiries about the LaMunyan site. Mr. Schassler said that the Department would shortly be issuing a letter to new owner of the site, requiring him to bring the site into compliance with the State's Solid Waste Management Regulations, 6 NYCRR Part 360. That would require, at a minimum, an investigation, and possible remediation, depending upon what is found as a result of the investigation.

Therefore, until the DEC has fully resolved the makes with Mind Code recommend that no further permits be issued on the site of the old landfill.

Kimberlea Shaw Rea

I prober los hal p

Cc: Mr. William Cole

A+10 412-9819

# KIMBERLEA SHAW REA, ESQ. ATTORNEY AND COUNSELLOR

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September 6, 2005

OF COURSE.
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By FAX and Regular Mail (518) 537-5324

Hon. William Banks Supervisor Town of Clermont 1795 Route 9 Clermont, NY 12526

Re: Lamunyan C&D Debris Landfill

# Dear Supervisor Banks:

At the Town Board meeting on August 1, 2005, I promised you a report on my review of documents obtained from the New York State Department of Environmental Conservation ("NYSDEC"). Because of the site's involved history, involving protracted litigation and disputed claims regarding the nature of the contamination, I said that my report would not "re-fight" those old battles, but would rather emphasize the technical aspects of the contamination that remains on site. I have therefore quoted at length from the technical reports and memoranda contained in some of the agency's documents I reviewed. I also refer to certain of the Town's own documents that I recently reviewed.

#### Background

Carl Lamunyan began operating the Lamunyan Construction and Demolition Debris ("C&D") landfill during the 1980's, at a time when the State's State Solid Waste Regulation (found at 6 NYCRR Part 360) essentially allowed for the operation of exempt C&D sites for up to one year. The NYSDEC has said that due to the site's exempt status, —others in the Hudson Valley—the State was very limited in its ability to address environmental violations in a timely manner. Nonetheless, it is important to note that the State's Part 360 regulations require remediation of sites that violated their standards.

This landfill accepted large quantities of pulverized C&D waste, mostly from the New York City area. It is clear from the technical documents that some of this C&D waste contained "cocktailed" hazardous substances, and did not consist solely of exempt

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C&D materials. Probably worse for the residents who lived in the vicinity of the landfill was the strong "rotten egg" odor of hydrogen sulfide gas, which was produced by disposal of wall board, which became wet and degraded after being covered in the landfill. There were many complaints from neighbors about these odors, and the well-documented adverse health affects that exposure to these gases cause. Moreover, for several months, neighbors reported as many as 100 trucks per day, entering the landfill as early as 5 a.m. and not ceasing operation until 2 a.m. The size of the landfill more than doubled its permitted size of 2 acres, and exceeded the height limits placed on it by the Town. Certain documents I reviewed substantiate the suggestion that users of the site had ties to organized crime; there is no question that the disposal practices were illegal and that they resulted in contamination of the groundwater and soils. Contaminated leachate apparently still leaches into the Stony Kill Creek, which flows into the Village of Tivoli's backup water supply.

In November 1988, the Town was successful in obtaining injunctive relief, in which the Columbia County Supreme Court stopped the operation. Mr. Larnunyan appealed the decision, and sued the Town in other actions that the State and Federal Courts deemed frivolous (in one action, Mr. Lamunyan was ordered to pay the Town's attorney's fees). However, the site remained contaminated. In January, 1990 the NYSDEC entered into a Consent Order with Mr. Lamunyan which required a cleanup. This cleanup included a fence around site, interim control plan for leachate and odors, and closure investigation plan. Due to Mr. Lamunyan's failure to comply with all the terms of the Order, the case was subsequently referred to the Attorney General's office for litigation. The Attorney General's office filed suit, and Mr. Lamunyan lost another of the lawsuits he provoked against the Town. Shortly thereafter, he declared bankruptcy, vacated the site and closed his automotive business. The Site was then, and is now, in violation of the State's Solid Waste Management Regulations. It was never put on the State's Inactive Hazardous Waste Disposal Site Registry (also known as the State Superfund List).

#### Nature of the Contamination

In 1991, the NYSDEC's remediation contractor, Dunn Geoscience Corporation performed a Preliminary Site Assessment on the site. I am citing parts of the PSA below.

Dunn Geoscience, NYSDEC and the New York State Department of Health sampled and analyzed surface water, sediment, leachate, waste and residential groundwater in proximity to the site. Fortunately, groundwater samples collected from nearby residents did not reveal contaminated groundwater at the neighboring wells. However, leachate samples collected at the site contained detectable levels of benzene (11 parts per billion ("ppb")), ethylbenzene (17 ppb) and xylene (30 ppb). Additional compounds found in leachate samples included methyl isobutyl ketone, acetone and methyl tertiary butyl other ("MTBE"). Sediment samples contained several semi-volatile compounds and PCBs. However, PCB concentrations were below the hazardous waste criteria of 50 ppm. Elevated levels of copper (68 to 73.5 ppm), cadmium (2.05 to 10.2 ppm), lead (36 to 1240 ppm), and low levels of pesticides were also detected in the

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sediment samples. Drum samples from excavated drums contained benzene (950 to 2200 ppb), tolueno (34,000 to 49,000 ppb), ethylbenzene (28,000 to 33,000 ppb), xylene (100,000 to 160,000 ppb) and several semi-volatile compounds.

Initial environmental sampling was performed for surface water and five sediment locations. Surface water samples reflected iron concentrations in excess of the NYSDEC Part 703 standard for Class C surface water. Likewise, aluminum and cyanide in one sample exceeded the Part 703 standards for Class C surface water. Fortunately, no significant concentrations of volatiles, semivolatiles, pesticides, PCBs and inorganics were reported from the sediment samples, except for one upgradient sample, which had concentrations of the pesticides 4,4'-DDT, 4,4'-DDE and 4,4'-DDD.

The excavation of five test pits and two trenches revealed C&D fill consisting of 35 percent - 60 percent shredded wood with lesser amounts of tires, shingles, railroad ties, carpet, metal, stone, plastic, rubber, and glass. Trace levels of the solvent toluene were found in several test pit samples, and one sample also had low concentrations of the solvents, ethyl benzene and total xylenes. Most of the polynuclear aromatics and several Tentatively Identified Compounds (TICs) were also detected in the test pit samples. Low levels of several target compound list pesticides and two PCBs were found in a majority of the test pit samples. Elevated levels of lead were reported in several test pit samples. These are all typical of "cocktail waste." Please note, however, that the amounts of hazardous substances found did not require the site to be placed on the State Superfund List.

The PSA noted that the site was previously used as a junkyard and noted that this use has likely contributed to offsite release of some of the contaminants. Air sampling conducted during July 1991 revealed sporadic detections of hydrogen sulfide, tetrachloroethene, xylene and trichlorofluoromethane in downwind samples. Toluene and 1,4- dichlorobenzene were detected in upwind and downwind samples suggesting that these compounds are not necessarily site-related. Furthermore, a NYSDOH health survey revealed that many symptoms experienced by respondents to a health questionnaire living in proximity to the site, such as eye and respiratory irritation, are consistent with intermittent exposures to hydrogen sulfide.

#### Outlined below are the PSA's recommendations:

- The landfill should be properly closed in accordance with NYSDEC Part 360 regulations. The closure should include a cap to reduce infiltration and surface water drainage control.
- Groundwater quality and flow directions should be monitored for the on-site wells
  to better define the flow directions and potential long term changes in water
  quality as the nature of the landfill material changes under normal degradative
  conditions. Additional wells at selected locations may be necessary to better
  define local groundwater flow direction adjacent to the fill area, and to provide
  early warning monitoring for those private residences located south of the site.

- Early warning monitoring wells should be sampled on a quarterly basis to protect downgradient residential water supplies.
- If the early warning monitoring program reveals contravention of groundwater standards, steps should be considered to protect the health of those residents potentially impacted.
- Complaints of hydrogen sulfide odors by nearby residents should be closely monitored to determine if additional air sampling is warranted to evaluate seasonal variations of hydrogen sulfide generation from the site.

## Sabsequent Agency Action

In 1996, the Regional Director of NYSDEC Region 4 summarized the landfill's history in an internal memorandum. In it, Mr. Adamczyk noted that "The physical condition of the site remains pretty much as it was shortly after operations ceased. To date, no cap or leachate control system has been constructed on the landfill. The enforcement case still lies with the Attorney General's Office. The most recent inspection indicated that a small quantity of leachate is still flowing from the western edge of the landfill into the Stonykill and hydrogen sulfide odors appear to have subsided. The most recent groundwater sampling by the Region (1994) indicated continued presence of contamination." His memorandum went on to discuss the fact that many of these types of C&D landfills in the Hudson Valley remained contaminated for a variety of reasons, e.g. "In most cases the owners simply lacked the financial resources to address all of the environmental problems or were able to successfully hide the money received during the operation from the state and local municipalities. While the intensity of the concerns has lessened, particularly regarding the odors from the hydrogen sulfide gas, this site will likely continue to contaminate groundwater as long as it remains uncapped."

He recommended that the Department continue to provide periodic inspections with occasional groundwater sampling, as resources allow, to be sure that environmental conditions have not worsened. He also recommended that the NYSDEC continue to provide technical assistance to the Attorney General's office as needed for any continuing litigation.

In 1997, another round of sampling was conducted by NYSDEC, and reported to the Town Engineer, David Crawford. The results noted continuously heavy leachate seeps, and significant exceedances of groundwater and surface quality standards for iron and manganese. Apparently, there were no exceedances for volatile and semivolatile compounds. However, these results were not conclusive because two monitoring wells were not sampled because of dense brush.

As you know, on May 31, 2005, the Regional Engineer Richard Forgea wrote to the Livalleras, stating that the site is still not in compliance with State regulations, and that it has not been closed as required.

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# My Recommendations

With your approval, I will call and write to NYSDEC Regional Administrator Stave Schassler, citing the Town's difficulty with the Agency's lack of enforcement, and asking the State to take action. It may be that NYSDEC does not realize that the new owner has been quoted as saying that NYSDEC has said that no further cleanup is necessary. In any case, we need immediate clarification from the Agency. If NYSDEC has reevaluated the site and is willing to give the new owner a no-further-action letter, then the Town would be free to permit certain allowable certain development activities, if the owner asks for permission. However, if the State will not provide the new owner with a no-further-action letter, then it should be willing to enforce its own regulations, and require a Part 360 cap and closure plan, to stop degradation of the environmental media at the site.

I will look forward to discussing this with you at this evening's board meeting.

Very truly yours,

Simberles Shaw Rea

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April 13, 2005

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Page i of 3

Gary Beck - Z3 Consultants- Cemetery Road

Randy Bloom

Alfred Jantzen, represented by Garret O'Connor

Amandus Fuchs

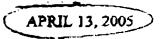
Amandus Fuchs

Thomas Vondell

Philip Seymour

William Cole

#### CLERMONT PLANNING BOARD



The Clermont Planning Board held its regular meeting on Wednesday, April 13, 2005. Those members present were Chairman Larry Saulpaugh, Clayton Andrus, Aldo Dusman, Garret O'Connor, Mandy Fuchs, Robert Quierolo and Chris Nolan. Others present were Elizabeth Maher, Judith Neary, Gary Beck, Jr. Z3 Consultants for Cemetery Road project, Randy Bloom and Richard Jones, engineer for Ms. Bloom, Robert Corey, Robert Desmond, Philip Seymour, Thomas Vondell and Al Trezza, Town Attorney.

Chairman Saulpaugh opened the meeting at 7:30 P.M. A motion was made by Mandy Fuchs, seconded by Clayton Andrus to approve the minutes. All in favor. So carried.

A motion was made by Mandy Fuchs, seconded by Clayton Andrus to close the regular meeting and open the public hearing on the subdivision and boundary line change of Alfred Jantzen of 13.119 acres on Pleasantvale Road. Garret O'Connor, member of the Planning Board, stepped down to represent Mr. Jantzen in this subdivision. Mr. Jantzen is subdividing a parcel of 13.119 acres on the north side of Pleasantvale Road and annexing it to Mr. O'Connors 4.886-acre parcel. Notification to adjoining landowners was done, deeds for both parcels were submitted. Robert Corey, a neighbor was present for the hearing. He asked if the pipeline runs through this property, but it does not.

As their was no other discussion, a motion was made to close the hearing and go back into regular session by Mandy Fuchs, seconded by Clayton Andrus.

The Environmental Assessment form was reviewed and declared a negative declaration on a motion made by Mandy Fuchs, seconded by Clayton Andrus. All in favor. So carried. A motion was made to approve the subdivision/boundary line change by Aldo Dusman, seconded by Chris Nolan. All in favor. So carried.

Thomas Vondell approached the board on subdividing a 5.88 acre parcel into two lots on the east side of Route 9, south of Pinho's. The lots would be 1.6 acres and 4.2 acres.

He will need two driveway approvals from the State Highway Superintendent. The driveways should be shown on the survey map and the superintendent's signature affixed to that map. The property has mapped wetlands. As of yet, does not have health department approval. Phil Massaro is the surveyor for this project.

Randy Bloom, developer and Dick Jones, engineer approached the board for the 5 lot subdivision Mr. Bloom is proposing on Langridge Road off of Pleasantvale Road. The discussion started on whether or not Langridge Road is a user road or Town road. Dan Wheeler, our engineer, believes that if a user road is maintained and taken care of for ten years by the Town, it becomes a town road, but others

LIEDRO

April 13, 2005

Page 2 of 3

dissagree. There are state regulations whereby a user road maintained by the Town for ten years becomes a town road, but the town does not own fee to road, it is used by the public but is not a dedicated road, remains a user road. An agreement has been reached by Ms. Bloom and Jim Potts, Highway Superintendent, whereby: the turnaround and area to push snow will be enlarged and trees will be removed on the curve for better site distance. Ms. Bloom is willing to turn road over to the Town from the start at her property line to the turnsround with a 15-20' easement for pushing off the snow. The length of the cul-de-sac will exceed the maximum length that the zoning allows, but this is a preexisting user (Town) road.

# Applicant needs the following:

- Metes and bounds description
- Board of Health approval
- Survey
- Deed description -no further subdivision on lots

Gary Beck of Z3 Builders, developer for the former Goodnow property on Cemetery Road, proposing 15 lots on the south side of Cemetery Road came before the board.

#### Discussion was as follows:

Stormwater Management area – who owns, maintains drainage casement.

Area is built, subject to approval of engineer and Town highway Superintendent. Receive a fee simple to road, easements to swales and ditches. Usually the management area is on a lot and a drainage easement goes with the property it is on, in this case Lot 6. Once installed it is the towns responsibility. Should check with Jim Potts on his requirements for maintenance easement.

- Access easement and maintenance agreement for stormwater.
- Wetland Buffer is not shown on map
- Need board of health approval on all lots
- Long Environmental Assessment form
- Road bond construction bond, maintenance bond 2 years

Larry will check with Dan Wheeler to see if there is anything else. A preliminary public hearing will be scheduled for next month. Aldo Dusman did ask for info on impact to schools. A motion was made by Chris Nolan, seconded by Clayton Andrus to schedule the public hearing and SEQRA review for May 11 th at 7:30 P.M.

Phil Seymour is proposing a 13 lot subdivision of 25.93 scres on the former Boice property on both sides of Nevis Road. Preliminary deep test were done last fall, however, Board of Health has not been to the site yet. Our engineer must review the maps.

- Escrow fee of \$300.00 for engineering fees, etc.
- Board of Health approval
- Drainage ditch crosses 4 of the lots, agreement for landowners that ditch can be cleaned out or maintained.
- Deed restrictions so that nothing can restrict site on road on east side.

William Cole is proposing a storage buildings 30 x 150 facing east/west and possibly a 30 x 40 storage



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April 13, 2005

Page 3 of 3

warehouse in the future in the former garage on three acres on Route 9G on what was the former LaMunyan property. He is also proposing putting the storage units on a 5 inch thick slab so as not to disturb the ground. He has been in contact with Dick Forge of DEC and there was no restriction to use of the land. The board feels he should try to get something in writing from DEC. This proposed use requires a site plan review as it is a commercial use on commercial property.

A motion was made to adjourn by Chris Nolan, seconded by Clayton Andrus.

Respectfully submitted,

Mary Helen Shannon

Secretary

GZA GeoEnvironmental of New York

Engineers and Scientists

April 25, 2002 File No. 55024

Mr. John Grathwol, P.E. New York State Department of Environmental Conservation 625 Broadway Albany, New York 12233

GI

Re: McKenna Landfill Remedial Closure Project

Final Engineering Report (Site No. 8-37-003)

Albion, New York

Dear Mr. Grathwol:

364 Nagel Drive Buffalo New York 14225 716-685-2300 FAX 716-685-3629 http://www.gza.net

GZA GeoEnvironmental of New York (GZA) is pleased to submit two (2) copies of the enclosed Final Engineering Report for the McKenna Landfill Remedial Closure Project (Site No. 8-37-003) in Albion, New York.

Very truly yours,

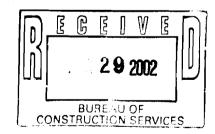
GZA GEOENVIRONMENTAL OF NEW YORK

Bart A. Klettke, P.E.

Senior Project Manager

cc: G. Bailey, Esq. - NYSDEC Region 9 (1 copy)

A Subsidiary of GZA GeoEnvironmental Technologies, Inc.







McKENNA LANDFILL REMEDIAL CLOSURE PROJECT FINAL ENGINEERING REPORT (SITE NO. 8-37-003) ALBION, NEW YORK

# Prepared For:

Waste Management of New York, LLC Fairport, New York

# Prepared By:

GZA GeoEnvironmental of New York Buffalo, New York

December 2001 File: 55024

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# **CERTIFICATION STATEMENT**

# WASTE MANAGEMENT OF NEW YORK, LLC McKENNA LANDFILL ALBION, NY McKENNA LANDFILL REMEDIAL CLOSURE PROJECT (SITE No. 8-37-003)

I hereby certify<sup>1</sup> this document has been prepared in conformance with the requirements of the "Remedial Design and Construction Work Plan" prepared in September 1995, by GZA GeoEnvironmental of New York, as a basis for executing the design and construction of the remedial closure in accordance with the "Record of Decision" issued by the New York State Department of Environmental Conservation (NYSDEC) on March 2, 1995 establishing the closure criteria for the site. Furthermore, I certify that the construction activities were completed, unless so noted, in accordance with the NYSDEC approved "Final Design Rational/Engineering Report" issued by GZA on December 16, 1999, under my signature and stamp as a Professional Engineer in the State of New York.



Bart A. Klettke, P.E.

New York State P.E. No. 069423-1

<sup>&</sup>lt;sup>1</sup> Certify means to state or declare a professional opinion.

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#### 1.00 INTRODUCTION

# 1.10 GENERAL



This report presents the observations made and data collected during construction observation of the McKenna Landfill Remedial Closure Project (NYSDEC Site No. 8-37-003) in the Town of Albion, Orleans County, New York. GZA GeoEnvironmental of New York (GZA), on behalf of Waste Management of New York, LLC (WMNY), prepared this report. A project locus plan is presented as Figure 1. Limitations to our work and this report are presented in Appendix A. Pertinent correspondence with the New York State Department of Environmental Conservation (NYSDEC) and the New York State Canal Corporation (NYS Canal Corporation) is contained in Appendix B – Correspondence.

WMNY retained the following companies to complete the Remedial Closure construction.

- Ciminelli Services Corporation (CSC) of Tonawanda, New York as the general contractor. CSC performed the earthwork construction and constructed the leachate collection and gas venting systems. CSC subcontracted with Inquip Associates, Inc. (Inquip) of McLean, Virginia to construct the soil-bentonite barrier wall; and subcontracted with TVGA Engineering, Surveying, P.C. (TVGA) of Elma, New York to perform construction layout, measure the constructed lines and grades, and prepare record drawings. Record survey drawings are presented in Appendix G.
- Serrot International Corporation (Serrot) of Reno, Nevada manufactured and installed the linear low density polyethylene (LLDPE) liner.

#### 1.20 BACKGROUND

The McKenna Landfill site is located on the north side of the former Yager Road, west of Transit Road, in the Town of Albion. The site is approximately 500 feet wide (north to south) by 1800 feet long (east to west) and consists of about 20 acres. It is located adjacent to the northeast corner of the Orleans Sanitary Landfill (OSL) site. The landfill occupies approximately 18 acres of the McKenna site. The site is bounded by the New York State Barge Canal to the north, an existing pond and Transit Road to the east, the former Yager Road to the south and an undeveloped portion of the OSL site to the west. An undeveloped portion of the OSL site is also located south of the site on the south side of Yager Road. The site setting is generally rural/agricultural with some sparsely located residences within a one-half mile radius of the site.

The landfill is an unlined facility and was operated during the 1970's and early 1980's; it ceased operation in October 1983. The landfill is presently listed on the New York State

Registry of Inactive Hazardous Waste Sites as a Class 2 site. Reported hazardous materials disposed in the landfill include concentrated acids, silver chloride sediment, solvents, adhesives with high concentrations of vinyl chloride, foundry sands, paint and treatment plant sludges. A proposed remedial action plan was issued by NYSDEC in January 1995, followed by a "Record of Decision" issued by NYSDEC on March 2, 1995 (Reference 1) that established the closure criteria for this site.



The "Record of Decision" mandated construction of the following composite final cover system for remedial closure of the McKenna Landfill.

- A passive gas venting system, consisting of individual gas vents spaced at one per acre, as a minimum;
- A low permeability barrier layer cover, consisting of either a geomembrane (60 mil LLDPE) or 18 inches of a low permeability soil;
- 24 inches of barrier protection soil; and
- 6 inches of topsoil, seeded to establish vegetative cover.

In addition, the closure criteria required a perimeter leachate collection system at the base of the landfill to produce a generally inward groundwater gradient, where practical considering the actual site conditions, and to limit migration of site related contaminants.

A "Remedial Design and Construction Work Plan" was prepared in September 1995 (Reference 2), by GZA, as a basis for executing the design and construction of the remedial closure in accordance with the "Record of Decision". The "Remedial Design and Construction Work Plan" was submitted to NYSDEC and accepted in March 1996. WMNY entered into a consent order agreement with NYSDEC, in March 1998, to develop and execute the remedial closure plan for the McKenna Landfill. GZA was retained by WMNY to collect necessary site information and prepare the remedial closure design including construction drawings, technical specifications, health and safety requirements and a construction quality assurance/quality control plan.

Site data collected or done, and reviewed during the design phase consisted of existing files and reports, planimetric survey and reconnaissance, test pit explorations, test borings, installation of groundwater level observation wells, a landfill gas survey, a wetlands delineation and leachate collection and analysis. The site data collected was summarized in the Final Design Rationale/Engineering Report (Reference 3) prepared for this project in December 1999 by GZA.

#### 2.00 REMEDIAL CLOSURE DESIGN



A detailed discussion regarding the design for the remedial closure construction is presented as Appendix C – Remedial Closure Construction Design Summary, which summarizes the remedial closure design and discusses the engineering considerations used for the design. Additional information is included in Reference 3. A general discussion of the remedial closure design follows.

The remedial closure cover system components consist of, from final grade down:

- 6 inches of topsoil and seeding,
- 24 inches of barrier protection material,
- A cushion geotextile,
- A 60 mil. textured, LLDPE geomembrane barrier layer, and
- A cushion geotextile, overlying a suitably prepared existing cover soil subgrade.

A barrier or cut-off wall was installed around the perimeter of the landfill and generally follows an alignment along the centerline of the perimeter surface water drainage swales (outside the perimeter leachate collection system piping and structures). The barrier/cut-off wall was designed to extend to the top of bedrock and provides a toe of slope connection for the final cover system to the top of bedrock.

The barrier/cut-off wall consists of:

- A three (3) foot wide soil-bentonite (slurry) wall on the north side and at the
  northeast and northwest corners of the landfill due to the deeper depths to bedrock
  (i.e. in the range of 10 to 13 feet), considering the site constraints and slope-back
  required for a deeper excavation, groundwater conditions and the presence of the
  barge canal, which required protection against construction disturbance; and
- Compacted low permeability soil (clay) barrier wall along the east, south and west sides of the landfill where the depth to bedrock was generally less than about seven feet below existing grades.

Both the soil-bentonite slurry wall and the compacted low permeability soil barrier wall were required to have permeability of  $1x10^{-7}$  cm/sec or less.

A leachate collection system consisting of a toe drain around the perimeter of the landfill drains to wet wells located at the northeast and northwest corners of the landfill. The

leachate collection pipe and appurtenances are located inside of the barrier/cut-off wall system.

The leachate collection piping consists of perforated, 6 and 8-inch diameter, HDPE pipe. The manholes and wet wells are also constructed of HDPE. The wet wells are 8 feet in diameter and each have a 6-foot deep sump below the lowest pipe invert.



A geosynthetic leachate collection drainage layer was constructed on the lower portion of the landfill slope and connects to the leachate collection system at the bottom of slope. The leachate collection drainage layer is a geocomposite (geogrid with geotextile bonded top and bottom).

A passive gas venting system was installed for the remedial closure that consists of 19 gas vents on the top portion of the landfill and 12 gas vent points along the perimeter leachate collection system. Gas vents have been provided on some of the leachate collection system cleanout risers and on each of the manhole/wet well structures for venting of the perimeter leachate collection drain system.

Gas collection trenches were excavated into the cover soil subgrade/waste on the upper portion of the landfill. A cushion geotextile (Geotextile, Type II) was installed beneath the geomembrane barrier on the top portion of the landfill to serve as a limited gas venting layer. The cushion geotextile ties into the gas collection trenches. The leachate collection drainage layer (Geocomposite) on the lower slope serves as a primary gas venting layer. This leachate collection/gas venting layer was connected to the gas collection and venting trench located along the upper limit of the layer.

#### 3.00 MATERIALS AND LABORATORY TESTING

Material testing was done as required in the approved quality assurance and quality control (QA/QC) plan included in Reference 3. A discussion describing the various materials used for construction in the McKenna Landfill Remedial Closure Project is presented as Appendix D - Materials and Laboratory Testing. Also presented in Appendix D is a summary of the pre-construction and construction laboratory test results, certificates of compliance, and manufacturer's data summarizing material characteristics. Appendix E includes the LLDPE liner installation field and laboratory data sheets.

#### 4.00 REMEDIAL CLOSURE CONSTRUCTION

# 4.10 GENERAL



This section describes the general procedures used for remedial closure construction. Partial construction was completed in 2000 with substantial work completion in 2001. The work included clearing and grubbing of on-site trees and brush, existing soil recovery, subgrade grading and excavation spoil disposal, barrier/cutoff wall construction, leachate collection and gas venting systems, final cover system, surface water drainage structures, and access road construction.

#### 4.20 CONSTRUCTION PROCEDURES

# 4.20.1 Clearing and Grubbing and Utility/Structure Removal and Abandonment

CSC cleared or removed trees, brush, down timber and objectionable material from within the work area using an excavator attached with a trash grapple. Cleared material was hauled away in articulated dump trucks and stockpiled outside the work area to be chipped up and disposed of within the designated disposal area of the landfill. CSC grubbed or removed from the ground surface topsoil, organic materials and debris from within the work area using a "Bobcat" attached with a "Brushcat"/mulching mower.

CSC removed or abandoned in-place the following existing utilities as shown on TVGA record survey drawing no. R-4 in Appendix G.

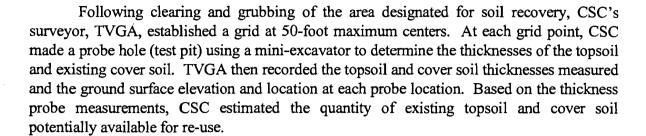
- Removed leachate riser pipe numbers 1 through 8;
- Removed existing gas vent numbers 1 through 3;
- Removed existing corrugated metal drainage pipe (CMP) crossing Yager Road off the southeast corner of the landfill; and
- Abandoned in-place existing manholes/concrete vault numbers 1 through 6.

The leachate riser pipes and gas vents were removed with a backhoe with the resultant excavation backfilled with crushed stone tamped in-place.

The excavation for the CMP was backfilled with excavation spoil compacted to a stable matrix up to about 2 feet below top of pavement elevation. The top 2 feet was backfilled with crushed stone compacted to a stable matrix.

The existing manholes/concrete vaults had cap and manhole barrel sections removed down to at least 2 feet below the level of the prepared subgrade. The remaining manhole sections were backfilled with crushed stone up to top of subgrade.

# 4.20.2 Existing Soil Recovery



CSC collected samples of topsoil/cover soil for analytical testing (chemical characterization) to determine their suitability for re-use. Samples were collected at the following frequencies:

Existing Topsoil: 1 sample per 5000 cubic yards (CY) of material potentially available for re-use. Approximately 13,000 CY of topsoil was excavated during soil recovery. Six (6) samples were tested for chemical characterization.

Existing Cover Soil: 1 sample per 5000 CY of material potentially available for reuse. Approximately 8,300 CY of cover soil was excavated during soil recovery. Six (6) samples were tested for chemical characterization.

The analytical results for all the samples tested satisfied the chemical characterization criteria. Results of the testing are presented in Appendix D.

CSC then excavated, with a bulldozer, the existing topsoil using the thickness probe measurements to control the excavation of the topsoil. Excavation work started from the top of the landfill and moved down towards the toe of slope. Material was loaded, with a frontend loader, into articulated dump trucks and stockpiled outside the work area for later use. Following excavation of the topsoil, CSC followed the same procedure for excavation of the existing cover soil.

#### 4.20.3 Subgrade Grading and Excavation Spoil Disposal

CSC excavated over-filled areas of the landfill and filled in areas steeper than 3 horizontal (H): 1 vertical (V) with compacted suitable fill to grade slopes no steeper than 3H:1V. Excavated soil/waste was deposited in the designated fill area at the east end of the landfill.

CSC graded work areas with bulldozers and excavators as necessary during construction to divert surface water runoff from excavations and to provide positive drainage of embankments and fills.

CSC graded with bulldozers, the existing landfill slope and rolled with vibratory smooth drum rollers as necessary to remove irregularities prior to construction of the landfill final cover system. CSC generally removed from the final subgrade surface, stones or rocks greater than 3 inches, protruding materials and any other unsuitable materials, which could have potentially damaged the geomembrane cover.



Suitable fill was required to be evaluated for geotechnical properties and chemical characterization, as discussed in section 4.20.8.6.

# 4.20.4 Decommissioning of Existing Monitoring Wells

A total of eight (8) existing monitoring wells on or adjacent to the McKenna landfill were decommissioned and removed as part of the remedial closure project. These wells were designated PL-3TR, OSL-14, B-5, B-8, B-15, McKenna No. 1, McKenna No. 2 and McKenna No. 3. Maxim Technologies, Inc. (Maxim) of Hamburg, New York was subcontracted by CSC to decommission the existing wells.

For wells OSL-14, B-5, B-8, B-15, McKenna No. 1 and McKenna No.2, Maxim overbored the well with 4-1/4 inch inside diameter hollow-stem augers to the bottom of well or the top of rock, whichever was higher. Maxim then removed well materials, including materials extending into rock. Upon removal of the well products the boreholes and open rock holes were flushed with water until the water appeared clean. The boreholes were then backfilled by tremie-grouting with cement-bentonite grout. The well materials were then disposed into the designated disposal area of the landfill.

For wells PL-3TR and McKenna No. 3, Maxim attempted to remove the well products, but the well risers broke off. The well materials were left in-place and the holes were flushed with water until the water appeared clean. The wells were then backfilled by tremie-grouting with cement-bentonite grout.

Groundwater level piezometer PL-6TR was also decommissioned after being damaged by construction equipment. CSC excavated to the bottom of the piezometer (down to the top of bedrock, approx 7 to 8 feet below ground surface), then removed the well materials (riser, screen and pea gravel) from the borehole and backfilled the hole with bentonite and compacted clay.

# 4.20.5 Soil-Bentonite /Low Permeability Soil Barrier Wall

A barrier or cut-off wall was constructed around the perimeter of the landfill. The barrier wall consists of a 3-foot wide soil-bentonite (slurry) wall, extending to top of rock, on the north side and at the northeast and northwest corners of the landfill. The slurry wall construction was done by Inquip Associates, Inc. (Inquip) of McLean, Virginia. Additionally, a compacted low permeability soil (clay) barrier wall was constructed by CSC along the east, south and west sides of the landfill.



Excavation for the slurry wall construction began at the northwest corner of landfill. Inquip used an excavator equipped with a 3-foot wide bucket to excavate to the top of bedrock (approximately 10-16 feet below ground surface). Where possible, Inquip keyed approximately 6 inches into the bedrock with the teeth of the excavator bucket. As excavation was being done, slurry (mixture of water and bentonite) was pumped into the excavation. The level of slurry within the open trench was maintained within one (1) foot of the top of the trench. Every ten (10) linear feet of excavation, Inquip measured the depth to bottom of trench to record a daily profile for quality control measures.

Following excavation of approximately every 120 linear feet or until the length of the trench was about 10 times the excavated depth, Inquip commenced backfilling of the trench. CSC transported imported backfill material with articulated dump trucks to a mixing area adjacent to the trench. The imported soil was mixed with the bentonite slurry so that a relatively homogeneous mixture (no clods or clumps of soil) was achieved. Mixing of the soil was performed using an excavator to remove the slurry from the trench and mix it with the soil; the slurry and soil were then mixed using a bulldozer. Finally, the relatively homogeneous backfill was placed within the trench. The backfill was tested for slump, with a required slump ranging between three (3) to six (6) inches. The backfill was also tested for density and bentonite content at a minimum of once per 100 CY of trench backfilled. Inquip subcontracted Quality Inspection Services, Inc. (QIS) of Buffalo, New York to perform the QC/QA work on the soil-bentonite slurry wall. QIS and Inquip provided GZA daily reports that included profiles, slump results, locations of slump tests, densities, temperatures, and marsh funnel results of the soil-bentonite slurry. Copies of these reports are included in Appendix D.

Upon completion of the slurry wall, Inquip obtained undisturbed tube samples at a rate of 1 tube per 200 cubic yards of soil-bentonite mix placed, in accordance with the project specifications. Slightly less than 2,000 cubic yards of soil-bentonite mix was placed for construction of the barrier wall. Therefore, ten (10) undisturbed Shelby tube samples were collected from the slurry wall. The samples were collected at approximately 200-foot intervals along the alignment of the slurry wall. Sample locations and depths were selected by GZA. These undisturbed samples were then sent to an independent laboratory to be tested for hydraulic conductivity. SJB Services, Inc. (SJB) of Buffalo, New York, was subcontracted to obtain the undisturbed samples. SJB used a track-mounted drill rig to collect the samples from the specified depths and locations.

After the undisturbed samples were collected, CSC then covered the slurry wall with at least a two (2)-foot thick cover (trench cap) of low permeability soil barrier. An initial loose lift approximately 18-20 inches thick was placed on top of the slurry wall, with a successive loose lift of approximately 8-10 inches thick. Each lift was compacted using a vibratory sheepsfoot roller.

CSC began construction of the low permeability soil barrier wall at the northwest corner of the landfill and worked around the landfill towards the east. An excavator was used to excavate down to the top of bedrock. Once down to top of bedrock the excavation was keyed into the bedrock approximately 6 inches using an excavator equipped with a hydraulic rock chipper. After excavation of approximately 50 linear feet, backfilling the trench began with low permeability soil. CSC installed an initial loose lift approximately 10-12 inches thick and successive loose lifts approximately 8-10 inches. Each lift was compacted with the vibratory sheepsfoot roller.

During construction of the low permeability soil barrier wall, GZA took measurements of the moisture content and dry density of the compacted soil. Details of the field monitoring program are described in Section 5. Subsequent overlying lifts were not placed until the tests or retests met the project specifications.

## 4.20.6 Leachate Collection System

The leachate collection system consists of a toe drain (approximately 3900 feet in length) around the perimeter of the landfill flowing through manholes to wet wells located at the northeast and northwest corners of the landfill. The leachate collection pipe and appurtenances are located inside of the barrier/cut-off wall system.

The leachate collection system pipes were delivered to the site in 40-foot lengths. Additional specific information related to the pipe is included in Appendix D. CSC's pipe welding subcontractor, Caputo Associates, used a McElroy No. 28 Hydraulic Fusion Machine to butt fuse the pipe on-site. This fusion unit was made by McElroy Manufacturing, Inc. of Tulsa, Oklahoma.

6-inch diameter pipes were installed for the leachate collection system on the east, west and south sides of the landfill, and 8-inch diameter pipes were installed on the north side of the landfill. The leachate collection pipes had perforations consisting of two rows of ½ inch diameter holes spaced approximately 4 inches on center. The two rows were approximately 120 degrees apart. The perforated pipe was placed with the holes facing down. Drainage stone was placed around the leachate collection pipes. The drainage stone was enveloped with a non-woven 6-oz. geotextile. In general, CSC placed the leachate collection system components to the lines and grades shown on the contract drawings. TVGA took record survey measurements during construction of the leachate collection system. The record survey drawings are included in Appendix G.

The wet wells/manholes were placed just prior to construction of the leachate collection system. Bedding stone was put in the wet well/manhole excavation in an approximate 12-inch loose lift thickness. The material was compacted using walk-behind vibratory plate tampers. Concrete anti-flotation anchors were constructed around the base of the wet wells/manholes. Flowable fill or low permeability soil was used to backfill around the wet wells/manholes above the concrete anchors to the ground surface.



During subgrade grading and leachate collection system construction, an existing 4-inch diameter PVC pipe was encountered in the northeast corner of the landfill. GZA directed CSC to connect this pipe with the new leachate collection system trench constructed along the toe of the north slope. Details of this pipe connection were described in a letter report submitted to NYSDEC<sup>1</sup>. The location of the pipe connection is shown on TVGA's survey record drawing no. R-9 in Appendix G.



Prior to completion of the leachate collection system, WMNY subcontracted Bailey Drilling and Septic Service (Bailey) to remove leachate collected by CSC and stored in temporary holding tanks. Bailey transported the leachate to the Town of Albion Wastewater Treatment Plant for disposal. Upon completion of the leachate collection system, Bailey removed leachate from Wet Well Nos. 1 and 2 for disposal. Leachate removal was generally done on a daily basis.

The leachate collection system became operational on October 25, 2000. GZA collected one leachate sample from the two wet wells and combined these two samples into one composite sample for analytical testing. Sampling began October 27, 2000 and was done generally on a quarterly basis during construction. A summary of the test results and analytical data was previously submitted to NYSDEC (Reference 6) and WMNY.

# 4.20.7 Gas Venting System

The gas venting system consists of 19 gas vents/gas vent risers interconnected with 6 inch slotted Schedule 80 PVC gas venting pipe on the top portion of the landfill, and 12 gas vent points along the perimeter leachate collection system. TVGA took record survey measurements during construction of the gas venting system. The record survey drawings are included in Appendix G.

Excavation for the gas venting trenches was done using an excavator cutting through the existing cover soil/subgrade to make contact with the waste. A non-woven 6-oz. geotextile was placed to line the excavation, followed by an approximate four-inch lift of gasventing stone placed on top of the geotextile. The gas vent pipe (delivered in 20-foot sections) was placed by hand on top of the bedding stone; connected together using PVC pipe solvent, and covered with a minimum 1 foot of gas venting stone that was then encapsulated with the geotextile.

At gas vent riser locations, CSC used a bobcat outfitted with a post-hole auger, to drill a 12-inch diameter hole extending 5 feet into waste. A 6-inch diameter, Sch. 80 PVC slotted gas vent pipe having a 3-foot screen length was installed. Filter stone was then placed within the hole around the riser pipe. Attached to the slotted pipe was a 6-inch solid Sch. 80 PVC gas vent riser pipe extending 3 feet above the final cover system elevation. The riser

<sup>&</sup>lt;sup>1</sup> "Existing Leachate Collection Structures/Conditions Encountered Along North Side of Landfill", October 19, 2000.

pipe was then completed with a "riser gooseneck" that consists of two (2) 6-inch Sch. 80 PVC 90° elbows with an attached bird screen.

# 4.20.8 Final Cover System

The final cover system on the upper portion of the landfill consists of the following components, from final grade down:

- 6 inches of topsoil and seeding,
- 24 inches of barrier protection material,
- A cushion geotextile (i.e. 12 oz./square yard)
- A 60 mil. textured, LLDPE geomembrane barrier layer, and
- A cushion geotextile, overlying a suitably prepared existing cover soil subgrade.

The final cover system on the lower portion of the landfill consists of the same components as above, with the following exceptions:

- A geocomposite leachate collection/gas venting layer was placed between the geomembrane barrier and the suitably prepared subgrade.
- An 18-inch thick weep drain was constructed of crushed stone separating the low permeability soil barrier and the barrier protection material. The weep drain was constructed to allow drainage of surface water infiltration from the barrier protection layer.
- Twenty-four (24) inches of low permeability soil was placed above the cushion geotextile in place of the barrier protection material for the portion of the final cover system below the weep drain.

The limits of the final cover system extend to the toe of the landfill slope and ties in with the perimeter leachate collection and barrier wall system.

# 4.20.8.1 Subgrade Preparation

Following final grading of the subgrade, the surface was observed by GZA for stones larger than three inches, sharp edged stones, and other irregularities. CSC generally removed stones larger than three inches and sharp edged stones. Serrot also observed the subgrade surface prior to it being covered by the geotextile and geomembrane layers and submitted a written subgrade acceptance form. Copies of the subgrade acceptance forms provided by Serrot are included in Appendix E.





# 4.20.8.2 Geocomposite Leachate Collection/Gas Venting Layer

The geocomposite was manufactured by Serrot and delivered to the site in plastic wrapped rolls. Each roll was approximately 14.5 feet wide and 300 feet long. Serrot installed the geocomposite for the leachate collection/gas venting layer atop the prepared subgrade.

Serrot deployed the geocomposite with the long dimension generally perpendicular to the toe of slope. Where cross seams occurred, the upper geonet (the HDPE portion of the geocomposite) overlapped on top of the lower geonet with an overlap of at least 1.0 foot. For the long seams, the geonet overlap was at least 3 inches. The geonet overlaps were secured with plastic zip ties placed every 2 feet along the long seams and every 1 foot along the cross seams. Following geonet overlap tying, the adjoining geotextiles were placed back over the geonet seam and sewn together.

The uphill end of the geocomposite was embedded into the gas venting trench, and the downhill end of the geocomposite was embedded into the leachate collection trench.

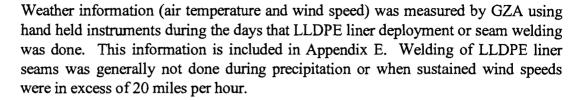
#### 4.20.8.3 Cushion Geotextile

The 12-oz. cushion geotextile was manufactured by Synthetic Industries and delivered to the site in plastic wrapped rolls. Each roll was approximately 15 feet wide and 300 feet long. Serrot installed the geotextile over the prepared subgrade in areas above the geocomposite leachate collection/gas venting layer. The cushion geotextile was also placed atop the geomembrane with the long dimension generally placed perpendicular to the toe of slope. The seams were sewn together.

# 4.20.8.4 LLDPE Geomembrane Leachate Collection/Gas Venting Layer

GZA and Serrot observed the prepared subgrade prior to placement of the cushion geotextile or geocomposite. Serrot submitted written acceptance to GZA of the subsurface preparation prior to it being covered by the LLDPE liner and underlying geotextile or geocomposite. Copies of the subgrade surface acceptance sheets provided by Serrot for LLDPE liner construction are included in Appendix E.

The 60-mil thick LLDPE liner was delivered to the site in rolls. Each roll was approximately 23 feet wide and 460 feet long. The panels placed on the slope of the landfill were generally laid perpendicular to the toe of slope. Panels were overlapped approximately 4 inches. GZA observed the panels during deployment and marked defects, holes or other deficiencies that required repair. As the rolls were laid out, the panels were seamed together using a hot-wedge seaming device. In areas where the hot-wedge machine could not be used, the panels were leistered (tack welded) to hold the sheets in place and then seamed together using an extrusion welding process.



Prior to initiating seaming activities (generally at the beginning of the work day and following the lunch break), a pre-weld test sample was made for each seaming unit by the qualified seaming person. Pre-weld samples were made, as a minimum, at the beginning of the day and after lunch. The test seams were approximately 2 feet long. Specimens were cut from the test seam and tested with a field electronic tensiometer. Three specimens were tested for peel strength and three for shear strength. The specimens were required to fail in film tear bond (FTB) and meet the following minimum tensile strengths.

Shear Test Min. Value: 72 pounds per inch (ppi) Peel Test Min. Value: 60 ppi

If the tests indicated that the welded seam failed before failure of the parent material, then another pre-weld sample was made. If the second test also failed, then the seaming equipment and/or seaming person was disqualified from seaming until the deficiency was corrected and a successful test seam had been produced. Data for the fusion and extrusion trial seams are included in Appendix E.

LLDPE liner seams welded by the double hot wedge method were non-destructively tested by Serrot with an air pressure test of the gap between the wedge weld tracks. The gap was pressurized by air injected through a lance inserted into the gap. A minimum pressure of 30 pounds per square inch (psi) was developed in the gap by a compressor. The pressure was monitored by a gauge attached to the lance. If a pressure decrease of 2 psi or less was observed over a 5-minute period, then the seam was considered to be acceptable. If a pressure decrease greater than 2 psi was observed within the 5-minute period, then the seam was considered to be unacceptable. At the conclusion of an acceptable air pressure test, the pressure was released at the seam end opposite the gauge assembly to detect air flow indicating the air space between the track welds was continuous along the seam length. The air pressure test data for the LLDPE liner installation is included in Appendix E.

If the non-destructive test was unacceptable, Serrot observed the length of the tested seam for obvious leaks or defects of the welded seam. If a defect was found, then Serrot scuffed the defect location and placed an extruded bead weld over the defect. The air pressure test was then repeated. In cases where the seam had numerous leaks or the leak location was not readily apparent (i.e., possible leak on the underside), Serrot scuffed and extrusion-welded or capped the entire seam interval and then retested the seam using a vacuum box test.

The LLDPE liner extrusion-welded seams were vacuum box tested by Serrot in accordance with ASTM D4437 and as required by the QA/QC plan. Seams where leaks were detected were repaired (i.e., reground and rewelded) and retested until the vacuum test data were satisfactory. Vacuum test data for the LLDPE liner installations are included in Appendix E.

Samples for destructive testing were obtained at intervals of 500 feet or less on the LLDPE liner seams, as required by the QA/QC plan. The destructive test samples taken were divided into thirds; 1/3 of each sample was destructively tested by Serrot's field tensiometer, 1/3 was destructively tested by an independent laboratory [Texas Research International (TRI)] tensiometer, and the remaining 1/3 of each sample was saved by GZA as an archive. Each tested sample was cut into ten 1-inch wide strips perpendicular to the seam orientation. Five strips were tested for peel strength and five for shear strength. The parent sheet tensile strength and minimum values for shear and peel are listed below. All strips were required to fail in FTB. Destructive test data for the LLDPE liner installations is presented in Appendix E.

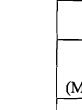
Parent Sheet Tensile Strength	90 ppi
Shear Test Minimum Value	72 ppi
Peel Test Minimum Value	60 ppi

An LLDPE liner seam sample was considered to fail if the test results from either Serrot or TRI did not meet the specified criteria. All of the seam samples met the specified criteria. Sample locations are shown on the record drawings provided by TVGA in Appendix G.

# 4.20.8.5 Low Permeability Soil Layer

#### Material Evaluation

GEOTECHNICAL TESTING - The soil that was used for the low permeability soil component of the perimeter barrier/cut-off wall and that portion of the final cover system below the weep drain, was obtained from the Walck Brothers borrow source located in Lockport, New York. Samples were collected prior to and during construction from this source. Laboratory testing was done at frequencies greater than or equal to those required in the approved QA/QC plan, as summarized below. Actual test frequencies and laboratory data are summarized in Appendix D.



TEST	FREQUENCY
Moisture content &	1 test per 1,000 cy of
Atterberg Limits	material
Grain size with	1 test per 2,500 cy of
hydrometer	material
Moisture-density	1 per 5,000 cy of
relationship	material
(Modified Proctor Test)	
Permeability of	1 test per 5,000 cy of
remolded samples	material
Permeability of	1 test per 800 cy of
undisturbed samples	material

In addition, one sample was tested in a saturated condition for Consolidated Undrained Triaxial Compressive Strength (ASTM D4767) to determine the effective angle of internal friction ( $\emptyset$ ). Another sample was tested for interface friction, using the Direct Shear Test Procedure (ASTM D5321), between the low permeability soil barrier and the cushion geotextile. Results of the internal friction angle and interface friction testing are included in Appendix D.

CHEMICAL CHARACTERIZATION TESTING - CSC obtained samples and performed chemical characterization testing to determine the environmental suitability of the low permeability soil. One sample per 5,000 CY of material imported to the site was collected and tested for the following parameters:

Parameter	Extraction/Preparation (1)	Analysis (1)
TCL <sup>(2)</sup> Volatile	5050	8260 (95-1)
Organic Compound		
TCL Semi-Volatile	3540/3550	8270 (95-2)
Organic Compound		
Pesticides/PCB	3540/3550	8080
Herbicides	3580	8150
TAL <sup>(3)</sup> metals	3050	95-M
Cyanide		9012

<sup>&</sup>lt;sup>1</sup> EPA SW-846.

Actual test frequencies and laboratory data are summarized in Appendix D.

<sup>&</sup>lt;sup>2</sup> TCL - Target Compound List.

<sup>&</sup>lt;sup>3</sup> TAL - Target Analyte List.

# Test Pad Construction

A test pad was constructed for the low permeability soil to observe CSC's proposed construction methods and provide soil compaction and other characteristic information that would guide CSC and GZA during the construction of the low permeability barrier layer. The test pad construction demonstrated that the Walck Bros. clay was suitable for use as low permeability soil. A test pad construction summary was prepared by GZA (Reference 4).

# Low Permeability Soil Layer Construction

CSC used bulldozers to spread the low permeability soil into loose lifts that were generally 7 to 8 inches thick. CSC compacted the low permeability soil after it was spread generally using vibratory sheepsfoot and smooth drum rollers. At the end of each work day, the surface of the low permeability soil placed that day was rolled with a vibratory smooth drum roller, which reduced rainwater infiltration and limited desiccation of the low permeability soil. CSC scarified the smooth low permeability soil surface with a vibratory sheepsfoot roller and added water, as necessary, before a subsequent overlying lift of low permeability soil was placed.

Occasionally, low permeability soil was placed at a moisture content greater than 6 percent above optimum moisture content. Consequently, CSC scarified the low permeability soil, allowed it to air dry and then recompacted it. GZA took in-place moisture/density retests following the appropriate remediation process. This procedure was repeated until the test data met the project requirements.

In areas where significant drying or cracking was noted or test results indicated the moisture content was below the specified amount, CSC scarified, added water, reworked and recompacted the low permeability soil until in-place density and moisture tests met the project requirements. CSC maintained a water truck on-site during construction that was used to moisten the exposed low permeability soil surface as needed.

GZA took in-place tests to measure the dry density and moisture content on each lift of low permeability soil after it was compacted. Details of the field monitoring program are described in Section 5. Subsequent overlying lifts were not placed until the tests or retests met the project specifications.

# 4.20.8.6 Barrier Protection/Suitable Fill Material

#### Material Evaluation

GEOTECHNICAL TESTING – The soil that was used for the barrier protection/suitable fill material was obtained from on-site soil recovery, the Barre Stone Products borrow source located in Barre, New York, and a soil stockpile in Brockport, New York. Samples were collected from these sources prior to and during construction. Laboratory testing was done at frequencies greater than or equal to those required in the approved QA/QC plan, as summarized below. Actual test frequencies and laboratory data are summarized in Appendix D.

TEST	FREQUENCY
Moisture content &	1 test per 2,500 cy of
Atterberg Limits	material
Grain size	1 test per 2,500 cy of
(Sieve only)	material
Moisture-density relationship	1 per 5,000 cy of material
(Modified Proctor Test)	
Permeability of remolded	1 test per 5,000 cy of
samples	material

In addition, one sample per borrow source was tested in a saturated condition for Consolidated Undrained Triaxial Compressive Strength to determine the effective angle of internal friction ( $\varnothing$ ). One sample, per borrow source, was also tested for interface friction, using the Direct Shear Test Procedure (ASTM D5321), between the barrier protection soil/suitable fill and the cushion geotextile. Results of the internal friction angle and interface friction testing are included in Appendix D.

CHEMICAL CHARACTERIZATION TESTING - CSC obtained samples and performed chemical characterization testing to determine the environmental suitability of the barrier protection/suitable fill material. One sample per about 5,000 CY of material<sup>2</sup> used was collected and tested for the following parameters:

<sup>&</sup>lt;sup>2</sup> Chemical testing of the Barre Stone barrier protection/suitable fill was done at a frequency of about 1 sample per 5,900 cy. See Appendix D, page D-12 for explanation.



Parameter	Extraction/Preparation	Analysis (1)
TCL <sup>(2)</sup> Volatile Organic Compound	5050	8260 (95-1)
TCL Semi-Volatile Organic Compound	3540/3550	8270 (95-2)
Pesticides/PCB	3540/3550	8080
Herbicides	3580	8150
TAL <sup>(3)</sup> metals	3050	95-M
Cyanide		9012

<sup>&</sup>lt;sup>1</sup> EPA SW-846.

Actual test frequencies and laboratory data are summarized in Appendix D.

# **Barrier Protection Material Construction**

The barrier protection material was placed with bulldozers in uniform lifts generally perpendicular to the toe of slope. The initial lift had an approximate loose lift thickness of 12 to 14 inches. Two (2) succeeding lifts were placed having an approximate loose lift thickness of 6 to 8 inches. Each lift was compacted using a vibratory sheepsfoot roller.

The barrier protection material was placed and compacted at a moisture content generally within  $\pm$  3 percent of its optimum moisture content. Wet soil was scarified with a bulldozer and dried until a suitable moisture content was obtained. Dry soil was moistened and blended until the soil moisture content was uniform and satisfactory.

#### 4.20.8.7 Topsoil

# Material Evaluation

GEOTECHNICAL TESTING – Topsoil was obtained from on-site soil recovery, a soil stockpile located in Brockport, New York, the New Guinea Road source near Clarendon, New York, and the Kenyon Road source in the Town of Murray, New York. Samples were collected prior to and during construction from these sources. Laboratory testing was done at frequencies greater than or equal to those required in the approved QA/QC plan, as summarized below. Actual test frequencies and laboratory data are summarized in Appendix D.

<sup>&</sup>lt;sup>2</sup> TCL - Target Compound List.

<sup>&</sup>lt;sup>3</sup> TAL - Target Analyte List.

TEST	FREQUENCY	
pH, Grain size (Sieve only)	1 test per 5,000 cy of	
and Organic Content	material	

CHEMICAL CHARACTERIZATION TESTING - CSC obtained samples and performed chemical characterization testing to determine the environmental suitability of the topsoil. One sample per 5,000 CY of material used was collected and tested for the following parameters:

Parameter	Extraction/Preparation	Analysis (1)
TCL <sup>(2)</sup> Volatile Organic Compound	5050	8260 (95-1)
TCL Semi-Volatile	3540/3550	8270 (95-2)
Organic Compound		
Pesticides/PCB	3540/3550	8080
Herbicides	3580	8150
TAL <sup>(3)</sup> metals	3050	95-M
Cyanide		9012

<sup>&</sup>lt;sup>1</sup> EPA SW-846.

Actual test frequencies and laboratory data for each borrow source are summarized in Appendix D.

# **Topsoil Construction**

CSC scarified, with a bulldozer, the surface of the underlying barrier protection layer and moistened it before the topsoil was placed to support bonding of the topsoil and barrier protection material. Topsoil was placed, spread and graded to a 6-inch minimum thickness. After the topsoil was spread, GZA notified CSC that deleterious material such as rocks, roots or other foreign matter should be cleared and disposed of by CSC so that the finished surface was acceptable for subsequent compaction and seeding. (As of this date, CSC has not completed removal of deleterious material from the topsoil layer. It is understood that WMNY will remove the deleterious material from the topsoil layer in winter/spring of 2002.) Compaction was performed by tracking the topsoil with a bulldozer. Tracking was done such that the bulldozer traveled perpendicular to the toe of slope. At least two passes of the bulldozer tracks were made over the topsoil area.



<sup>&</sup>lt;sup>2</sup> TCL - Target Compound List.

<sup>&</sup>lt;sup>3</sup> TAL - Target Analyte List.

# 4.20.9 Surface Water Drainage Structures

Surface water drainage structures were constructed along the toe of the landfill. Drainage channels were generally formed with 3H:1V side slopes and grass-lined with some sections of the drainage swales lined with rip rap or erosion control material (jute mesh). Corrugated metal culvert pipes were also installed. Drainage structures and channel lining details are shown on the record survey drawings in Appendix G.

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# 4.20.10 Access Roads

New stone access roads were constructed along the east and west sides of the landfill for access to the wet wells and manholes for leachate collection and off-site treatment/disposal. A stone access road was constructed from the southwest corner of the landfill to the top of the landfill.

Suitable fill was placed and compacted to the design elevations for subgrade construction for the roads. The subgrade for the access road leading to the top of the landfill was the barrier protection material. A woven geotextile was placed atop the prepared subgrade and the road was constructed with 12 inches of compacted subbase stone.

#### 5.0 REMEDIAL CLOSURE CONSTRUCTION MONITORING

#### 5.10 GENERAL

This section describes the field and laboratory testing done during and after construction of the various landfill closure components. Laboratory testing of the different components is discussed in Appendix D and E. Photographs taken by GZA showing different aspects of the construction are presented in Appendix F. Survey control procedures used to measure the constructed lines and grades are also discussed.

#### 5.20 FIELD TESTING AND CONSTRUCTION OBSERVATIONS

GZA monitored the remedial closure construction by observing the construction activities and checking the construction for conformance to the contract documents, made field measurements and recorded and summarized the results. Daily field summaries (DFSs) were prepared by GZA, which summarized our observations and testing. The DFSs were previously submitted to WMNY and NYSDEC (Reference 5). The services that we provided, related to the various work components, follows.

## 5.20.1 Clearing and Grubbing and Utility/Structure Removal and Abandonment

GZA observed that clearing and grubbing was done according to the project specifications. Materials were properly disposed of within the designated disposal area in the east end of the landfill.



GZA observed that removal of the existing leachate riser pipes and corrugated metal drainage pipe, and abandonment of the existing manholes/concrete vaults were done according to the project specifications and properly disposed of within the designated disposal area in the east end of the landfill.

#### 5.20.2 Existing Soil Recovery

GZA observed and documented the excavation activities and assisted CSC in determining the depth of the topsoil/cover soil and cover soil/waste interfaces at each probe location. TVGA recorded and plotted the topsoil and cover soil thicknesses obtained at each location.

CSC obtained samples of the existing topsoil and cover soil for analytical testing (chemical characterization) to determine their suitability for re-use. Sample locations were selected by GZA. CSC and GZA collected separate samples for geotechnical quality assurance testing.

CSC excavated and re-used the existing topsoil and cover soils as determined by the chemical characterization and geotechnical quality assurance testing. GZA monitored the following items during excavation and re-use of existing topsoil and cover soils.

- That the excavation and segregation of the topsoil and cover soils was controlled by thickness probe measurements and observation.
- That excavation did not expose or extend into existing waste fill materials.
- That CSC properly segregated existing topsoil material from the cover material.
- That CSC did not re-use topsoil or cover soil that contained waste materials, debris or otherwise unsuitable characteristics.
- That topsoil or cover soil that appeared to be wet from leachate breakouts or appeared stained from previous leachate breakouts was not re-used.

Following excavation and removal of the topsoil and cover soils for re-use, the remaining soils were graded to form a relatively smooth surface, and the finished subgrade was sealed with a smooth drum roller.

#### 5.20.3 Subgrade Preparation



GZA monitored the placement and compaction of suitable fill used to grade areas to no steeper than 3H:1V. We checked that loose lift thicknesses were 8 inches or less, and took in-place moisture-density tests following material compaction. GZA generally used the compaction criteria specified for barrier protection material as described in section 5.20.11.

We monitored the waste grade preparation and suitable fill placement to check that the surface appeared stable and uniform. Irregularities and other unsuitable materials were removed from the surface.

Excavation subgrades were checked by GZA prior to placement of fill and overlying materials for construction of the leachate collection pipes, gas venting system piping, final cover system drainage structures and other site improvements. GZA looked for the presence of deleterious materials and for disturbed, weathered (softened and/or desiccated) subgrade conditions. CSC was advised of unsuitable subgrade conditions so that the areas could be properly undercut to remove the unsuitable materials before fill placement.

# 5.20.4 Decommissioning of Existing Monitoring Wells

GZA observed the activities associated with the decommissioning of the monitoring wells designated PL-3TR; OSL-14; B-5; B-8; B-15; McKenna No. 1; McKenna No. 2; McKenna No. 3. and groundwater level piezometer PL-6TR. GZA prepared monitoring well decommissioning logs that were included in the DFSs (report nos. 00-30 and 00-31 for the wells except PL-6TR; see Section 4.20.4 for general description of decommissioning for PL-6TR).

#### 5.20.5 Soil-Bentonite/Low Permeability Soil Barrier Wall

GZA observed and monitored that Inquip constructed the soil-bentonite barrier wall and measured and recorded the required information that was described in the project specifications. Inquip submitted the required records to GZA for review. Copies of Inquip's records are included in Appendix D.

GZA observed and made field tests for construction of the low permeability soil barrier wall constructed on the east, west and south sides of the landfill as described in section 5.20.10.

## 5.20.6 Leachate Collection System and Gas Venting System

GZA observed the storage and handling of the manholes, pipe and fittings. Damaged materials were not allowed for use. GZA also observed the joining of the pipe and fittings and that the backfilling of the pipe and manholes was compacted to a stable matrix. GZA checked that required fittings and components had been supplied and installed. Pipe that was improperly joined or damaged during backfilling was repaired or replaced.

#### 5.20.7 Geocomposite Leachate Collection/Gas Venting Layer

GZA observed the deployment of each geocomposite roll and advised Serrot of any observed defects, punctures and tears so that repairs could be made. GZA observed the orientation of the panel layout and overlap dimensions. Prior to seaming the geotextile, GZA checked the overlaps and tie spacing where the geonet material was joined. The geotextile seaming was observed for bonding and for holes that resulted from melt-through from the heat bonding. GZA observed pinning operations and frequency and checked them against specifications. Areas found to be deficient were brought to Serrot's attention for remediation.

#### 5.20.8 LLDPE Geomembrane

GZA observed and documented that the geomembrane installation was done as specified. GZA observed the non-destructive (air pressure and vacuum box) testing and reviewed destructive sample test results for conformance to the project specifications results prior to the geomembrane being covered.

Summary field sheets documenting the observation and non-destructive testing of each field seam are included in Appendix E. Included in Appendix E are the destructive sample test results reported by TRI. Based on GZA's observations of the field test data and the destructive sample results, the field seams met the requirements of the QA/QC plan.

#### 5.20.9 Cushion Geotextile

GZA observed the deployment of each geotextile roll and advised Serrot of any observed defects, punctures and tears so that repairs could be made. GZA also observed seams/overlaps and checked them against the specifications. Defective seams/overlaps and patches were identified to Serrot so that repairs could be made before covering.

Cushion geotextile that was deployed atop the geomembrane had portions exposed during the 2000/2001 winter shut-down period. GZA evaluated the geotextile at the re-start of construction in the spring of 2001. GZA's evaluation was summarized in a letter report<sup>3</sup>

<sup>&</sup>lt;sup>3</sup> "Test Results of Geotextile Exposed During Winter Season 2000-2001, McKenna Landfill Remedial Closure Project (Site No. 8-37-003)", dated May 17, 2001.

submitted to NYSDEC. Our evaluation indicated that the geotextile was not adversely affected by the winter exposure.

#### 5.20.10 Low Permeability Soil Layer



GZA made field tests to measure the dry density and moisture content of the compacted low permeability soil barrier using surface moisture/density gauges. These measurements were made with the gauge in the direct transmission mode with the source rod typically extended 6 inches. The value used for compaction field control is summarized in the following table.

Borrow Source	Compaction Control Value Based on ASTM D1557 Test Results											
	Maximum Dry Density (pcf) ASTM D1557	Minimum Dry Density Required (pcf)	Optimum Moisture Content (ASTM D1557) (%)	Allowable Moisture Content Range (%)								
Walck Bros.	111.0	99.9	18.5	20.5-24.5								

The low permeability soil was required to be compacted to an in-place density equal to or greater than 90 percent of the maximum dry density with an in-place moisture content generally between 2 to 6 percent above optimum moisture content.

Field test locations were selected by GZA based on construction observations. The compacted low permeability soil surface was observed and test locations were selected where the compacted low permeability soil was generally representative of the surrounding fill. An in-place test was taken at these locations. Tests were made within the compacted area to provide a test frequency of at least nine tests per acre per lift on the landfill slope, and one (1) test per 150 lineal feet per lift where placed in linear excavations (i.e. the low permeability soil barrier wall constructed along the toe of the east, west and south slopes), in accordance with the QA/QC plan. Penetrations into the low permeability soil for moisture/density testing were filled with bentonite pellets.

The test data were required to satisfy the density and moisture content criteria before a subsequent overlying lift could be placed. Areas with test data indicating unsatisfactory density were remediated/reworked as necessary and as previously described. Following remediation, a retest was made generally within 2 feet of the original test location, as stated in

the QA/QC plan. If the retest results met the project requirements, no further reworking was done. If the retest results were not satisfactory, the process was repeated until the test measurements satisfied the project requirements.

Field test locations and results are included with the daily field summary reports, which were previously submitted to NYSDEC (Reference 5). Locations of Shelby tubes taken from the low permeability soil placed within linear excavations for low permeability barrier wall construction are shown on Figure 2. Four (4) lifts of low permeability soil were placed and the field test locations (density tests and Shelby tube locations) are shown on Figures 3 through 6, respectively.

GZA collected bulk samples of the low permeability soil at a frequency greater than one sample per 1,000 cubic yards placed. Additional information is included in Appendix D.

## 5.20.11 Barrier Protection Material

GZA made field tests to measure the dry density and moisture content of the compacted barrier protection material using surface moisture/density gauges. These measurements were made with the gauge in the direct transmission mode with the source rod typically extended 6 to 8 inches. The values used for compaction field control are summarized in the following table.

	•	ontrol Value for Ba on ASTM D1557		
Borrow Source	Maximum Dry Density (pcf)	Minimum Dry Density Required (pcf)	Allowable Moisture Content Range (%)	Construction Period When Used
On-site Soil	124.0*	111.6*	8.5- 12.5*	11/15/00- 6/5/01*
Barre Stone Products	122.0	109.8	11.0-15.0	5/24/01-6/4/01
	134.5	121.0	5.5-9.5	6/5/01-End of Project
Brockport Site	131.5	118.3	8.0-12.0	7/25/01-End of Project

\* - On-site soil recovery material was mainly used for construction of an access road in the areas shown on Figures 2 through 4. This material was placed in one uniform 2-feet thick lift and was observed by GZA to be well compacted by rollers and extensive truck travel. Moisture-density testing of this material was only done on June 5, 2001.

The barrier protection material was required to be compacted to an in-place density equal to or greater than 90 percent of the maximum dry density and generally have a moisture content ranging from 2 percent below the respective optimum moisture content to 2 percent above optimum.



Field test locations were selected by GZA based on construction observations. The compacted barrier protection material surface was observed and test locations were selected that were generally representative of the surrounding fill. In-place tests were taken at these locations. Tests were made within the compacted area to provide a test frequency of at least nine tests per acre per lift in accordance with the QA/QC plan, except for the access road noted above. Penetrations into the barrier protection material for moisture/density testing were filled with bentonite pellets.

The test data were required to satisfy the density criteria before a subsequent overlying lift could be placed. Areas with test data indicating unsatisfactory density were remediated/reworked by CSC, as necessary and as previously described. Following remediation by the contractor, a retest was made generally within 2 feet of the original test location, as stated in the QA/QC plan. If the retest results met the project requirements, no further reworking was done. If the retest results were not satisfactory, the process was repeated until the test measurements satisfied the project requirements.

Field test locations and results are included with the daily field summary reports that were previously submitted to NYSDEC (Reference 5). There were 3 lifts of barrier protection material placed for the barrier protection material layer. The field test locations for lifts 1 through 3 are shown on Figures 7 through 9, respectively.

## 5.20.12 Topsoil

GZA observed the placement of the topsoil layer to document that the material and placement generally conformed to project requirements. GZA collected bulk samples of topsoil at a frequency greater than one sample per 5,000 cubic yards placed. Additional information is included in Appendix D.

#### 5.20.13 Surface Water Drainage Structures

GZA observed the storage and handling of the pipe, fittings, concrete manhole, jute mesh, etc. Damaged material was not permitted to be used. GZA observed subgrade conditions prior to installation of the concrete manhole. We tested the density of the bedding stone placed and compacted for installation of the concrete manhole for conformance to specifications. GZA also observed the joining of the pipe and fittings and that the backfilling of the pipe and concrete manhole was compacted to a stable matrix. GZA checked that the required fittings and components had been supplied and installed. Pipe that was improperly joined or damaged during backfilling was repaired or replaced. GZA checked that the riprap and jute mesh was installed in accordance with the specifications.

#### 5.20.14 Access Roads

GZA observed that the suitable fill subgrade and road subbase stone was compacted to a stable matrix.

#### 5.30 LABORATORY TESTING



A laboratory testing program was implemented during the construction of the final cover system in accordance with the QA/QC program. Laboratory tests were done to check that samples collected met the project requirements and assess the variability of the soil material properties with respect to pre-construction testing results.

#### 5.30.1 Drainage Stone & Gas Venting Stone

Samples of the drainage stone and gas venting stone were collected during construction by GZA at a rate of about one sample for every 1,000 cubic yards placed, as specified in the QA/QC plan. Each sample collected was tested in the laboratory for gradation. One sample for each 2,500 cubic yards placed was tested for permeability. The samples tested were compacted to a dense condition (112 to 114.5 pcf) in a fixed ring permeameter prior to making the permeability tests. Permeability tests were done using the constant head method as described in Appendix D. The gradation and permeability test results are summarized for the drainage and gas venting stone in Appendix D. The permeability tests results were greater than the required minimum permeability of 1 x 10<sup>-2</sup> cm/sec for the drainage and gas venting stone.

#### 5.30.2 Soil-Bentonite Barrier Wall

Upon completion of slurry wall construction, Inquip obtained ten (10) undisturbed Shelby tube samples from the slurry wall. The undisturbed tube samples were required to have a hydraulic conductivity of 1 x  $10^{-7}$  cm/sec. or less. The test results ranged from 2.6 x  $10^{-8}$  to 9.5 x  $10^{-8}$  cm/sec, which meet the project requirements. Copies of the laboratory test results are included in Appendix D.

#### 5.30.3 Geomembrane

Non-destructive seam testing was observed by GZA and recorded in the DFS's (Reference 5). Copies of the recorded geomembrane installation details including non-destructive seam testing results, are included in Appendix E. The LLDPE liner seams met the requirements stated in the QA/QC plan.

The geomembrane installer collected destructive seam samples at intervals of 500 feet or less. Peel and shear tests were made on the samples as described in Section 4.20.8.4. Destructive test data for the geomembrane are included in Appendix E. The test results met project requirements or the seam was capped as required by the QA/QC plan.

#### 5.30.4 Low Permeability Soil

Samples of low permeability soil were collected during construction. Atterberg limits, gradation, moisture/density relationship and reconstituted permeability testing was done as required in the QA/QC Plan. GZA, prior to construction and during construction, collected bag samples of low permeability soil fill at a rate of about one sample for every 1,000 cubic yards placed. Each bag sample was tested for Atterberg limits and moisture content. One sample for each 2,500 cubic yards placed was tested for grain size. One sample for each 5,000 cubic yards placed was tested for moisture/density relationship and permeability.

GZA also collected Shelby tube samples of the compacted low permeability soil layer. Shelby tube samples were taken at a rate of about one Shelby tube per 800 cubic yards placed. Shelby tube samples were collected by pushing the Shelby tubes into the compacted low permeability soil. The Shelby tube holes were backfilled with bentonite pellets and tamped with a metal rod.

GZA collected 21 Shelby tube samples during construction of the low permeability soil layer. The Shelby tube sample locations are shown on Figures 2 through 6. A soil sample was extracted from each Shelby tube and the permeability measured using the falling head test method. The permeability test results for the low permeability soil layer have a range from  $1.1 \times 10^{-8}$  to  $9.6 \times 10^{-9}$  cm/sec. These results meet the permeability requirement to be less than or equal to  $1.0 \times 10^{-7}$  cm/sec.

#### 5.30.5 Barrier Protection/Suitable Fill Material

Samples of barrier protection/suitable fill material were collected during construction. Moisture content, Atterberg limits, gradation, moisture/density relationship and reconstituted permeability testing was done as required in the QA/QC Plan. GZA collected bag samples of barrier protection/suitable fill material at a rate of about one sample for every 2,500 cubic yards placed. Each bag sample was tested for moisture content, Atterberg limits and gradation. One sample for each 5,000 cubic yards placed was tested for moisture/density relationship and reconstituted permeability. The results of the laboratory testing indicate that the barrier protection material met project requirements.

#### 5.30.6 Topsoil

Samples of topsoil were collected during construction of the topsoil layer. Gradation, pH and organic content testing was done as required in the QA/QC plan. GZA collected bag samples of topsoil at a rate of about one sample for every 5,000 cubic yards placed. Each sample was tested for gradation, pH and organic content. The results of the laboratory testing indicate that the topsoil met project requirements.

#### 5.40 SURVEY DATA



TVGA made survey measurements of the prepared subgrade before the final cover system construction began. They established a baseline system and made ground surface elevation measurements at maximum 50 foot grid point intervals. Measurements were also made at changes in slope. This data was compared to the post-construction data to assist in determining the final cover system component thicknesses. TVGA:

- Staked the locations of the gas vent systems, leachate collection systems, drainage structures, access road and other site improvements prior to construction;
- Measured and recorded the locations and elevations of constructed items to produce record drawings of the construction;
- Measured and recorded the centerline location and elevations of the bottom and top of the soil-bentonite/low permeability soil barrier wall during construction at maximum 50-foot intervals along the wall alignment;
- Checked the location, elevation and layout of the leachate collection pipes and gas venting pipes as they were being installed;
- Measured and recorded the alignment and invert elevations of the collection pipes at maximum 50-foot intervals and at all bends and elbows (Note: Some sections of the gas collection pipes were not recorded by TVGA since the pipes were covered over by CSC prior to record measurement by TVGA.);
- Measured and recorded the limits of geomembrane placement;
- Located panel seams, destructive test locations, non-destructive failed areas, and patches;
- Measured and recorded the limits of geocomposite and geotextile placement; and
- Prepared record drawings that are presented in Appendix G.

#### 6.0 CONCLUSION

GZA has monitored the construction of the McKenna Landfill Remedial Closure Project according to generally accepted practices. Based on field observations made by GZA and field and laboratory test data, it is GZA's professional opinion that the construction observed at the site, as described herein, generally complied with drawings, technical

specifications and QA/QC plan approved by NYSDEC for Site No. 8-37-003. Limitations and additional considerations are contained in Appendix A.



#### REFERENCES

- 1. "Record of Decision, McKenna Landfill Site, Town of Albion, Orleans County, Site Number 8-37-003", New York State Department of Environmental Conservation, March 1995.
- 2. "Remedial Design and Construction Work Plan, McKenna Landfill (Site No. 8-37-003), Town of Albion, Orleans County, New York", GZA GeoEnvironmental of New York, September 1995.
- 3. "Final Design Rationale/Engineering Report, McKenna Landfill, Remedial Closure Project, NYSDEC Site No. 8-37-003", GZA GeoEnvironmental of New York, December 1999.
- 4. "Test Pad Construction Summary, Walck Bros. Borrow Site, McKenna Landfill Remedial Closure Project, Site No. 8-37-003", GZA GeoEnvironmental of New York, August 2000.
- 5. Daily Field Summary (DFS) Transmittals:

<u>2000</u>	
6/30/00	Report No. 00-1 (Dated 5/16/00) through Report No. 00-23 (Dated 6/23/00)
8/3/00	Report No. 00-24 (Dated 6/26/00) through Report No. 00-35 (Dated 7/12/00)
10/9/00	Report No. 00-36 (Dated 7/13/00) through Report No. 00-76 (Dated 9/01/00)
11/8/00	Report No. 00-77 (Dated 9/5/00) through Report No. 00-110 (Dated 10/19/00)
1/4/01	Report No. 00-111 (Dated 10/20/00) through Report No. 00-147 (Dated 12/18/00)
<u>2001</u>	
9/6/01	Report No. 01-1 (Dated 5/20/01) through Report No. 01-24 (Dated 6/8/01)
9/27/01	Report No. 01-25 (Dated 6/11/01) through Report No. 01-62 (Dated 8/3/01)

## REFERENCES (cont.)

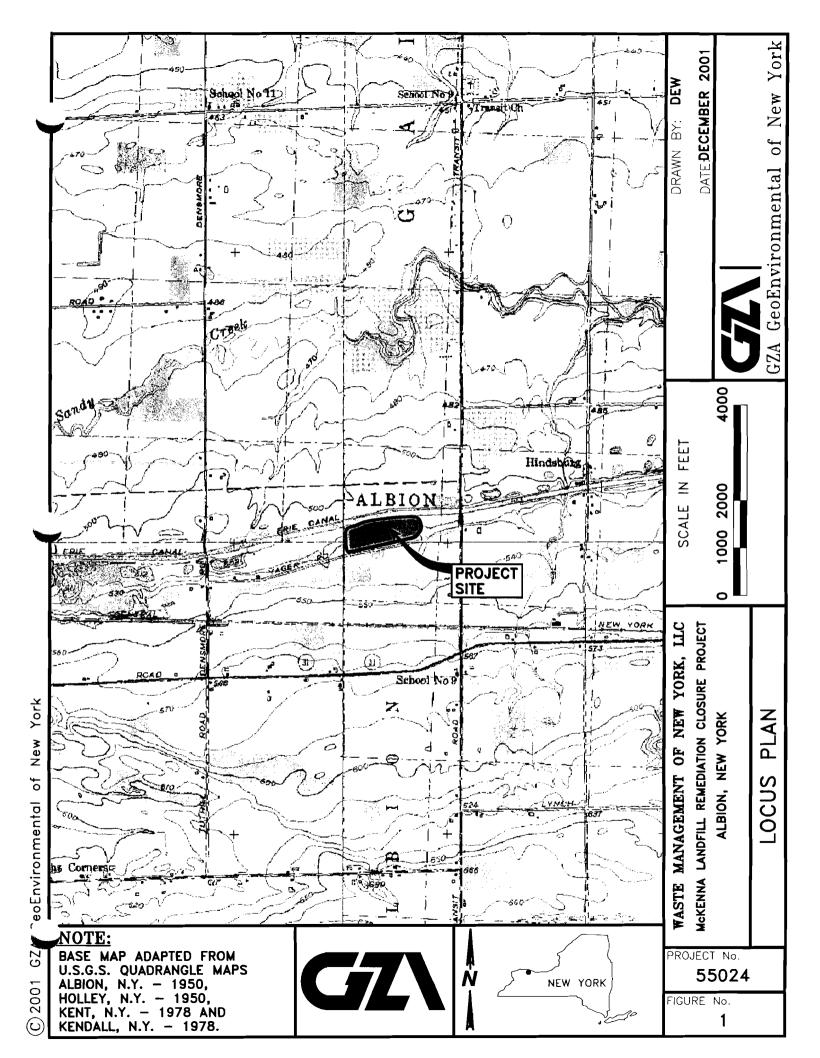
10/15/01 Report No. 01-63 (Dated 8/6/01) through Report No. 01-95 (Dated 9/20/01)

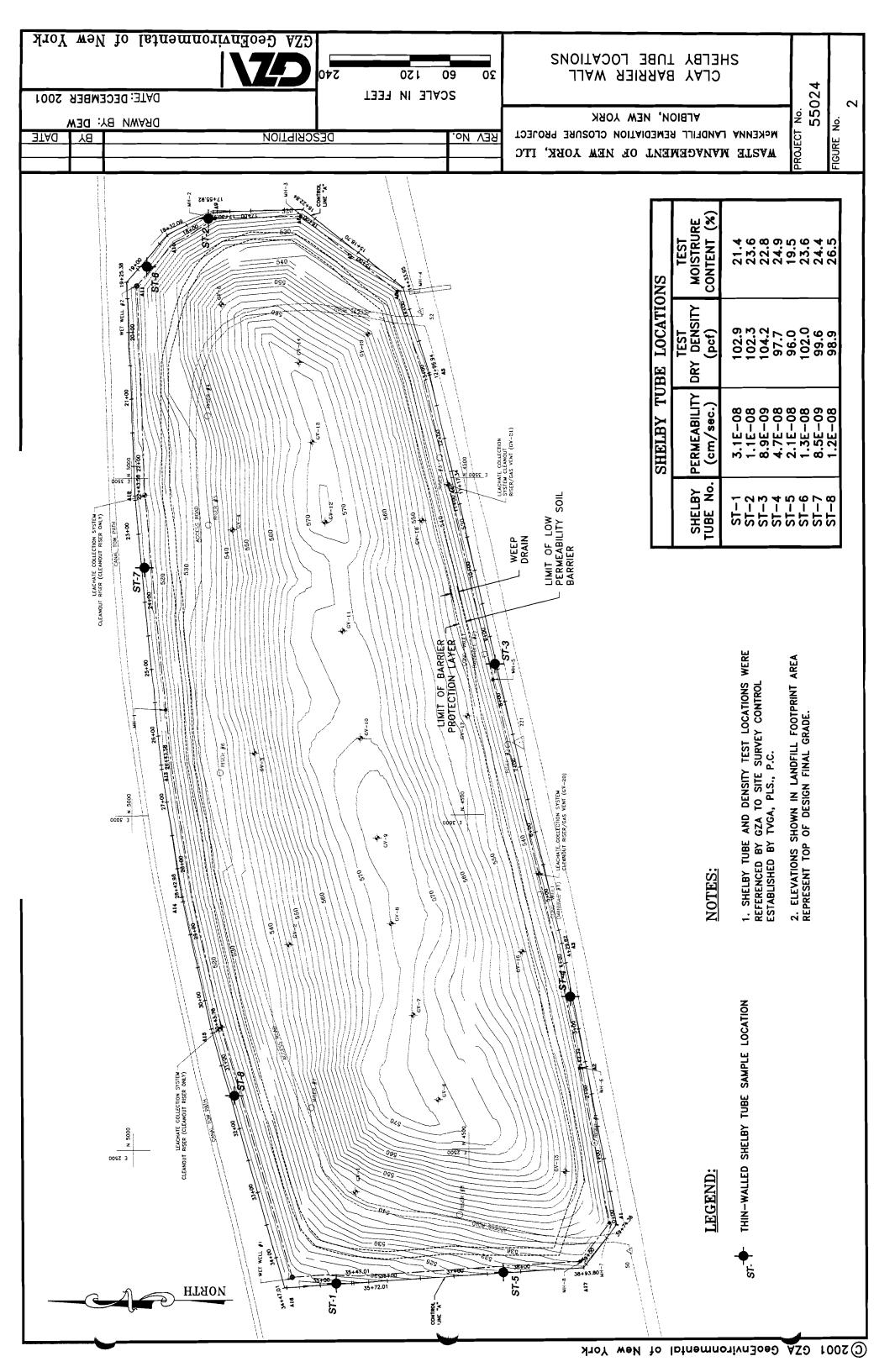
12/6/01 Report No. 01-96 (Dated 9/21/01) through Report No. 01-137 (Dated 11/28/01)

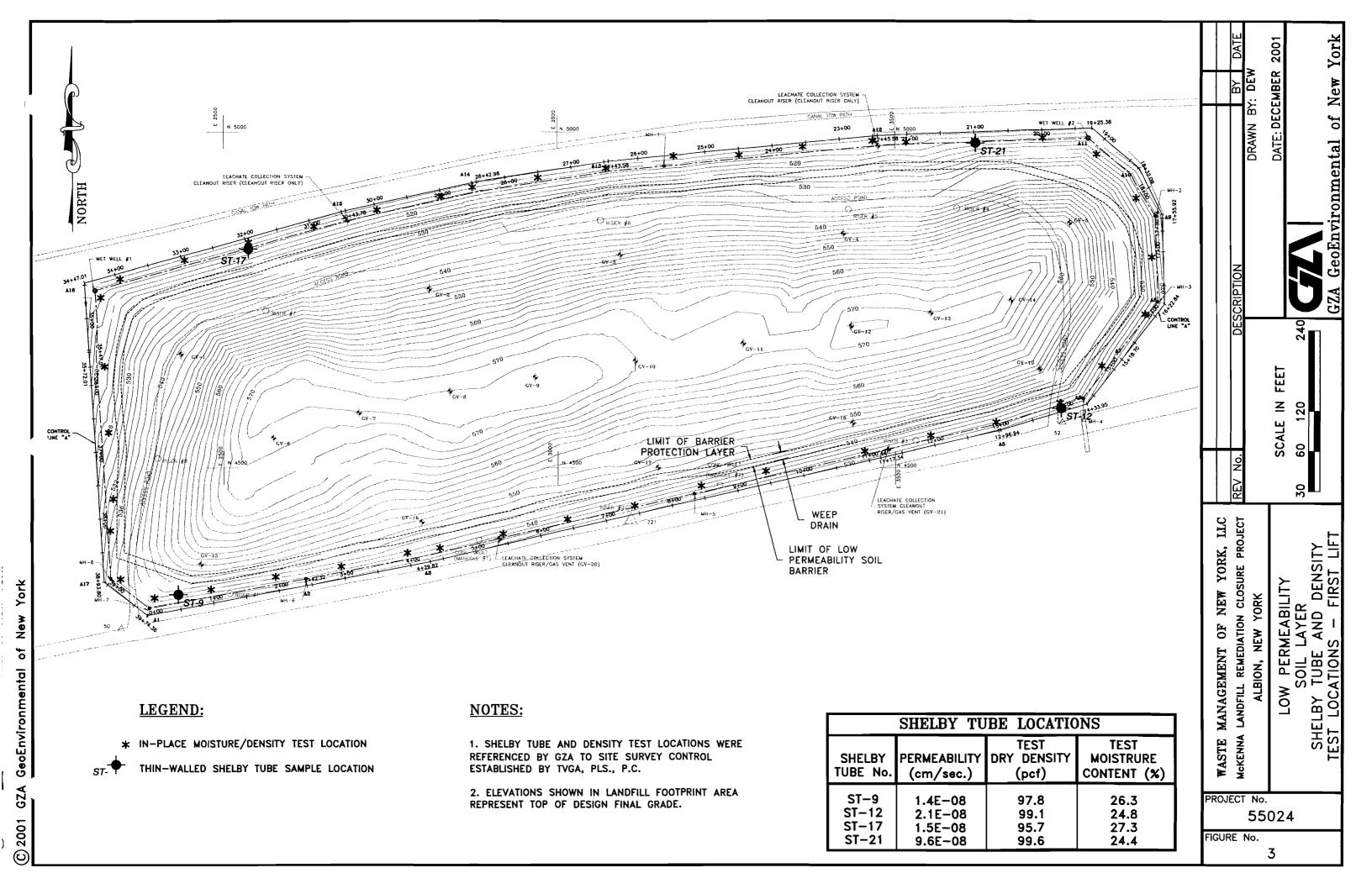
**6.** Transmittals of Analytical Sample Data for Composite Leachate Sampling of Wet Well Nos. 1&2.

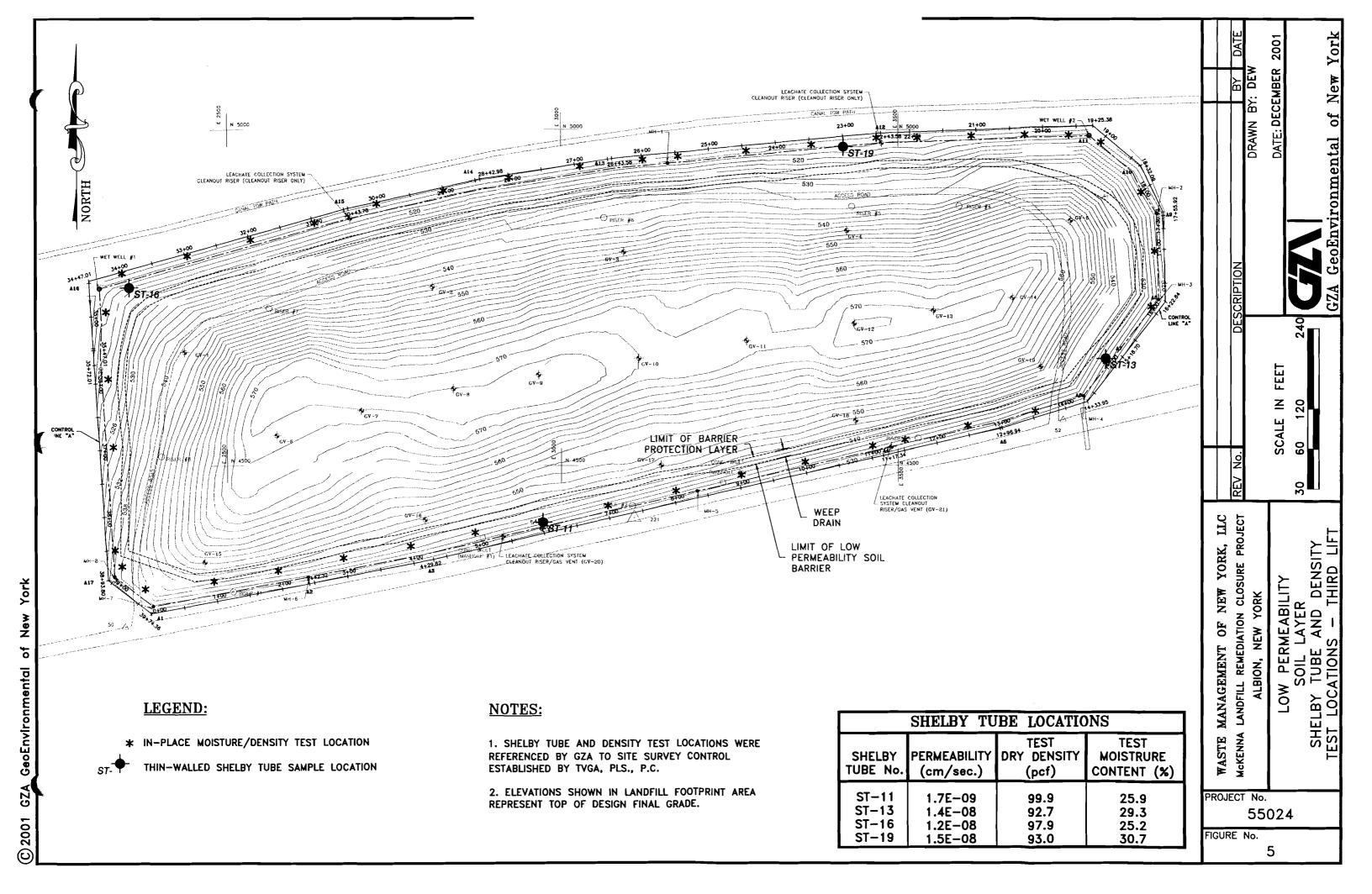
9/17/01 Sample Data for 1/26/00, 5/4/00, 5/15/00, 8/2/00, 10/27/00, 1/31/01, 5/30/01, & 7/03/01

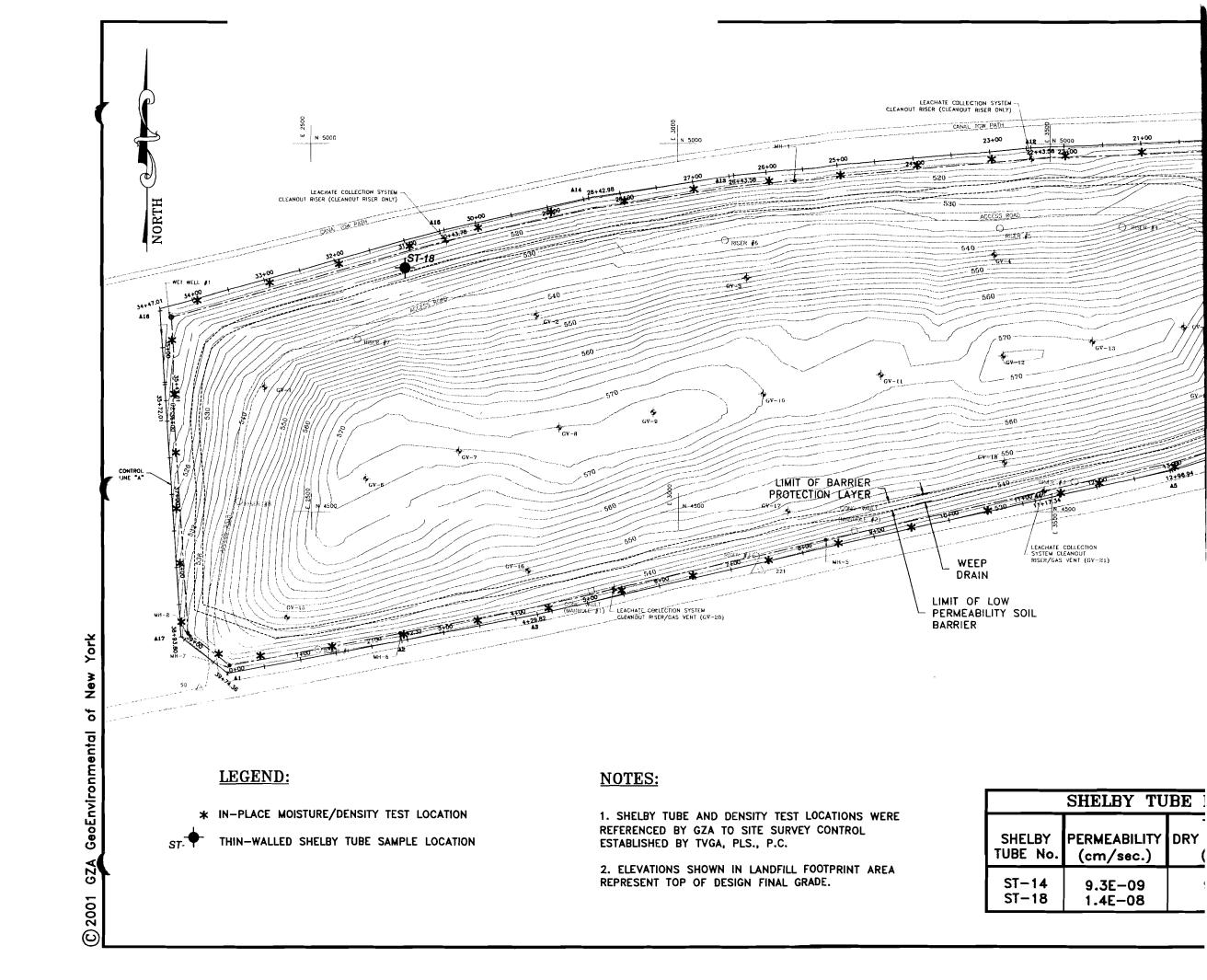
12/14/01 Sample Data for 10/23/01

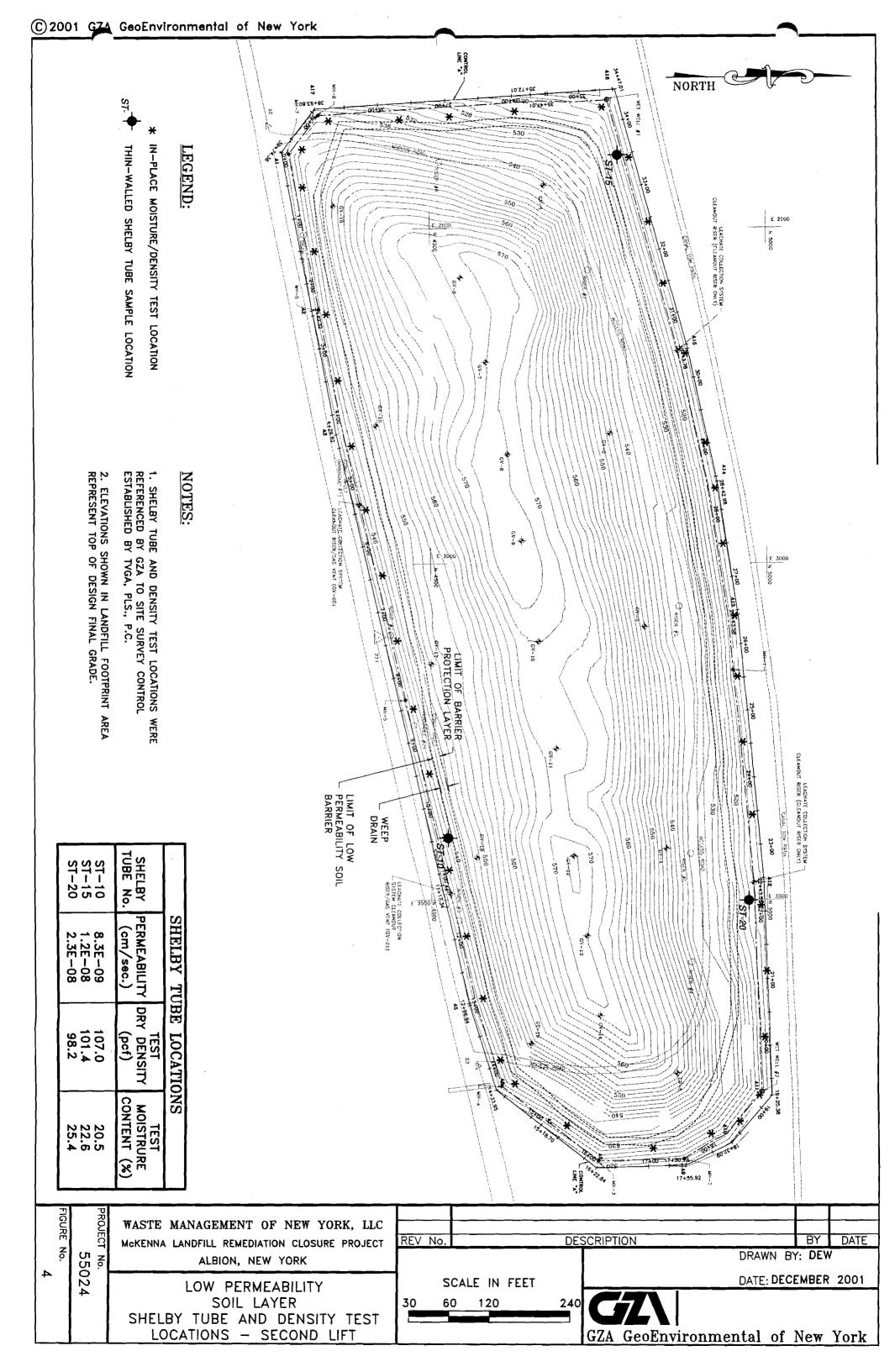


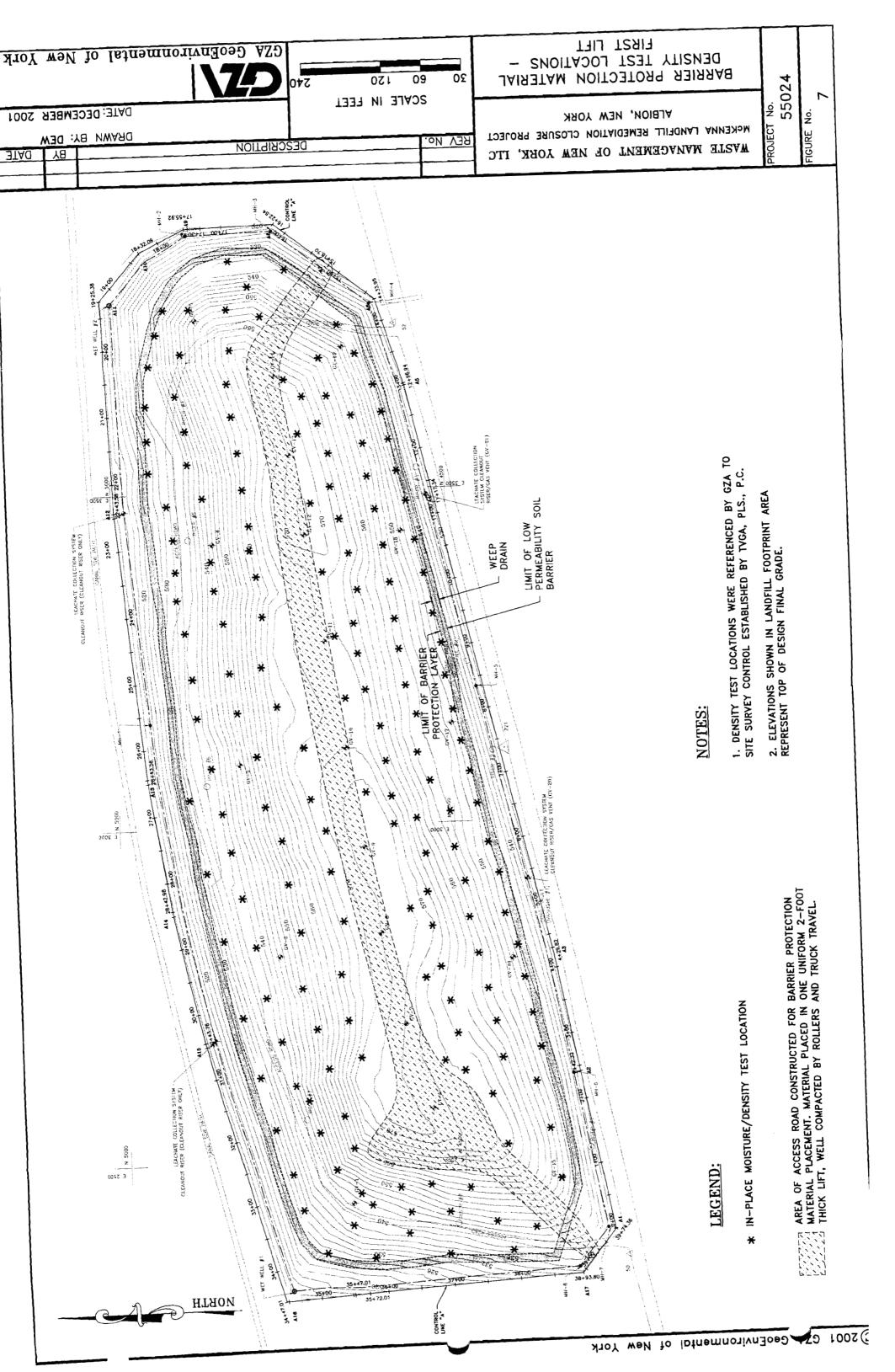


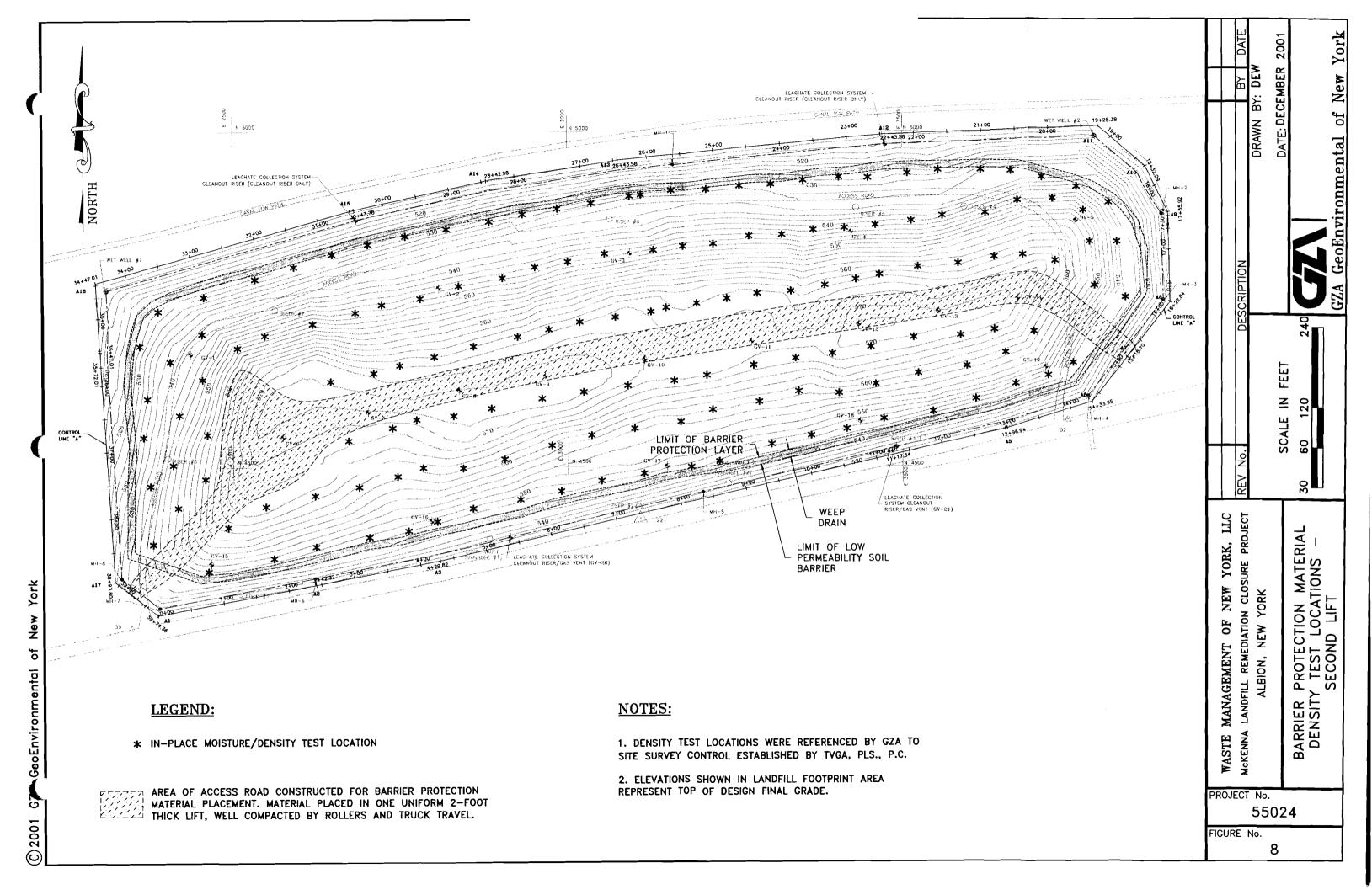


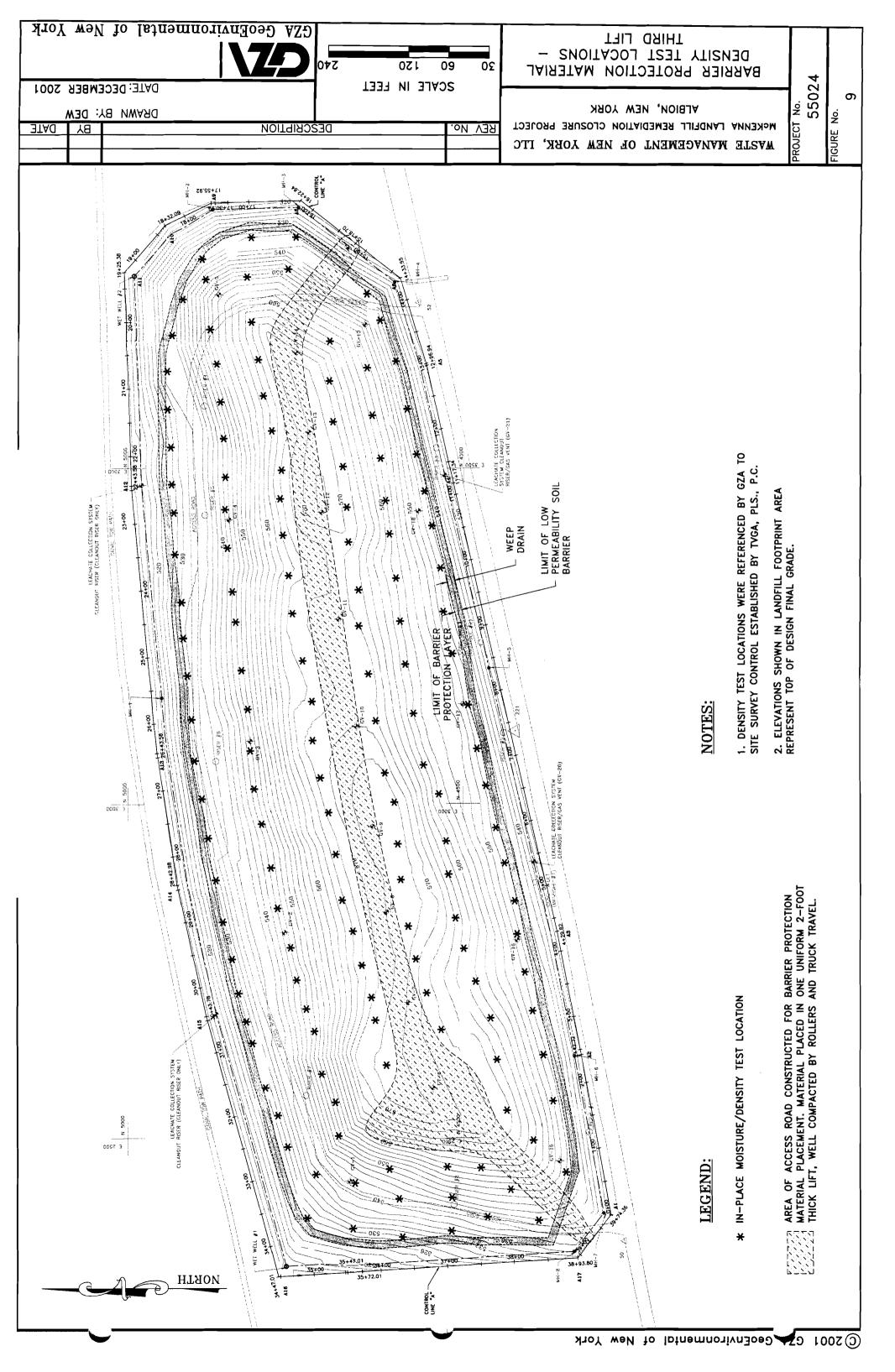












#### APPENDIX A

#### LIMITATIONS

- 1. This construction monitoring report was prepared by GZA GeoEnvironmental of New York (GZA) for Waste Management of New York, LLC (WMNY) for the specific application to the construction for the McKenna Landfill Remedial Closure Project in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.
- 2. The observations and testing described in this report were made under the conditions stated. Conclusions made in this report were based on our observations, information provided by others as stated, and data obtained from widely spaced in-situ tests and laboratory tests from widely spaced samples. Variations in soil and material properties between test locations may occur.

GZA GeoEnvironmental of New York

Engineers and Scientists

August 7, 2000 File No. 55024

Mr. Richard P. Manns
New York State Canal Corporation
Buffalo Division
3901 Genesse Street
P.O. Box 121
Buffalo, New York 14225-0121

GZ

Re:

Canal Work Permit No. 030E700

for McKenna Landfill Site

Albion, New York

364 Nagel Drive Buffalo New York 14225 716-685-2300 FAX 716-685-3629 http://www.gza.net

Dear Mr. Manns,

GZA GeoEnvironmental of New York (GZA) has executed the enclosed Canal Work Permit No. 030E700 for the McKenna Landfill Remedial Closure Project in Albion, New York, received by GZA on July 17, 2000. We are returning both copies of the permit for execution by the New York State Canal Corporation.

We trust you have received our insurance certificates. Please contact me should you have any questions or require additional information.

Very truly yours,

GZAGEOENVIRONMENTAL OF NEW YORK

John J. Danzer, P.E.V Senior Project Manager

A Subsidiary of GZA GeoEnvironmental Technologies, Inc.

Enclosures: 2 Executed Copies of Permit

cc: D. Sturges - WMNY (w/o enclosures)

Louis R. Tomson Chairman

Nancy E. Carey Board Member

John R. Riedman Board Member

John R. Platt Executive Director



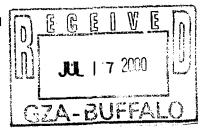
John T. Brizzell, P.E. Deputy Executive Director/Chief Engineer

William G. Leslie, P.E. Division Director

Phone (716) 631-9017 Fax (716) 626-1328

# New York State Canal Corporation

Buffalo Division 3901, Genesee Street P., O. Box 121 Buffalo, New York 14225-0121



July 13, 2000

Mr. John Danzer, P.E. GZA GeoEnvironmental of New York 364 Nagel Drive Buffalo NY 14225

Re:

Canal Work Permit 030E700

McKenna Landfill Remed al Closuse Project

Town of Albion, Orleans, County

Dear Mr. Danzer:

Our Legal Department has reviewed your comments on the marked-up permit. Accordingly, we can not execute this permit with the crossed out language in paragraph eight. Enclosed please find the original and one copy of Canal Permit 030E700 with the name change as requested.

Please sign both and return them to this office. When they are signed by the Division Canal Engineer, one copy will be returned to you for your records. The approved copy will be your authorization to use Canal property for the purpose outlined in the Permit.

If you have any questions, please contact Rick Manns of this office at (716) 635-6250.

Very truly yours,

David J. Martin, P.E. Division Canal Engineer

Richard P. Manns Permit Engineer

**Enclosures** 

cc: Canal Corp., Albany HQ

J. Dergosits

S. Hoffman

R. Sturges

Waste Mgmt. of NY, LLC 425 Perinton Parkway Fairport NY 14450



#### **New York State Canal Corporation CANAL WORK PERMIT**

030E700 Permit No. App. Fee \$25.00 Permit Fee \$0.00 \$25.00 Total Recd Tn/Vil/Cty Albion County of Orleans



Exp. Date 10/31/01 CPM No. 143-144

Cl Sta. 4231+80-4255+80±

Side South

Parcel No. 3415-A/3750/3418

Buov No. N/A

Permittee GZA GeoEnvironmental of New York

364 Nagel Drive Address

Tn/Vil/Cty Ruffalo

Work (716)685-2300 Tel No.

State NY Zip 14225

Fax No.

Under the provisions of the Canal Law, PERMISSION IS HEREBY GRANTED to the Permittee to conduct the following work upon the above-identified New York State Canal Corporation (the "Canal Corporation") property (the "Property"):

implementing the municipal landfill closure plan for the McKenna Landfill Site (Site #8-37-003) in accordance with the Department of Environmental Conservation (DEC) Order on Consent # B8-0374-91-06, as amended, the Final Design Rationale/Engineering Report received by DEC on December 20, 1999 and approved by DEC on January 10, 2000, the Closure Remedial Program Work Plan, and the letter agreement between the Canal Corporation and the Permittee dated August 16, 1999

as set forth and presented in the attached application and in accordance with any plans or maps, hereto attached or incorporated by reference, and pursuant to the conditions and regulations, whether general or special, which are hereinafter set forth; all of which form part of this permit.

#### CONDITIONS AND REGULATIONS:

- Notice IT IS ABSOLUTELY NECESSARY THAT THE PERMITTEE NOTIFY, Rick Manns 1. NYS Canal Corporation, at 3901 Genesee St., Buffalo, NY 14225, Tel. No. (716) 635-6250 BEFORE WORK IS STARTED AND UPON COMPLETION OF THE WORK.
- The Permit hereby granted will terminate 10/31/01 but it may be revoked by the Canal Corporation at any time if it is 2. determined that the Permittee is not in compliance with all the provisions hereof or if it is determined that the permitted work or use is no longer consistent with the operational needs of the Canal Corporation. Upon revocation, the Permittee shall promptly discontinue operations, surrender and deliver up the Property into the possession and use of the Canal Corporation in good condition and remove all structures and facilities from the Property at the Permittee's expense, approved improvements excepted. If the Permittee fails to remove the same in a timely manner after reasonable notice, the Canal Corporation will do so and the reimbursement of the costs thereof will be the responsibility of the Permittee.
- 3. This Permit grants no right, title, ownership, or interest of any kind in the Property. In addition, the Canal Corporation retains the right to make changes and additions to the Conditions and Regulations of this Permit; and such additions and changes shall form a part of the Permit heretofore issued and shall be complied with immediately.
- This Permit shall not be subleased, assigned or transferred in whole or in part without the prior written permission of the 4. Canal Corporation. Any attempt to sublease, assign, transfer or convey the authority granted to perform described use as stated above without the prior written permission of the Canal Corporation will be considered an automatic revocation of this Permit.
- The Permittee shall perform the work authorized herein in compliance with any and all applicable federal, state, and local 5. laws, ordinances, codes, rules and regulations now in effect or that may hereinafter become effective. The Permittee shall not conduct any other work upon the Property without the prior written permission of the Canal Corporation. Under no circumstances shall the Permittee make any alterations, excavations, modifications or improvements of any kind to the Property or modifications to the use authorized by this Permit without the prior written permission of the Canal Corporation. The Permittee is responsible for obtaining all required permits from federal, state and local agencies, including but not limited to the U.S. Army Corps of Engineers, NYS Department of Environmental Conservation, and NYS Historical Preservation Office. The Permittee agrees to comply with every condition in these permits.
- 6. New York State Thruway Authority (the "Thruway Authority") and the Canal Corporation reserve the right to enter on the Property with such personnel, agents or employees, contractors, subcontractors and invitees and with such equipment as it deems necessary for canal purposes, including but not limited to annual environmental audits as required by the New York State of Environmental Conservation. The Canal Corporation reserves the right, to inspect the Property, any improvements on the Property, and any work being conducted on the Property at any time it deems appropriate.
- Prior to commencement of this permit, the Permittee shall furnish the Canal Corporation with a certificate(s) of insurance on the Canal Corporation's form executed by a duly authorized representative of each insurer, showing compliance with the insurance requirements set forth below. All insurance required by the agreement shall be obtained at the sole cost and expense of the Permittee, shall be maintained with insurance carriers licensed to do business in New York State, and shall be acceptable to the Canal Corporation. The New York State Thruway Authority and the New York State Canal Corporation officers, agents, and employees shall be named as additional insureds. All certificates shall provide for 30 days' written notice to the Canal Corporation prior to the cancellation, non-renewal, or material alteration of any insurance policy referred to therein. This notice shall be sent by certified mail. Failure of the Canal Corporation to demand such certificate or other evidence of full compliance with these insurance requirements or failure of the Canal Corporation to identify a deficiency from evidence that is provided shall not be construed as a waiver of the Permittee's obligation to maintain such insurance.

Failure to maintain the required insurance may result in termination of this agreement at the Canal Corporation's option. If the Permittee fails to maintain the insurance as set forth herein, the Canal Corporation shall have the right, but not the obligation, to purchase said in turance at the Permittee's expense. The Permittee shall provide certified copies of all insurance policies required herein within 10 days of the Canal Corporation's written request for said copies.

No Representation of Coverage Adequacy - By requiring insurance herein, the Canal Corporation does not represent that coverage and limits will necessarily be adequate to protect the Permittee, and such coverage and limits shall not be deemed as a limitation on the Permittee's liability under the indemnities granted to the Canal Corporation under this agreement.

Cross-Liability Coverage - If the Permittee's liability policies do not contain the standard ISO separation of insureds provision, or a substantially similar clause, they shall be endorsed to provide cross-liability coverage.

The Permittee shall obtain insurance of the types and in the amounts described below:

- (a) Commercial General Liability and Umbrella Liability Insurance -The Permittee shall maintain commercial general liability (CGL) and, if necessary, commercial umbrella insurance with a limit of not less than \$2,000,000 each occurrence. It such CGL insurance contains a general aggregate limit, it shall apply separately to this agreement. CGL insurance shall be written on ISO occurrence form CG 00 01 10 93 (or a substitute form providing equivalent coverage) and shall cover liability agising from premises, operations, independent contractors, products-completed operations, personal injury and advertising injury, and liability assumed under an insured contract. The Authority shall be included as an insured under the C3L, using ISO additional insured endorsement CG 20 10 11 85 or a substitute providing equivalent coverage, and under the commercial umbrella, if any. This insurance shall apply as primary insurance with respect to any other insurance or self-insurance programs afforded to the Canal Corporation.
- (b) Workers Compensation Injurance The Permittee shall maintain Workers Compensation, Employers Liability, and Disability Benefits as statutorily required by New York State. If employees will be working on, near or over navigable waters, US Longshore and Harbor Work Compensation Act endorsement must be included.
- (c) Environmental Insurance If the work involves abatement, removal, repair, replacement, enclosure, encapsulation and/or disposul of any haz redous material or substance, the Permittee shall maintain in full force and effect throughout the term thereof, pollution regal liability insurance with limits of not less than \$5,000,000, providing coverage for bodily injury and property damage, including loss of use of damaged property or of property that has not been physically injured. Such policy shall provide coverage for actual, alleged or threatened emission, discharge, dispersal, seepage, release or escape of pollutants, including any loss, cost or expense incurred as a result of any cleanup of pollutants or in the investigation, settlement or defense of any claim, suit, or proceedings against the Canal Corporation arising from the Permittee's work.
  - 1. If coverage is written on a claims-made policy, the Permittee warrants that any applicable retroactive date precedes the effective date of this Permit; and that continuous coverage will be maintained, or an extended discovery period exercised, for a period of not less than 2 years from the time work under this Permit is completed.
  - If the Permit includes disposal of materials from the job site, the Permittee must furnish to the Canal Corporation, evidence of pollution legal liability insurance in the amount of \$1,000,000 maintained by the disposal site operator for losses arising from the disposal site accepting waste under this Permit.
- The Permittee understands that no liability of any kind shall attach to or rest upon the Thruway Authority or the Canal Corporation for any damage on account of the granting or revocation of any Permit. Neither the Canal Corporation nor the Thruway Authority shall be responsible for any loss of real property or personal property. The Permittee therefore undertakes and agrees to protect, indemnify, hold harmless and defend the Thruway Authority, the Canal Corporation, and their respective officers, agents, employees, assigns, contractors and subcontractors and the successors and assigns of each of the foregoing from and against any and all liabilities, penalties, fines, forfeitures, demands, losses, claims, judgments, suits, causes of action and the costs and expenses incidental thereto and damages of any nature whatsoever which are directly or indirectly caused by or arising out Permittee's use of and/or work conducted upon the Property including but not limited to:
  - (a) any planning, design, work or construction done in, on or about the Property or any part thereof;
  - (b) any possession, occupation, condition, operation, maintenance or management of the Property or any part thereof by the Permittee, its officers, agents, employees, contractors or subcontractors;
  - (c) any act, omission or negligence on the part of the Permittee or any of its officers, agents, employees, contractors, subcontractors, or invitees;
  - (d) any accident, injury or datnage to any person or property occurring in, on or about the Property, including loss of natural resources:
  - (e) any failure on the part of the Permittee to perform or comply with any of the covenants, agreements, terms, provisions, conditions or limitations contained in this Permit on its part to be performed or complied with;
  - (f) any Environmental condition (as defined in Paragraph 9(2) of this Permit) created on or introduced to the Property by the Permittee, its officers, agents, employees, contractors, subcontractors, or invitees;
  - (g) any investigation, monitoring, removal or remediation activities necessitated solely and directly by the increase in areal extent or severity of any Hazardous Condition caused or contributed by the Permittee's actions or activities or by those of its officers, agents, employees, contractors or subcontractors, or invitees;
  - (h) any claims asserted by any person or entity in connection with or in any way arising out of the presence, storage, use, disposal, generation, transportation, or treatment of any Hazardous Waste (as defined in Paragraph 9(a) of this Permit) at, upon, under or within the Property; or
  - (i) non-compliance with, o violation of, any federal, state or local environmental law, rule or regulation, or any governmental action, order, directive, administrative proceeding, or ruling whatsoever. As used herein, the term "Environmental Law" shall mean any local, state, of federal law, rule, ordinance or regulation, government action, order, directive, administrative proceeding or ruling whatsoever either in existence as of the date hereof or enacted or promulgated after the cate of this Permit, related to the existence, management, control, discharge, treatment, containment, transportation, and/or removal of substances or materials that are or may become a threat to the public health or environment; any common law theory based on nuisance, trespass, negligence, strict liability, aiding and abetting or other tortious conduct.

TA-99016 (12/97) Page 3

The Permittee agrees that such indemnity shall not be limited by reason of insurance coverage and shall survive the termination of this Permit. Upon termination or expiration of this Permit, the Permittee will furnish the Canal Corporation with a general release of any and all damages claimed to have been sustained by the Permittee arising from its use, operation or occupancy of or relating to the Property.

#### 9. Environmental Terms and Conditions:

- (a) The Permittee shall not store, handle, treat, dispose of, discharge, or produce Hazardous Waste upon the Property, except as permitted by applicable laws. As used herein, the term "Hazardous Waste" shall mean:
  - Any waste, product, substance or material that is regulated or monitored by any federal, State or local law, ordinance, or governmental authority, including without limitation the United States Environmental Protection Agency:
  - Any waste, product, substance or material whose use, storage, handling, treatment, disposal, discharge, or production is likewise regulated or monitored; or
  - 3. Any material or substance that is:
    - Defined or designated as a "hazardous substance" or "hazardous waste" under the laws of the State of New York;
    - (ii) Petroleum;
    - (iii) Asbestos;
    - (iv) Designated as a "hazardous substance" pursuant to the Federal Water Pollution Control Act (33 U.S.C. §1321);
    - (v) Defined as a "hazardous waste" pursuant to the Federal Resource Conservation and Recovery Act (42 U.S.C. §6903);
    - (vi) Defined as a "hazardous substance" pursuant to the Comprehensive Environmental Response Compensation and Liability Act (42 U.S.C. §9601);
    - (vii) "Polychlorinated biphenyls" ("PCBs") under the Toxic Substances Control Act (15 USCA §2601); or
    - (viii) Defined as a "regulated substance" pursuant to the Solid Waste Disposal Act (Regulation of Underground Storage Tanks), (42 U.S.C. §6991).
- (b) The Permittee shall not cause or permit the occurrence of any Environmental Condition on or at the Property. As used herein, the term "Environmental Condition" shall mean any adverse impact on the air, soil, surface water, groundwater, and stream sediments, including any release to the environment of materials referred to in Paragraph 9(a) of this Permit.
- (c) The Permittee represents and warrants that the Permittee does not intend and will not use any Hazardous Waste (as defined in Paragraph 9(a) of this Permit) on the Property. The Permittee must receive the written approval of the Canal Corporation prior to using any Hazardous Waste (as defined in Paragraph 9(a) of this Permit) on the Property.
- (d) In the event the Permittee encounters any Environmental Condition in connection with the Property that was not introduced directly or indirectly by the Permittee, its officers, agents, employees, permitted assigns, contractors, subcontractors, or invitees, the Permittee shall be responsible and held liable for any investigation, removal, or remedial activities or measures necessitated by the increase in areal extent or severity of the Environmental Condition which measure was caused, either in whole or in part, by the Permittee's actions or activities.
- (e) In the event of any Environmental Condition (including without limitation, the presence or release of any material defined in Paragraph 9(a) of this Permit), the Permittee must immediately notify the Canal Corporation by phone. If the Environmental Condition appears to be the result of conduct of the Permittee, its officers, agents, employees, permitted assigns, contractors, subcontractors, or invitees, including any release resulting from the use, operation and/or maintenance of the Property, the Permittee shall promptly remediate such Environmental Condition to the satisfaction of the Canal Corporation. In the event the Permittee does not with reasonable promptness remediate such Environmental Condition, the Canal Corporation may, at its option, elect to remediate same and recover the cost incurred for such remediation by adding it to the permit fee due from the Permittee or through utilization of any other legal means for such recovery.
- (f) Prior to bringing any fill material on to the Property, the Permittee must first obtain the approval of the Canal Corporation. Such fill material must either be from an approved virgin source or sampled and analyzed by the Permittee or its agent using methods approved by the Canal Corporation, with two (2) copies of the resulting data package provided to the Canal Corporation.
- 10. If any of the provisions of this Permit are held invalid, such provision shall be held for naught as though not contained herein, and the remainder of this Permit shall remain in full force and effect.
- 11. The Canal Corporation reserves the right to issue more that one work permit for any one location.

#### 12. Special Conditions:

- (a) Permittee shall comply with and implement the municipal landfill closure plan for the McKenna Landfill Site (Site #8-37-003) in accordance with: the letter from Thomas Andrews to Richard Manns dated April 26, 2000; the Department of Environmental Conservation (DEC) Order on Consent # B8-0374-91-06, as amended; the Final Design Rationale/Engineering Report received by the Department of Environmental Conservation on December 20, 1999 and approved by DEC on January 10, 2000; the Closure Remedial Program Work Plan; the letter agreement between the Canal Corporation and the Permittee dated August 16, 1999; and the Remedial Closure Contract Drawings by GZA Engineers dated April 25, 2000, all of which are hereby incorporated by reference.
- (b) The Permittee agrees to supply the New York State Canal Corporation's Division Engineer located at 3901 Genesee Street, Buffalo, NY 14225 and the Canal Environmental Engineer located at New York State Canal Corporation 200 Southern Boulevard, Albany, NY 12209-2098 with copies of all reports, data, information and results for all activities undertaken by the Permittee on the Property. All information is to be transmitted within 90 days of field work and/or data collection.

THIS PERMIT IS NOT VALID UNTIL IT IS APPROVED AND SIGNED BY THE DIVISION CANAL ENGINEER

GZA GeoEnvironmental of New York

Engineers and Scientists

December 8, 2000:

File: 55024

Mr. John Grathwol, P.E.
Division of Hazardous Waste Remediation
Bureau of Construction Services
New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233-7010

GZ

Re:

Revisions to Winterization Contingency Plan

and Overall Project Schedule

McKenna Landfill Remedial Closure Project

(Site No. 8-37-003) Albion, New York

364 Nagel Drive Buffalo New York 14225 716-685-2300 FAX 716-685-3629 http://www.gza.net

Dear Mr. Grathwol:

In follow up to our recent discussions, it has become necessary to revise the Winterization Contingency Plan and Project Schedule, submitted on October 27, 2000, for the McKenna Landfill Remedial Closure Project in Albion, New York.

Ciminelli Services Corp. (CSC) continued to incur schedule delays during the month of November due to rain and the on set of winter weather conditions. Therefore, the project will not be progressed as far as originally proposed in the October 27, 2000 Winterization Contingency Plan. This letter presents proposed modifications to the contingency plan for winterizing the site over the upcoming winter months and a new schedule for completing the project in 2001.

A Subsidiary of GZA GeoEnvironmental Technologies, Inc. These revisions are being submitted to New York State Department of Environmental Conservation (NYSDEC) for review and concurrence. A copy is also being forwarded to the New York State Canal Corporation (NYS Canal Corp.).

#### **Current Project Status**

As of Tuesday, December 5, 2000, Serrot International, Inc. completed installation of the geosynthetics, including the 60 mil, LLDPE, geomembrane barrier and the overlying 12 oz/sy, non-woven, polypropylene geotextile cushion layer (Geotextile, Type II). CSC had commenced placement of the barrier protection layer soil on the southwest corner of the landfill and on the western portion of the top of the landfill. The barrier protection placed to date was generally to provide an access road and turn around area to perform the barrier protection layer construction operation.

CSC has not been able to continue with this operation due to the current weather conditions and concerns that such operations could potentially damage the completed geosynthetics. CSC, therefore, has indicated that it does not intend to proceed further with this operation, this construction season.



CSC, however, has indicated it will complete the anchor trench backfill, re-establish temporary surface water drainage, set up appropriate erosion and sedimentation controls and then demobilize from the project site for the winter (until about late April, 2001). This remaining work is expected to be done over the next two to three weeks.

We note that the gas venting system and leachate collection system are currently operational and that the exposed geosynthetics should be secure once the anchor trench backfilling is completed.

# Revised Schedule to Complete the Project

CSC plans to generally demobilize from the project site between about the end of December, 2000 and about late April, 2001. As stated in the October 27, 2000 contingency plan, leachate, from the new system, will be collected and treated on an ongoing "as needed" basis during the demobilization period and until the project is completed in 2001. Frequent inspection of the site will also be done during the demobilization period.

Ciminelli plans to remobilize late in April, 2001 or possibly sooner depending on the weather and complete the remaining work (i.e. remaining barrier protection layer, topsoil and seeding, finish grading of drainage swales, drainage infrastructure installation, final access road construction and final site restoration). Due to the barrier protection layer not being progressed as far as anticipated in the October 27, 2000 plan, it is now expected that the project would be completed by about mid to late July, 2001.

#### Winter Contingency Plan Modifications

The following sections present modifications to the October 27, 2000 contingency plan for winterizing (i.e. securing, operating and monitoring) the site over the winter shutdown period and recommencing the construction in the spring of 2001. These modifications generally address the exposed geosynthetics and the proposed quality assurance program to be implemented in the Spring of 2001, to evaluate their integrity before the barrier protection layer construction continues.

# A. Potential Impacts On Exposed Geosynthetics

Based on our discussions with Serrot International, Inc. (the geosynthetics manufacturer, supplier and installer), there should be no environmental/weather exposure impact to the geomembrane layer, provided that backfilling of the anchor trench is completed. Serrot has indicated that there are case histories of geomembrane

material being exposed for up to a year or longer with insignificant or no impact on the geomembrane properties. As stated above, the geomembrane has been covered with the geotextile cushion layer, thus limiting its exposure to the weather/sunlight.



As discussed with NYSDEC, the area of potential concern with regard to weather (i.e. sunlight) exposure would be the exposed geotextile cushion layer. Case studies and information indicate the geotextile material can undergo strength degradation when exposed to sunlight (i.e. UV exposure) for long periods. The information we currently have is from studies done in the south. At this time, we do not have any information on any cases where the geotextile material has been exposed over the winter months in a wintery northern climate (i.e. with varying snow cover and more limited sunlight). Therefore, it is difficult to predict to what degree the strength properties of the geotextile cushion layer may be impacted from its exposure over the winter shutdown period.

WMNY and GZA have evaluated the possibility of placing a sacrificial synthetic cover over this material, however, the material and installation costs appear to be more costly than the cost of replacing the geotextile cushion layer, if it would become detrimentally degraded. Therefore, we are proposing to leave the geotextile layer exposed and then evaluate the exposure impacts in the Spring of 2001 and determine if any replacement would be necessary.

## B. Quality Assurance Program for Evaluating the Geotextile Exposure

Prior to commencing placement of the barrier protection material, sample coupons of the exposed cushion geotextile, will be collected at random and relatively uniformly spaced intervals and at a frequency of at least <u>one sample per acre</u> of exposed geotextile. Each sample shall be tested for the following properties:

Property	Test Method
Unit Weight (oz/yd²)	ASTM D5261
Grab Tensile Strength (lbs)	<b>ASTM D4632</b>
Puncture Resistance (lbs)	<b>ASTM D4833</b>
Mullen Burst Strength (psi)	<b>ASTM D3786</b>

GZA has evaluated the cushioning and separation strength properties required of the cushion geotextile layer, which provide a suitable factor of safety with respect to the overlying barrier protection material gradation and the construction placement. These analyses are enclosed as Attachment 1. The required properties are also compared with the strength properties of the Geotextile, Type II material which has been specified, supplied and place over the geomembrane. In general, the Geotextile, Type II strength properties significantly exceed the required strength properties.

Based on our analyses, it is recommended that the strength properties of the test coupons meet or exceed the following values.

Property	<u>Value</u>
Unit Weight (oz/yd²)	6
Grab Tensile Strength (lbs)	200
Puncture Resistance (lbs)	100
Mullen Burst Strength (psi)	200



Should the sample test results not meet these minimum requirements, then the geotextile material shall be removed and replaced with respect to the unacceptable test sample locations. Additional samples should be collected and tested as necessary to assist in determining the limits of any required geotextile replacement. Test sample locations should also be compared with deployment records to assist in determining the extent of any required replacement. Any geotextile cushioning material which is required to be replaced shall be replaced with Geotextile, Type II material and re-installed as originally specified.

In addition to the above testing program, the exposed geosynthethics shall also be carefully observed in the field for any visual evidence of degradation or physical damage, prior to placing the barrier protection material over it. Such inspections shall be documented in GZA's daily field reports.

#### C. Site Inspection

A program of scheduled weekly inspections, of the site, will be performed by a representative of GZA and CSC during the winter shutdown period as originally proposed in the October 27, 2000 contingency plan. The proposed inspection form (Attachment 2) has been modified to address the inspection of the exposed geosynthetics.

File: 55024

Page 5

We trust that the revised project schedule and modified winter contingency plan will be acceptable with NYSDEC. Please contact the undersigned or Mr. Richard Sturges at WMNY, if you have any questions or comments regarding this information.

Very truly yours,

GZ

GZA GEOENVIRONMENTAL OF NEW YORK

John J. Danzer, P.E. Senior Project Manager

Ernest R. Hanna, P.E. Associate Principal

cc: R. Stur

R. Sturges - WMNY

R. Hilts - Ciminelli Services Corp.

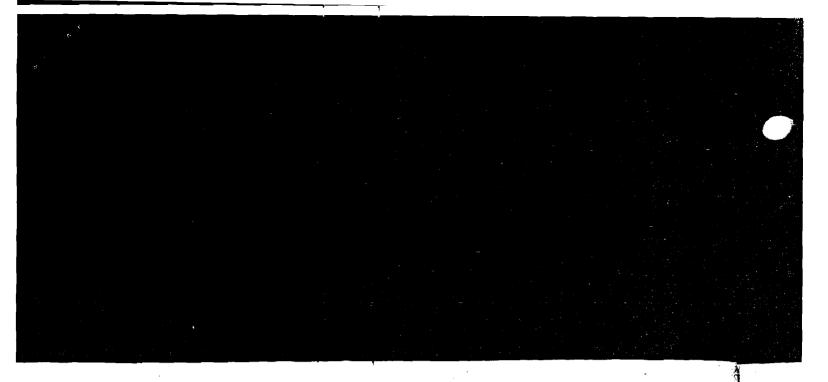
R. Long - NYSDEC, Region 8

J. Dergosits - NYS Canal Corp.

# ATTACHMENT 1

EVALUATION OF REQUIRED PROPERTIES FOR GEOTEXTILE CUSHION MATERIAL

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# CATERPILLAR PERFORMANCE HANDBOOK

a CAT publication

by Caterpillar Inc., Peoria, Illinois, U.S.A.

OCTOBER 1986

Performance information in this booklet is intended for estimating purposes only. Because of the many variables peculiar to individual jobs (including material characteristics, operator efficiency, underfoot conditions, altitude, etc.), neither Caterpillar Inc. nor its dealers warrant that the machines described will perform as estimated.

Materials and specifications are subject to change without notice.



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Tires Standard Cold Inflation Pressures

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Model	Tire Size	Strength Index	Fre		sure (		relin)   Re	ar	Fre			Good	dyear) Re	
D25C	26.5R25		kPa 400	psi 58	kPa —	psi	kPa 400	psi 58	kPa 517	psi 75	kPa —	psi —	kPa 517	psl 75
D30C	29.5R25	**	351	51	_	_	448	65	517	75	<b>-</b> ·		517	75
D35C	F: 29.5R25 R: 33.25R29	**	351	51	_	_	503	73	517	75	-	_	517	75
D35HP	F: 29.5R25 R: 33.25R29	**	351	51	_	_	503	73	517	75	<b>-</b>	-	517 ·	75
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D300B	23.5R25	**	320	46	320	46	320	46	320	46	320	46	320	46
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D400	26.5R25	**	400	58	400	58	400	58	517	75	517	75	517	75
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1740	.5-25* :/65-33* HEEL
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#### **Geosynthetic Products Division**

9/28/2000

Serrot International Inc.

PA

Connie Turner

167 Anderson Rd

Cranberry Twp

16066

BOL

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PO 14461QD

Ref. Job 10057 Order 00003176 WMI of NY Albion-MC Kenna

1291 This is to certify that Product GEOTEX , a nonwoven polypropylene geotextile produced by Synthetic Industries, will meet the following certifiable minimum average values when tested in accordance with the proper ASTM test methods. A minimum average roll value is calculated as the mean minus two standard deviations, yielding a 97.5 percent confidence level. This geotextile has been continuously inspected for the presence of needles and none were detected.

Physical Property	Test Method	MARY	SI Unit
Mass Per Unit Area Thickness Tensile Strength Elongation Trapezoidal Tear Mullen Burst	ASTM D-5261	12.0 oz/yd2	(406.8) g/m2
	ASTM D-5199	115 mils	(2.921) mm
	ASTM D-4632	320 lbs	(1424) N
	ASTM D-4632	50 %	50 %
	ASTM D-4533	125 lbs	(556.25) N
	ASTM D-3786	620 psi	(4274.2 kPa
Puncture Strength A.O.S. Permittivity Permeability Water Flow Rate UV Resistance	ASTM D-4833	210 lbs	(934.5) N
	ASTM D-4751	100 Sieve	0.15 mm
	ASTM D-4491	0.80 sec-1	0.80 sec-1
	ASTM D-4491	0.29 cm/sec	0.29 cm/sec
	ASTM D-4491	60 gpm/ft2	(2444.682 lpm/m2
	ASTM D-4355	70 %	70 %

Strength Resained other 500 hours exposure in Xanon Ara Weatherometer

Sincerely

Pattl Weaver Technical Manager

Geosynthetic Products Division

Setts makes no warranty express or implied concerning the product funished hereunder other than at the large of delivery is shall be of this quality and spontage on my large the product of the product

Fourth Edition

# Designing with Geosynthetics

Robert M. Koerner, Ph.D., P.E.

H. L. Bowman Professor of Civil Engineering, Drexel University and Director, Geosynthetic Research Institute



PRENTICE HALL
Upper Saddle River, New Jersey 07458

th Geotextiles Chap. 2

E IN EQ. (2.25a)

Factors

Chemical Clogging <sup>†</sup>	Biological Clogging
1.0 to 1.2	1.0 to 1.3
1.2 to 1.5	2.0 to 4.0
1.0 to 1.2	2.0 to 4.0
1.2 to 1.5	5 to 10 <sup>‡</sup>
1.2 to 1.5	1.2 to 1.5
1.1 to 1.3	1.1 to 1.3

either the upper values or include

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(2.25b)

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ion function were given in Second be said, in a general sense they do not also serve this full not be served properly it ion of separation always plays they and in such cases the geometry.

#### Sec. 2.5 Designing for Separation

#### 2.5.1 Overveew of Applications

Perhaps the target application that best illustrates the use of geotextiles as separators is their placement between a reasonably firm soil subgrade (beneath) and a stone base course, aggregate, or ballast (above). We say "reasonably firm" because it is assumed that the subgrade deformation is not sufficiently large to mobilize uniformly high tensile stress in the geotextile. (The application of geotextiles in unpaved roads on soft soils with membrane-type reinforcement is treated later in Section 2.6.1.) Thus for a separation function to occur the geotextile has only to be placed on the soil subgrade and then have stone placed, spread, and compacted on top of it. The subsequent deformations are very localized and occur around each individual stone particle. A number of scenarios can be developed showing which geotextile properties are required for a given situation.

#### 2.5.2 Burst Resistance

Consider a geotextile on a soil subgrade with stone of average particle diameter  $(d_a)$  placed above it. If the stone is uniformly sized, there will be voids within it that will be available for the geotextile to enter. This entry is caused by the simultaneous action of the traffic loads being transmitted to the stone, through the geotextile, and into the underlying soil. The stressed soil then tries to push the geotextile up into the voids within the stone. The situation is shown schematically in Figure 2.28. Giroud [64] provides a formulation for the required geotextile strength that can be adopted for this application.

$$T_{\text{reqd}} = \frac{1}{2} p' d_{\nu}[f(\varepsilon)]$$
 (2.26)

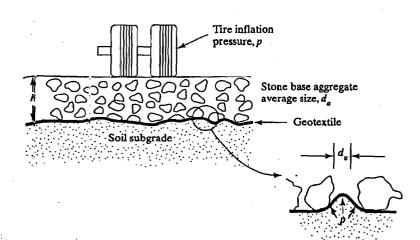


Figure 2.28 Geotextile being forced up into voids of stone base by traffic tire loads.

where

Sec. 2.5

Designing

Solution: Assum thickness of the s

Note that with the tor of safety valu

For a range of (p'), and cumulative the design guide in F sofar as the require poorly graded aggre design; hence this at

Figure 2.2 tion based

 $T_{\text{read}}$  = required geotextile burst strength;

p' = stress at the geotextile's surface, which is less than or equal to p, the time inflation pressure at the ground surface;

 $d_v = \text{maximum void diameter of the stone} \approx 0.33d_a$ ;

 $d_a$  = the average stone diameter,

 $f(\varepsilon) = \text{strain function of the deformed geotextile}$ 

$$=\frac{1}{4}\left(\frac{2y}{b}+\frac{b}{2y}\right), \text{ in which}$$

b =width of opening (or void), and

y = deformation into the opening (or void).

The field situation is analogous to the ASTM D3786 (Mullen) burst test, which has the geotextile being stressed into a gradually increasing hemispherical shape until it fails in radial tension (recall Section 2.3.3). Thus, the adapted form of Eq. (2.26) is:

$$T_{\text{ult}} = \frac{1}{2} p_{\text{test}} d_{\text{test}} [f(\varepsilon)]$$
 (2.27)

where

 $T_{\rm ult} = \text{ultimate geotextile strength},$ 

 $p_{\text{test}} = \text{burst test pressure}, \text{ and}$ 

 $d_{\text{test}} = \text{diameter of the burst test device } (= 30 \text{ mm}).$ 

Knowing that  $T_{\text{allow}} = T_{\text{ult}}/(\Pi RF)$ , where  $\Pi RF = \text{cumulative reduction factors}$ , we can formulate an expression for the FS as follows:

$$FS = \frac{T_{\text{allow}}}{T_{\text{reqd}}} = \frac{(p_{\text{test}}d_{\text{test}})}{(\Pi RF)p'd_{y}}$$

For example, if  $d_{\text{test}} = 30 \text{ mm}$ ,  $d_v = 0.33 d_a$ , and IIFS = 1.5 (which is not particularly low since creep is not an issue with this application), then the FS is the following, with de in mm.

$$FS = \frac{p_{\text{test}}(30)}{(1.5)p'(0.33d_a)}$$

$$FS = \frac{60.6p_{\text{test}}}{p'd_a}$$
(2.28)

#### Example 2.7

Given a 700 kPa truck tire inflation pressure on a poorly graded stone-base course consisting of 50 mm maximum-size stone, what is the factor of safety using a geotextile with an ultimate burst strength of 2000 kPa and cumulative reduction factors of 1.5?

h Geotextiles Chap. 2

in or equal to p, the tire

n) burst test, which has the nerical shape until it fails in of Eq. (2.26) is:

(2.27)

ive reduction factors, we can

(which is not particularly low) ne FS is the following, with 4,

orly graded stone-base course of safety using a geotextile will duction factors of 1.5?

Solution: Assuming that the tire inflation pressure is not significantly reduced through the thickness of the stone base, we can solve Eq. (2.28) as follows.

$$FS = \frac{60.6(2000)}{700(50)}$$
$$= 3.5$$

Note that with the cumulative reduction factors of 1.5 already included, the resulting factor of safety value is acceptable.

For a range of stone-base particle diameters  $(d_a)$ , values of tire inflation pressure (p'), and cumulative reduction factors of 1.5, along with a factor of safety of 2.0, we get the design guide in Figure 2.29. Here it can be seen that stone size is quite significant insofar as the required burst-pressure values are concerned. Note also that these are poorly graded aggregates and that the presence of fines will lessen the severity of the design; hence this approach should be considered to be a worst-case design.

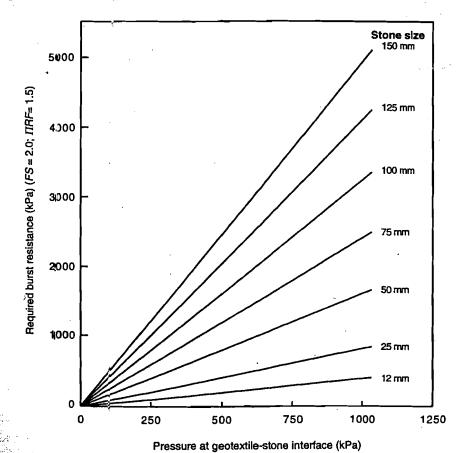


Figure 2.29 Lesign guide for burst analysis of geotextile used in a separation function based on cumulative reduction factors of 1.5 and a factor of safety of 2.0.

#### 2.5.3 Tensile Strength Requirement

Continuing the discussion of the general problem, there is a process acting on the general textile simultaneously as its tendency to burst in an out-of-plane mode: tensile stream mobilized by in-plane deformation. This occurs as the geotextile is locked into position by the stone-base aggregate above it and soil subgrade below it. A lateral or in-plane tensile stress in the geotextile is mobilized when an upper piece of aggregate is forced between two lower pieces that lie against the geotextile. The analogy to the grab tensile test can be readily visualized, as illustrated in Figure 2.30. Here we can estimate the maximum strain that the geotextile will undergo as the upper stone wedges itself down to the level of the geotextile. Using the dimensions shown (where  $S \sim d/2$  and  $l_f = de$  formed geotextile length), the maximum strain with no slippage or stone breakage can be calculated.

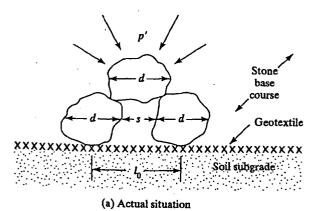
$$\varepsilon = \frac{l_f - l_o}{l_o} (100)$$

$$= \frac{[d + 2(d/2)] - 3(d/2)}{3(d/2)} (100)$$

$$= \frac{4(d/2) - 3(d/2)}{3(d/2)} (100)$$

$$= 33\%$$

Note that the preceding assumptions result in a strain that is independent of particle size. Thus the strain in the geotextile could be as high as 33% given the idealized



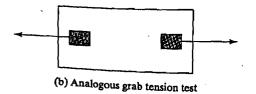


Figure 2.30 Geotextile being subjected to tensile stress as surface pressure is applied and stone base attempts to spread laterally.

(upper-bound) assum; to the pressure exerte

where

 $T_{\text{reqd}} = \text{required}$  p' = applied I  $d_v = \text{maximu}$   $d_a = \text{average}$   $f(\varepsilon) = \text{strain fu}$   $= \frac{1}{4} \left( \frac{2y}{b} + \frac{1}{4} \right)$   $= \frac{1}{4} \left( \frac{2y}{b} + \frac{1}{4} \right)$   $= \frac{1}{4} \left( \frac{2y}{b} + \frac{1}{4} \right)$ 

y = deforma

Example 2.8 illustrate

#### Example 2.8

Given a 700 kPa 1 maximum-size sto stress on the geoto 33% is 500 N with

Solution: (a) Usi quired grab tensil

(b) The factor of reduction factors

#### 2.5.4 Puncture Res

The geotextile must: tion of separation; it without it the best of process acting on the geo.

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analogy to the grab tensile

Here we can estimate the

er stone wedges itself down

(where  $S \sim d/2$  and  $l_f = de$ -

(upper-bound) assumptions stated above. The tensile force being mobilized is related to the pressure exerted on the stone as follows [64].

$$T_{\text{reqd}} = p'(d_{\nu})^{2}[f(\varepsilon)] \tag{2.29}$$

where

$$T_{\text{reqd}} \approx \text{require} \mid \text{grab tensile force};$$

 $p' \approx \text{applied pressure};$ 

 $d_v = \text{maximi} \text{ m void diameter} \approx 0.33 d_a$ , where

 $d_a = \text{average}$ , stone diameter; and

 $f(\varepsilon) = \text{strain function of the deformed geotextile};$ 

$$\approx \frac{1}{4} \left( \frac{2y}{b} + \frac{b}{2y} \right)$$
, where

b = width of stone void, and

 $y \approx$  deformation into stone void.

Example 2.8 illustrates the design procedure above.

#### Example 2.8

Given a 700 kPa truck-tire inflation pressure on a stone-base course consisting of 50 mm maximum-size stone with a geotextile beneath it, calculate (a) the required grab tensile stress on the geotextile, and (b) the factor of safety for a geotextile whose grab strength at 33% is 500 N with cumulative reduction factors of 2.5 and  $f(\varepsilon) = 0.52$ .

**Solution:** (a) Using an empirical relationship that  $d_v = 0.33 d_a$  and  $f(\varepsilon) = 0.52$ , the required grab tensile strength from Eq. (2.29) is as follows.

$$T_{\text{reqd}} = p'(d_v)^2(0.52)$$

$$= p'(0.33d_a)^2(0.52)$$

$$= 0.057 p'd_a^2$$

$$= 0.057(700)(1000)(0.050)^2$$

$$= 100 \text{ N}$$

(b) The factor of safety for a 500 N grab tensile geotextile at 33% strain with cumulative reduction factor, of 2.5 is as follows.

$$FS = \frac{T_{\text{allow}}}{T_{\text{reqd}}}$$

$$= \frac{500/2.5}{100}$$

$$= 2.0 \quad \text{which is acceptable.}$$

## 2.5.4 Puncture Registance

The geotextile must survive the installation process. This is not just related to the function of separation; indeed, fabric survivability is critical in all types of applications—without it the best of designs are futile (recall Figure 2.19). In this regard, sharp stones,

opage or stone breakage can

10)

that is independent of particle h as 33% given the idealized

Figure 2.30 Geotextile being subto tensile stress as surface pressure plied and stone base attempts to at laterally.



Solution: Using th 0.6 for the factors !

Designing '

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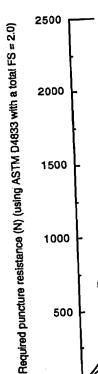


Figure 2.32 Pt tors of 2.0, a fac

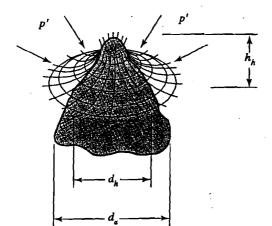


Figure 2.31 Visualization of a stone puncturing a geotextile as pressure is an plied from above.

tree stumps, roots, miscellaneous debris, and other items, either on the ground surface beneath the geotextile or placed above it, could puncture through the geotextile after backfilling and traffic loads are imposed. The design method suggested for this situation is shown schematically in Figure 2.31. For these conditions, the vertical force exerted on the geotextile (which is gradually tightening around the protruding object) is as follows:

$$F_{\text{reqd}} = p' d_a^2 S_1 S_2 S_3 \tag{2.30}$$

where

 $F_{\text{reqd}}$  = required vertical force to be resisted;  $d_a$  = average diameter of the puncturing aggregate or sharp object;

p' = pressure exerted on the geotextile (approximately 100% of tire inflation pressure at the ground surface for thin covering thicknesses);

 $S_1 = \text{protrusion factor} = h_h/d_a;$ 

 $h_h = \text{protrusion height} \leq d_a$ ;

 $S_2$  = scale factor to adjust the ASTM D4833 puncture test value (which uses an 8.0 mm diameter puncture probe) to the diameter of the actual puncturing object =  $d_{probe}/d_a$ ;

 $S_3$  = shape factor to adjust the ASTM D4833 flat puncture probe to the actual shape of puncturing object =  $1 - A_p/A_c$  (values for  $A_p/A_c$  range from 0.8 for rounded sand, to 0.7 for run-of-bank gravel, to 0.4 for crushed rock, to 0.3 for shot rock):

 $A_p$  = projected area of puncturing particle;

 $A_c$  = area of smallest circumscribed circle around puncturing particle.

#### Example 2.9

What is the factor of safety against puncture of a geotextile from a 50 mm stone on the ground surface mobilized by a loaded truck with a tire inflation pressure of 550 kPa traveling on the surface of the base course? The geotextile has an ultimate puncture strength of 200 N, according to ASTM D4833.

ith Geotextiles Chap. 2

Sec. 2.5 Designing for Separation

**Solution:** Using the full stress on the geotextile of 550 kPa and the values 0.33, 0.15, and 0.6 for the factors  $S_1$ ,  $S_2$ , and  $S_3$ , respectively,

$$F_{\text{reqd}} = p' d_a^2 S_1 S_2 S_3$$
= (550)(1000)(50 x 0.001)<sup>2</sup>(0.33)(0.15)(0.6)
= 40.8 N

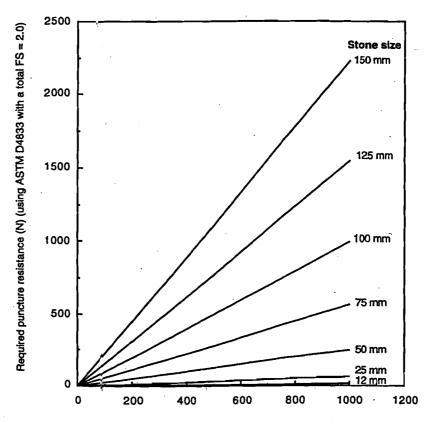
Assuming that the cumulative reduction factors are 2.0, the factor of safety is as follows:

$$FS = \frac{F_{\text{allow}}}{F_{\text{reqd}}}$$

$$= \frac{200/2.0}{40.8}$$

$$= 2.4 \quad \text{which is acceptable}$$

Using the following assumptions (which can be modified as desired), a design guide can be developed as shown in Figure 2.32: the geotextile has an angular subgrade



Pressure at geotextile-stone interface (kPa)

Figure 2.32 Puncture resistance design guide based on cumulative reduction factors of 2.0, a factor of safety of 2.0, and conditions stated in text.

2.31 Visualization of a stone ring a geotextile as pressure is apom above.

either on the ground surface through the geotextile after hod suggested for this situalitions, the vertical force exund the protruding object) is

(2.30)

te or sharp object; mately 100% of tire inflation ring thicknesses);

cture test value (which uses diameter of the actual punc-

t puncture probe to the actual values for  $A_p/A_c$  range from  $\epsilon$  gravel, to 0.4 for crushed

id puncturing particle.

textile from a 50 mm stone on the inflation pressure of 550 kPatrice as an ultimate puncture strength.

above it such that  $S_1 = 0.33$ ,  $S_2 = 0.15$ , and  $S_3 = 0.5$ ; the cumulative reduction factor are 2.0; and the factor of safety is also 2.0.

$$F_{\text{reqd}} = p' d_a^2(0.33)(0.15)(0.5)$$

$$= 0.0248p' d_a^2$$

$$FS = \frac{F_{\text{ult}} / \Pi RF}{F_{\text{reqd}}}$$

$$2.0 = \frac{F_{\text{ult}} / 2.0}{0.0248p' d_a^2}$$

$$F_{\text{ult}} = 0.099p' d_a^2 \quad \text{which is graphed accordingly.}$$

#### 2.5.5 Impact (Tear) Resistance

As with the puncture requirement just described, the resistance of a geotextile to impact is as much a survivability criterion as it is a separation function. Yet in many applications of separation, the geotextile must resist the impact of various objects. The most obvious one is a rock falling on it, but there are also situations in which construction equipment and materials can cause or contribute to impact damage on geotextiles.

The problem concerns the energy mobilized by a free-falling object of known weight and the height of the drop. Rarely will an object be intentionally impelled onto an exposed geotextile with additional force, so only gravitational energy will be assumed.

To develop a design guide, we assume free-falling stones of specific gravity of 2.60, varying in diameter from 25 to 600 mm and falling from heights of 0.5 to 5 m. Using this data the design curves of Figure 2.33 are developed. The relationship is as follows.

$$E = mgh$$

$$= (V \times \rho)gh$$

$$= [V \times (\rho_w G_s)]gh$$

$$= \left(\frac{\pi (d_a/1000)^3}{6}\right) \left(\frac{1000kg}{m^3}\right) (2.6)(9.81)h$$

$$E = 13.35 \times 10^{-6} d_a^3 h \tag{2.31}$$

where

E = energy developed (joules),
 m = mass of the object (kg),
 g = acceleration due to gravity (m/s²),
 h = height of fall (m),

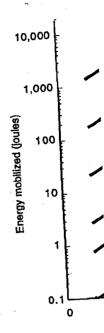


Figure 2.33 Ene yielding support.

V = volume of t  $\rho$  = density of tl  $\rho_w$  = density of v  $G_s$  = specific gra  $d_a$  = diameter of

Note that these calcula ing surface, that is, the forms, the geotextile car ways the case, the reducurves of Figure 2.33. ( the allowable impact st test as discussed in Sec

#### Example 2.10

What energy is motextile? The geotex 4. If the geotextile

er selection of the resin, an ion CQC and CQA, HDPE chates. This is not to say that or new formulations will not ader the current widespread

Chap. 5

um thickness of a geomemn (with timely cover) and 1.5 plations require a minimum PE is the only polymer that nical design should proceed ction 5.3.4. As with thickness trane thickness can be calcufregulations apply, or to the o regulations. When the secume thickness and type as the

ped in Section 5.3.4.

$$\frac{}{}$$
 (5.18)

nation, embrane and the upper

embrane and the lower

ane tension.

beneath a 50 m high landfill co ed subsoil settlement is estimated is above the geomembrane Solution: The necessary information for solving the design equation is

- (a) For out-of-plane tension testing, the yield-stress of HDPE (from Table 5.5c) is conservatively estimated as 20,000 kPa.
- (b) The mobilization distance for HDPE at  $50 \times 12.5 = 625$  kPa (from Fig. 5.10) is approximately 80 mm.
- (c) The friction angle (from Table 5.7) for HDPE against Ottawa sand ( $\delta_{tt}$ ) is 18°.
- (d) The friction angle for HDPE against a geonet (separate test results) ( $\delta_L$ ) is 10°.
- (e) These values give the required geomembrane thickness.

$$t = \frac{(625)(0.080)[\tan 18 + \tan 10]}{(20,000)[\cos 20 - (\sin 20)(\tan 10)]}$$
$$= \frac{25.1}{17600}$$
$$= 0.00143 \text{ m}$$
$$t = 1.43 \text{ mm}$$

Thus the regulated values of 1.5 mm in the U.S. or 2.0 mm in German regulations would control in this situation.

#### 5.6.7 Puncture Protection

There are many circumstances where geomembranes are placed on or beneath soils containing relatively large-sized stones, for example poorly prepared soil subgrades with stones protruding from the surface or resting on the surface, soil subgrades over which geomembranes (particularly textured) have been dragged dislodging near-surface stones, and cases where crushed-stone drainage layers are to be placed above the geomembrane. All of these situations, particularly the last (which is unavoidable since it is a design situation), could use a protective geotextile to avoid puncturing the geomembrane. Note that if the soil subgrade is a CCL, a geotextile cannot be used and the isolated stones must be physically removed. For the drainage layer case, which is common to all landfills, a nonwoven needle-punched geotextile can provide significant puncture protection (recall Figure 5.8). The issue of required mass per unit area of the geotextile becomes critical.

In a series of papers, Wilson-Fahmy, Narejo, and Koerner [71, 72, 73] have presented a design method that focuses on the protection of 1.5 mm thick HDPE geomembranes. The method uses the conventional factor of safety equation.

$$FS = \frac{p_{\text{allow}}}{p_{\text{act}}} \tag{5.32}$$

where

FS = factor of safety (against geomembrane puncture),

 $P_{act} = actual pressure due to the landfill contents (or surface impoundment), and$ 

TABLE 5.18 MODIFICATION FACTORS AND REDUCTION FACTORS FOR GEOMEMBRANE PROTECTION DESIGN USING NONWOVEN NEEDLE-PUNCHED GEOTEXTILES

Modification Factor	s			75
MF <sub>5</sub>		MF <sub>PD</sub>		MF
Angular Subrounded Rounded	1.0 0.5 0.25	Isolated Dense, 38 mm Dense, 25 mm Dense, 12 mm	1.0 0.83 0.67 0.50	Hydrostatic Geostatic, shallow Geostatic, mod. Geostatic, deep
Reduction Factors				
•				RF <sub>CR</sub>
	•	Mass per unit area		Protrusion (mm)

RF<sub>CRD</sub>  $(g/m^2)$ 38 25 Mild leachate 1.1 Geomembrane alone N/R N/R N/R Moderate leachate 1.3 270 N/R N/R Harsh leachate 1.5 550 N/R 1.5 1100 1.3 1.2 > 1100 **≅ 1.2** ≅ 1.1

N/R = Not recommended

 $p_{\text{allow}}$  = allowable pressure using different types of geotextiles and site-specific conditions.

Based on a large number of ASTM 5514 experiments, an empirical relationship for  $p_{\rm allow}$  has been obtained, Eq. (5.33). It requires the set of modification factors and reduction factors given in Table 5.18.

$$p_{\text{allow}} = \left(50 + 0.00045 \frac{M}{H^2}\right) \left[\frac{1}{\text{MF}_S \times \text{MF}_{PD} \times \text{MF}_A}\right] \left[\frac{1}{\text{RF}_{CR} \times \text{RF}_{CBD}}\right]$$
(5.33)

where

 $p_{\text{allow}} = \text{allowable pressure (kPa)},$ 

 $M = \text{geotextile mass per unit area } (g/m^2),$ 

H = protrusion height (m).

 $MF_s$  = modification factor for protrusion shape,

 $MF_{PD}$  = modification factor for packing density,

 $MF_A$  = modification factor for arching in solids,

 $RF_{CR}$  = reduction factor for long-term creep, and

 $RF_{CBD}$  = reduction factor for long-term chemical/biological degradation.

Note that in the above all MF values  $\leq 1.0$  and all RF values  $\geq 1.0$ .

The situation can termine the unknown F a given FS value. Exam

#### Example 5.19

Given a coarse-gra HDPE geomembra essary for a FS valu

Solution: Use H = isolated, but are ac density,  $MF_A = 0.5$  degradation.

Now calcular

Then calculate the

 $p_{\rm allow} =$ 

1800 =

M =

#### 5.6.8 Runout and

The terminus of geor zontal runout at the into an anchor trenc suitably compacted. ally not be used sinc brane failure, althou

The design me peated here. Both a ble, with the latter t

For termination possible choices (see of both geomembre (shown as a geonet

#### Beomembranes Chap. 5

#### FOR GEOMEMBRANE )TEXTILES

MF <sub>A</sub>	
Hydrostatic	1.0
Geostatic, shallow	0.75
Geostatic, mod.	0.50
Geostatic, deep	0.25

RF	CR
·U	CR

Pr	Protrusion (mm)					
38	25	12				
N/R	N/R	N/R				
N/R	N/R	> 1.5				
N/R	1.5	1.3				
1.3	1.2	1.1				
<b>≅</b> 1.2	ຸ≅ 1.1	<b>≥</b> 1.0				

eotextiles and site-specific

an empirical relationship for modification factors and re-

$$\frac{1}{r_A} \left[ \frac{1}{RF_{CR} \times RF_{CBD}} \right] (5.33)$$

l biological degradation

alues  $\geq 1.0$ .

#### Sec. 5.6 Solid-Material (Landfill) Liners

The situation can be approached from a given mass per unit area geotextile to determine the unknown FS value, or from an unknown mass per unit area geotextile and a given FS value. Example 5.19 uses the latter approach.

#### Example 5.19

Given a coarse-gravel ( $d_{50} = 38$  mm) leachate collection layer to be placed on a 1.5 mm HDPE geomembrane under a 50 m high landfill, what geotextile mass per unit area is necessary for a FS value of 3.0? Assume that the solid waste weighs 12 kN/m<sup>3</sup>.

**Solution:** Use H = 25 mm = 0.025 m, which is an estimate since the gravel particles are not isolated, but are adjacent to one another,  $MF_S = 1.0$  for shape,  $MF_{PD} = 0.20$  for packing density,  $MF_A = 0.50$  for arching,  $RF_{CR} = 1.5$  for creep, and  $RF_{CBD} = 1.5$  for long-term degradation.

Now calculate the value of  $p_{\text{allow}}$  using Eq. (5.32).

$$FS = \frac{p_{\text{allow}}}{p_{\text{act}}}$$
$$3.0 = \frac{p_{\text{allow}}}{(50)(12)}$$
$$p_{\text{allow}} = 1800 \text{ kN/m}^2$$

Then calculate the required mass per unit area of the geotextile using Eq. (5.33).

$$p_{\text{allow}} = \left(50 + 0.00045 \frac{M}{H^2}\right) \left[\frac{1}{\text{MF}_S \times \text{MF}_{PD} \times \text{MF}_A}\right] \left[\frac{1}{\text{FS}_{CR} \times \text{FS}_{CBD}}\right]$$

$$1800 = \left[50 + 0.00045 \frac{M}{(0.025)^2}\right] \left[\frac{1}{1.0 \times 0.20 \times 0.50}\right] \left[\frac{1}{1.5 \times 1.5}\right]$$

$$M = 493 \text{ g/m}^2 \quad \text{use a 500 g/m}^2 \text{ geotextile}$$

#### 5.6.8 Rungut and Anchor Trenches

The terminus of geomembranes (and geonets if they are also involved) is a short horizontal runous at the top of the slope (recall Figure 5.30), and then (usually) a short drop into an anchor trench (recall Figure 5.31). The anchor trench is backfilled with soil and suitably compacted. Concrete anchor trenches with full fixity to the liner should generally not be used since geomembrane pullout is probably more desirable than geomembrane failure, although both should obviously be avoided.

The design method is explained and illustrated in Section 5.3.6 and will not be repeated here. Both analyses (runout alone and runout plus anchor trench) are applicable, with the latter being the most common.

For termination of double liner systems, the designer is faced with a number of possible choices (see Figure 5.46). The major considerations are to protect the integrity of both geomembranes and to keep surface water out of the leak detection system (shown as a geonet in Figure 5.46).

#### **ATTACHMENT 2**

REVISED WINTER SHUTDOWN SITE INSPECTION REPORT FORM

#### **ATTACHMENT 2**

#### McKenna Landfill Remedial Closure Albion, New York

# WINTER SHUTDOWN SITE INSPECTION REPORT FORM

Date:		,							
Inspection Completed by:									
Weather and General Site Conditions During the Day	of the Inspection	on:							
Inspection Record:									
Were any of the conditions listed below observed?									
<u>Conditions</u>	<u>Yes</u>	<u>No</u>							
Final Cover System									
1) Any Major Erosion Gullies/Washouts	( )	( )							
2) Any Wind Damage to Exposed	( )	( )							
Geosynthetics	( )	. ()							
3) Any Problems Along Geosynthetic	( )	( )							
Anchor Trenches	( )	( )							
<ul><li>4) Any Visible Damage to Geosynthetics</li><li>5) Any Seeps or Soft Spots</li></ul>	( )	( )							
6) Any Sloughing or Slope Problems	( )	()							
Gas Venting System									
7) Any Visible Damage to Gas Vents	( )	( )							
8) Any Unusual Conditions Along Gas	( )	( )							
Venting Trench Alignments									
Leachate Collection System									
9) Any Visual Damage to Manholes and	( )	( )							
Wet Wells									
10) Any Damage to Clean-out Risers	( )	( )							
11) Any Unusual Conditions Along Leachate	( )	( )							
Collection Trench Alignments									
12) Any Apparent Problems with Leachate Collection and Pumping	( )	( )							

# WINTER SHUTDOWN SITE INSPECTION REPORT FORM (Con't)

General Site Conditions			
13) Any Silt Fence Down or Damaged	( )	( )	
14) Any Hay Bales Need Replacing	( )	( )	
15) Any Drainage Swales Blocked or	( )	( )	
Prevented From Flowing Properly		•	
16) Any Unusual Standing Water	( )	( )	
17) Access Roads Passable and in Suitable	( )	( )	
Condition	-		
18) Any Temporary Fencing Down or	( ) .	( )	
Damaged or Problems with Gate	•		
19) Any Problems with Stored Materials	( )	( )	
20) Any Problems with Field Offices/Trailers	( )	( )	, · · · · · · · · · · · · · · · · ·
21) Any Other Unusual Site Conditions	( )	( )	
Observed or Vandalism			
action, if any, that should be taken in the space provi sketch and/or photographs of the subject area.	uca below. If no	ceded, piease pro	vide a
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( ) Please check if additional information is attached

# WINTER SHUTDOWN SITE INSPECTION REPORT FORM (Con't)

Location/Photographs and Additional Information:

#### **Bart Klettke**

From:

"John Grathwol" <jcgrathw@gw.dec.state.ny.us> <bklettke@gza.com> Monday, May 21, 2001 10:12 AM McKenna Landfill (site Code 8-37-003)

To:

Sent:

Subject:

Based on the geotextile test results included in your May 17, 2001 letter, the Department concurs with your recommendation that coverage of the geotextile with barrier protection material/low permeability soil may proceed without remediation of the existing geotextile.

#### APPENDIX C

#### LANDFILL DESIGN SUMMARY

#### **LIMITS OF WASTE**

The limits of waste encountered by the design phase test pit explorations extended beyond the north line of the McKenna property onto the NYS Canal Corporation right-of-way. The remedial closure design was prepared based on the understanding that the waste materials which extended onto the NYS Canal Corporation property along the north side of the landfill would generally remain in-place and that portions of the remedial closure components would be allowed to be constructed on the NYS Canal Corporation property under modifications to WMNY's Consent Order Agreement.

The limits of waste encountered by the field explorations were within the general mound of the McKenna Landfill (i.e. waste was not encountered at the test pit locations beyond the toe of the existing fill slopes). The limits of the final cover system and the alignment of the perimeter leachate collection system drain piping and barrier wall system were established at or outside the limits of waste encountered.

#### **EXISTING SOIL RECOVERY**

Test pit explorations were made during the design phase to evaluate existing cover soil and topsoil for potential soil recovery and re-use. Existing topsoil thicknesses ranged between 0.1 and 0.8 feet. The underlying existing cover soil thicknesses (soil between the topsoil layer and existing waste materials) ranged between 1.0 and 3.9 feet at the test pit locations.

The intent of the existing soil recovery plan was to remove the existing topsoil and a portion of the existing cover soils for re-use as part of the remedial closure construction.

The acceptable topsoil, was re-used as topsoil material for the final cover system construction and/or for final site restoration outside the landfill cover system. The acceptable existing cover soil materials, were re-used as barrier protection layer material for the final cover system construction and/or as suitable fill for subgrade filling.

The Contractor was required to implement the procedures specified to evaluate the potential quantity of existing topsoil and cover soil available for recovery and re-use, determine their acceptability for re-use (i.e. through chemical characterization testing) and to control excavation and grading during the borrow soil recovery. If some or all of the existing topsoil and cover soil materials were determined to be unacceptable for re-use then the unacceptable materials would be left in place and properly prepared and graded as existing subgrade for construction of the gas venting system and final cover system. Alternatively, portions could be used as cover material over the area designated for excavation spoil disposal in the eastern end of the landfill.

#### SUBGRADE GRADING AND EXCAVATION SPOIL DISPOSAL

Portions of the existing north slope were as steep as 2H:1V. The remedial closure design included regrading (i.e. cutting and filling) of the north slope to flatten the steep portions to at least 3H:1V. The Contractor was required to grade the final subgrade surfaces over the landfill area as necessary to provide fir, all subgrade slopes which were not steeper than 3H:1V and no flatter than 5 percent.

Excavations required for the north slope regrading and for construction of the perimeter leachate collection and barrier wall system encountered waste. The east end of the landfill was relatively flat and provided sufficient space for disposal of excavation spoil material (waste and soils unsuitable for re-use) that was generated during closure construction. This area was re-graded as necessary to provide proper drainage with slopes no steeper than 3H:1V and no flatter than 5 percent.

Construction of the final cover system then proceeded on subgrade surfaces, which had been properly prepared by the Contractor and accepted by GZA.

#### DECOMMISSIONING OF EXISTING MONITORING WELLS

A total of eight (8) existing monitoring wells on or adjacent to the McKenna Landfill were decommissioned and removed as part of the remedial closure construction project. These wells were designated PL-3TR; OSL-14; B-5; B-8; B-15; McKenna No. 1; McKenna No. 2 and McKenna No. 3. A groundwater level piezometer, PL-6TR, damaged during closure construction, was also decommissioned and removed.

#### BARRIER/CUT-OFF WALL

A barrier or cut-off wall was installed around the entire perimeter of the landfill and generally follows an alignment at or adjacent to the centerline of the perimeter surface water drainage swales (outside the perimeter leachate collection system piping and structures). The barrier/cut-off wall was designed to extend to the top of bedrock. Bedrock was encountered by the design phase explorations at depths ranging from a few feet to about 13 feet below the existing perimeter grades. The barrier/cut-off wall provides a toe of slope connection for the final cover system to the top of bedrock.

The barrier/cut-off wall consists of a 3 foot wide soil-bentonite (slurry) wall on the north side and at the northeast and northwest corners of the landfill (approximately 1840 feet in length). A slurry wall was proposed along the north side of the site due to the deeper depths to bedrock (i.e. in the range of 10 to 13 feet), and considering the site constraints and slope-back required for a deeper excavation, groundwater conditions and the presence of the barge canal, which required protection against construction disturbance. A root barrier (i.e. vinyl sheet piling) was incorporated on the outside of the soil-bentonite barrier wall in the areas

where future plantings (by others) are proposed as part of the overall OSL/McKenna Landfill site development and screening plan.

A compacted low permeability soil (clay) barrier wall was installed along the east, south and west sides of the landfill where the depth to bedrock was generally less than about seven feet below existing grades. Both the soil-bentonite slurry wall and the compacted low permeability soil barrier wall were required to have permeability of 1x10<sup>-7</sup> cm/sec or less.

#### LEACHATE COLLECTION SYSTEM

The leachate collection system consists of a toe drain system (approximately 3900 feet in length) around the perimeter of the landfill flowing to wet wells located at the northeast and northwest corners of the landfill. The leachate collection pipe and appurtenances are located inside of the barrier/cut-off wall system.

Leachate collection flows along the south side of the landfill to the east and west from a high point located at manhole MH-6. The leachate collection piping then flows northerly along the east and west sides to the wet well locations. Leachate collection flows along the north side of the landfill to the east and west (to the wet well locations) from a high point located at manhole MH-1.

The leachate collection piping consists of perforated, 6 and 8 inch diameter, HDPE pipe. The manholes and wet wells are also constructed of HDPE. The wet wells are 8 feet in diameter and each have a 6 foot deep sump below the lowest incoming pipe.

A geosynthetic leachate collection drainage layer was constructed on the lower portion of the landfill slopes and connects to the leachate collection system at the bottom of slope. The leachate collection drainage layer is a geocomposite drainage layer (geogrid with geotextile bonded top and bottom).

The design required either removing or abandoning in-place the existing leachate collection manholes depending on location and the proposed construction grades.

#### **GAS VENTING SYSTEM**

A passive gas venting system was installed for the remedial closure. The gas venting system consists of 19 gas vents on the top portion of the landfill and 12 gas vent points along the perimeter leachate collection system. Gas vents have been provided on some of the leachate collection system cleanout risers and on each of the manhole/wet well structures for venting of the perimeter leachate collection drain system.

Three (3) existing gas vents located on top of the landfill were removed and abandoned prior to construction of the final cover system.

Gas collection trenches (totaling approximately 5340 linear feet) were excavated on the upper portion of the landfill. A cushion geotextile (Geotextile, Type II) was installed beneath the geomembrane barrier on the top portion of the landfill and serve as a limited gas venting layer. The cushion geotextile ties into the gas collection trenches. The leachate collection drainage layer (Geocomposite) on the lower slope areas serve as a primary gas venting layer. The leachate collection/gas venting layer was connected to the gas collection and venting trench located along the upper limit of the layer.

The following controls have been incorporated in the gas venting system to control gas migration from the landfill towards the canal area.

- 1. The access covers for the wet wells, at the northwest and northeast corners of the landfill were designed to be a bolted air-tight cover, similar to the manholes. Valves were placed on the wet well vents, which will be normally closed, except when the wet wells are to be pumped down.
- 2. Valves, which will be normally closed, were placed on the vents for manholes MH-1 and MH-2.
- 3. Valves were placed on the mid-slope gas vents (GV-1 through GV-5), which can be closed if an odor problem develops.

#### FINAL COVER SYSTEM

The final cover system on the upper portion of the landfill consists of the following components, from final grade down:

- 6 inches of topsoil and seeding,
- 24 inches of barrier protection material,
- A cushion geotextile (i.e. 12 oz./square yard)
- A 60 mil. textured, linear low density polyethylene geomembrane barrier layer, and
- A cushion geotextile, overlying \(\epsilon\) suitably prepared existing cover soil subgrade.

The final cover system on the lower portion of the landfill consists of the same components as above, with the following exceptions:

- the leachate collection gas venting layer (geocomposite) was placed between the geomembrane barrier and the suitably prepared subgrade for the portion of landfill below the weep drain; and
- 24 inches of low permeability spil was placed above the cushion geotextile in place of the barrier protection material.

The limits of the final cover system extend to the toe of the landfill slopes and tie in with the perimeter leachate collection and barrier wall system.

An 18-inch thick weep drain was constructed of crushed stone separating the low permeability soil barrier and the barrier protection material. The weep drain was constructed to allow drainage of surface water infiltration from the barrier protection layer.

#### SURFACE WATER DRAINAGE STRUCTURES

Surface water drainage consists of sheet flow from the landfill slopes to perimeter drainage swales, constructed along the toe of the slopes. The drainage swale along the south side of the landfill is located between the toe of the slope and the north edge of former Yager Road. Flow along the south drainage swale will be both to the west and east from a high point located near manhole MH-6. Drainage along the east and west side swales will be to the north connecting to the drainage swale which flows westerly along the south side of the canal. The existing drainage swale along the south side of the canal was reconstructed and re-graded adjacent to the north slope of the landfill. The drainage structures also included the installation of culvert pipes and the lining of some sections of the drainage swales with rip rap and erosion control material.

#### ACCESS ROADS

New access roads were constructed along the east and west sides of the landfill to the wet wells for leachate collection and off-site treatment/disposal. Access along the north side of the landfill is executed using the existing canal towpath road. Some subbase stone resurfacing of the canal towpath road has been done in conjunction with final site restoration. Access along the south side of the landfill will continue to be via former Yager Road. Access to the top of the landfill has been provided by a new access road off of the west access road. The existing access road on the east, north and west slopes of the landfill has been abandoned with the final cover construction, however, a bench remains, as part of the final cover system, in the location of the existing access road around the landfill. Access to the north side of the landfill will be via the existing canal towpath.

Three (3) gate structures were installed at the access points to the McKenna Landfill site from the canal towpath. The entrance gate structures are 4 feet high by 20 feet wide, double swing gate structure (two 10 feet wide gates).

#### APPENDIX D

#### MATERIALS AND LABORATORY TESTING

#### STONE PRODUCTS

#### 1. Gas Vent/Drainage Stone

The gas vent/drainage stone was produced at Barre Stone Products, located in Barre, New York. Barre Stone is an approved NYSDOT source (Source No. 4-18R). The stone was a washed crushed stone product, generally having a maximum particle size of 2 inches, and complies with NYSDOT Standard Specifications Section 304. The gas vent/drainage stone was required to have a minimum in-place permeability of 1x10<sup>-2</sup> cm/sec.

Two bulk samples (nos. 05310-1 and 05310-2) of stone were collected prior to construction. Grain size analyses were made to estimate the suitability of the stone for use in the gas venting system and leachate collection system. A permeability test was also done for sample no. 05310-1. The permeability test result for Sample No. 05310-1 was  $1.5 \times 10^{+1}$  cm/sec. This value is greater than the required minimum value of  $1\times10^{-2}$  cm/sec, thereby making the material suitable for use for the gas venting system and leachate collection system.

GZA also collected bulk samples of the gas venting and drainage stone at an approximate frequency of one sample per 1,000 cubic yards of stone placed. It is estimated that about 5,000 cubic yards of stone was required to construct the gas venting system and the leachate collection system. GZA collected a total of 5 bulk samples and tested each for gradation. Additionally, 3 samples were tested for permeability, which corresponds to a testing frequency of about one permeability test per 2330 cubic yards (cy). This is a greater frequency than required (1 test per 2,500 cy) in the approved quality assurance/quality control plan. The test results are summarized on Table D1. Testing met project requirements. Included also is laboratory test data from Barre Stone Products.

#### Table D1

## SUMMARY OF BULK SAMPLE LABORATORY TESTING BARRE STONE PRODUCTS DRAINAGE/GAS VENT STONE

# WASTE MANAGEMENT OF NEW YORK MCKENNA LANDFILL REMEDIAL CLOSURE PROJECT

		A	TTERBERG	LIMITS	GRAD	ATION	MODIFIED	PROCTOR	RECO	NSTITUTED PE	RMEABILITY	
SAMPLE NUMBER	NATURAL MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	% FINER THAN #200 SEIVE	% FINER THAN 2 MICRONS	MAXIMUM DRY DENSITY (PCF)	OPTIMUM MOISTURE CONTENT (%)	PERMEABILITY (CM/SEC)	CONFINING PRESSURE (PSF)	TEST DRY DENSITY (PCF)	TEST MOISTURE CONTENT (%)
05310-1					<1				1.5E+01		112.2	3.2
05310-2				,	<1							
05141-1					1				1.60E+01		113.3	5.2
05141-2					1				1.40E+01		114.5	0.7
12111-1					<1							

May 9, 2000

Mark Keeler 13519 West Lee Road Albion, New York 14411

Dear Mark Keeler,

ACCEPTABLE FOR DRAINAGE STONE & GAS VENTING STONE

#### **Material Gradation**

The following results are from a washed gradation on Item 703.02 (#2 Washed Stone) sampled by a representative of Barre Stone Products.

Sieve Size	Weight Retained	Percent Retained	Percent Passing	Specification
1.5"	0.0	0.0	100	100
1*	0.00	0.0	100	90-100
1/2"	7.78	86.1	13.9	0-15
1/4"	1.28	13.3	0.5	
No.200	0.05	0.4	0.1	0-1.0
Pan	0.01	0.1		
Total	T9.12.	100	`	

This material meets all requirements set forth in the specifications.

If you should need any other information, feel free to contact me at 589-1812. We will be happy to assist you in any capacity that we can.

Sincerely,

**Todd Krenzer** 

Quality Control Manger

Chalwhye

**Barre Stone Products** 

#### 2. Gas Vent Riser Stone

The gas vent riser stone used around the gas vent riser pipes was produced by Barre Stone Products. The material was an open-graded, washed No. 1A stone product meeting the requirements of the New York State Department of Transportation (NYSDOT) Standard Specifications, Section 703-02 coarse aggregate. Two gradation tests and one constant head permeability test was done during construction. The permeability test result was 2.6 cm/sec. This value is greater than the required minimum value of  $1x10^{-2}$  cm/sec, thereby making the material suitable for use as gas vent riser stone. The test results are summarized on Table D2. Included also is laboratory test data from Barre Stone Products.

# SUMMARY OF BULK SAMPLE LABORATORY TESTING BARRE STONE PRODUCTS GAS VENT RISER STONE

### WASTE MANAGEMENT OF NEW YORK MCKENNA LANDFILL REMEDIAL CLOSURE PROJECT

		ATTERBERG LIMITS			GRADATION		MODIFIED PROCTOR		RECONSTITUTED PERMEABILITY			
SAMPLE NUMBER	NATURAL MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	% FINER THAN #200 SEIVE	% FINER THAN 2 MICRONS	MAXIMUM DRY DENSITY (PCF)	OPTIMUM MOISTURE CONTENT (%)	PERMEABILITY (CM/SEC)	CONFINING PRESSURE (PSF)	TEST DRY DENSITY (PCF)	TEST MOISTURE CONTENT (%)
05310-3					1				2.6E+00		109.6	1.1
05310-4					1						_	

May 15, 2000

Mark Keeler 13519 West Lee Road Albion, New York 14411

ACCEPTABLE FOR FILTER STONE

Dear Mark Keeler,

#### **Material Gradation**

The following results are from a washed gradation on Item 703.02 (#1A Washed Stone) sampled by a representative of Barre Stone Products.

Sieve Size	Weight Retained	Percent Retained	Percent Passing	Specification
1/2""	0.0	0.0	100	100
1/4"	0.05	0.4	99.6	90-100
1/8"	11.85	92.9	6.6	0-15
No.200	0.82	6.4	0,3	0-1.0
Pan	0.02	0.3		
Total	12.75	10C		

This material meets all requirements set forth in the specifications.

If you should need any other information, feel free to contact me at 589-1812. We will be happy to assist you in any capacity that we can.

Sincerely,

Todd Krenzer

Quality Control Manger

**Barre Stone Products** 

#### 3. Subbase Stone

The subbase stone was used for the construction of the final site access roads and construction of the weep drain. The stone was a 2-inch quarried crusher run meeting the requirements of the NYSDOT, Standard Specifications, Type 4 Subbase Item 304.05. Two gradation tests and one moisture/density test was done during construction. The test results are summarized on Table D3. Included also is laboratory test data from Barre Stone Products.

#### Table D3

# SUMMARY OF BULK SAMPLE LABORATORY TESTING BARRE STONE PRODUCTS SUBBASE STONE

# WASTE MANAGEMENT OF NEW YORK MCKENNA LANDFILL REMEDIAL CLOSURE PROJECT

		ATTERBERG LIMITS		GRADATION		MODIFIED PROCTOR		RECONSTITUTED PERMEABILITY				
SAMPLE NUMBER	NATURAL MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	% FINER THAN #200 SEIVE	% FINER THAN 2 MICRONS	MAXIMUM DRY DENSITY (PCF)	OPTIMUM MOISTURE CONTENT (%)	PERMEABILITY (CM/SEC)	CONFINING PRESSURE (PSF)	TEST DRY DENSITY (PCF)	TEST MOISTURE CONTENT (%)
05300-1					5		130.3					
05300-2					3							



Construction Materials Evaluation

## LABORATORY TEST REPORT

**CLIENT:** 

Barre Stone

PAGE: l of 1 DATE:

01/28/00

PROJECT:

2000 Laboratory Testing

REPORT NO:

5954S-01-0100

On January 18, 2000 granular material was sampled by a representative of CME Associates, Inc. and delivered to our laboratory for testing as required.

Sample identification is as follows:

Sample No.: RL-4328

Location/Source:

Pit Stockpile/Barre Stone

## **MECHANICAL ANALYSIS (ASTM C-136 & C-117)**

	Percent Passing By Weight	<u> </u>	C. C. S. 334 S- 1-
Sieve Size	<del>-</del> -	ACCEPTABLE	FOR SUBBASE STONE
2"	100	•	
1 1/2"	98		
3/4"	77		
3/8"	60		
#4	42		
#10	26		
#40	13		
100	9	_	
# 200 (wash)	7.3	`	

### MATERIAL CLASSIFICATION

Classification:

Run-of-Crush Stone (2" minus)

## LABORATORY MOISTURE-DENSITY RELATIONSHIP (ASTM D-1557C & D-4718)

100% Maximum Dry Density Optimum Moisture Content 150.9 pcf

The Laboratory Moisture Density Curve is attached.

Feel free to contact this office should you have any questions.

Respectfully submitted,

<del>CME A</del>SSOCIATES, INC

Robert V. Knowles, P.E. Branch Manager

## 4. Bedding Stone

Bedding stone was used for bedding around drainage culvert pipes and beneath the catch basin and manhole structures. The stone was a 1-inch quarried crusher run meeting the requirements of the NYSDOT, \$\\$\text{standard Specifications}\$, Section 304. Three gradation tests and one moisture/density test was done during construction. The test results are summarized on Table D4. Included also is laboratory test data from Barre Stone Products.

#### LOW PERMEABILITY SOIL

Low permeability soil (LPS) fill for the final cover system construction was obtained from the Walck Brothers borrow pit located in Lockport, New York. The LPS was required to have an in-place permeability less than or equal to  $1x10^{-7}$  centimeters per second (cm/sec). The LPS was also required to have a minimum effective internal angle of friction of 27 degrees.

Approximately 16,500 cubic yards of Walck Brothers borrow was used for LPS barrier construction. Pre-construction and construction testing consisted of natural moisture content, grain size analysis, Atterberg limits, moisture-density relationship, remolded permeability, chemical characterization testing and determination of effective internal angle of friction. Test frequencies are summarized below.

#### WALCK BROTHERS LPS GEOTECHNICAL LAB TESTING SUMMARY

<b>Test Designation</b>	Required	Number of	Estimated	Estimated Test
	Frequency	Tests Done	Quantity of	Frequency
			Fill Placed	
Atterberg Limits	Ea. 1,000 Cubic	18	16,500 Cubic	Ea. 900 Cubic
(ASTM D4318)	Yards		Yards	Yards Placed
Grain Size	Ea. 2,500 Cubic	9	16,500 Cubic	Ea. 1,800 Cubic
Analysis	Yards		Yards	Yards Placed
(ASTM D422)				
Moisture Density	Ea. 5,000 Cubic	5	16,500 Cubic	Ea. 3,300 Cubic
Relationship,	Yards		Yards	Yards Placed
Modified Proctor				
(ASTM D1557)				
Remolded	Ea. 5,000 Cubic	5	16,500 Cubic	Ea. 3,300 Cubic
Permeability	Yards		Yards	Yards Placed
(ASTM D5084)				
Angle of Internal	1 per Borrow	1	16,500 Cubic	1 per Borrow
Friction	Source		Yards	Source

#### Geotechnical Testing Summary

A test pad was constructed using Walck Brothers borrow. GZA monitored the test pad construction and submitted a report to NYSDEC<sup>1</sup>. Based on the test results summarized in that report, GZA considered the Walck Brothers borrow source acceptable for LPS.

<sup>&</sup>lt;sup>1</sup> "Test Pad Construction Summary, Walck Bros. Borrow Site, Lockport, New York" prepared for Waste Management of New York, LLC; by GZA GeoEnvironmental of New York; dated August 22, 2000.

Pre-construction and construction-phase geotechnical testing results are summarized on Table D5.

Also included herein is pre-construction lab testing provided by CSC, including results of triaxial compressive strength testing for the clay. The strength test and accompanying calculation show that the clay has an effective internal angle of friction exceeding 27 degrees when the soil cohesion value from the lab test is considered. The results of the geotechnical testing for the Walck Brothers clay, therefore, indicate the clay was acceptable for use as low permeability soil.

#### Chemical Testing Summary

Pre-construction chemical characterization testing was done for the Walck Bros. source. Chemical characterization testing was required for every 5,000 cubic yards of soil used. Four samples were tested for a jest frequency of about 1 test per 4,100 cubic yards. The samples were tested for the following parameters.

Parameter	Extraction/Preparation (1)	Analysis (1)
TCL <sup>(2)</sup> Volatile Organic	5050	8260 (95-1)
Compounds	•	
TCL Semi-Volatile Organic	3540/3550	8270 (95-2)
Compounds		
Pesticides/PCB's	3540/3550	8080
Herbicides	3580	8150
TAL <sup>(3)</sup> Metals	3050	95-M
Cyanide		9012

<sup>&</sup>lt;sup>1</sup> EPA SW-846.

GZA reviewed the laboratory itest results submitted by CSC's analytical laboratory, Upstate Laboratories, Inc., (Upstate) and tabulated the compounds detected for each sample. A table of the compounds detected for each material type is included herein as Table D6, along with the laboratory data. GZA compared the reported chemical concentrations versus recommended soil cleanup objective values and eastern United States background values shown in the tables.

The data shows elevated value; for methylene chloride, acetone and antimony. GZA discussed thesed values with Upstate. Upstate stated that the values for the methylene chloride and acetone were probably attributable to laboratory contamination, since these compounds are common laboratory solvents. Upstate also stated that the apparent elevated

<sup>&</sup>lt;sup>2</sup> TCL – Target Compound List.

<sup>&</sup>lt;sup>3</sup> TAL – Target Analyte List.

values for antimony may be caused by matrix interference with other common elements, such as aluminum.

Based on GZA's review and consultation with Upstate, the chemical characterization test results for this material was acceptable. Therefore, the Walck Bros. borrow material was considered acceptable for low permeability soil construction.

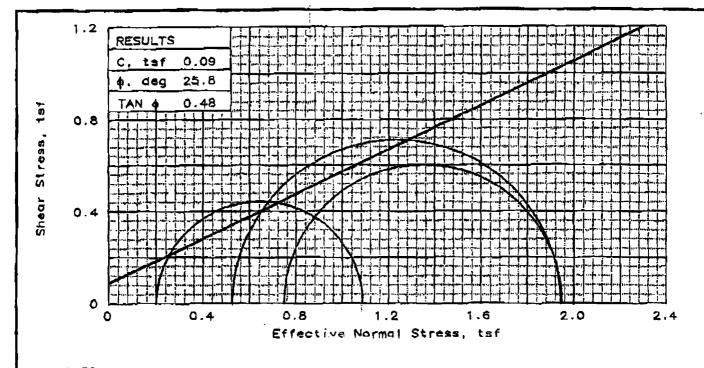
Table D5

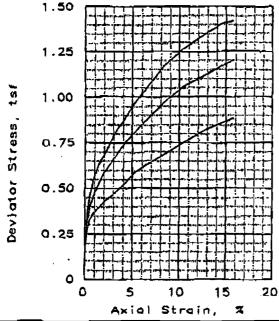
## SUMMARY OF BULK SAMPLE LABORATORY TESTING WALCK CLAY PIT LOW PERMEABILITY BARRIER SOIL

#### WASTE MANAGEMENT OF NEW YORK

#### MCKENNA LANDFILL REMEDIAL CLOSURE PROJECT

		A	TTERBERG I	IMITS	GRAD	ATION	MODIFIED	PROCTOR	RECO	NSTITUTED PER	RMEABILITY	
SAMPLE NUMBER	NATURAL MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	% FINER THAN #200 SEIVE	% FINER THAN 2 MICRONS	MAXIMUM DRY DENSITY (PCF)	OPTIMUM MOISTURE CONTENT (%)	PERMEABILITY (CM/SEC)	CONFINING PRESSURE (PSF)	TEST DRY DENSITY (PCF)	TEST MOISTURE CONTENT (%)
06270-1	26.7	59	19	40	99	74	110.5	18.5	1.7E-08	720	99.3	20.3
06270-2	25.5	60	19	41								
06270-3	25.5	58	18	40	90	66						
06270-4	27.6	60	20	40								
06270-5	25.4	57	17	40	100	72	111.0	18.5	2.1E-08	720	99.3	18.2
.06270-6	26.4	AA	19	41		] .						}
06270-7	26.3	59	19	40								
06270-8	26.3	63	19	44	100	71						
06270-9	24.3	57	18	39		_						
06270-10	27 4	62	10	43	ōō	77 .	110.5	18.5	1.5E 08 ·	720	- 00.7	19.6
08210-1	21.6	54	16	38	94		114.0	17.0	2.1E-08	720	102.2	16.9
08210-2	36.5	64	19	45	97							
08300-1	32.3	50	16	34	97		116.0	13.5	4.4E-08	720	104.1	15.3
08300-2	32.3	48	16	32	97						1	
05071-1	23.1	46	16	30								
05071-2	29.5	53	15	38								
05071-3	23.3	40	16	24					_			
05071-4	35.5	39	13	26								





TYPE OF TEST:

CU with Pare Pressures
SAMPLE TYPE: Recompacted

DESCRIPTION: Elastic Silt - MH

LL= 54 PL= 24 PI= 30

SPECIFIC GRAVITY= 2.65

REMARKS: 90% Proctor @ 2% Over

	SAMPLE NO. :	1	2	3
•	WATER CONTENT, Z DRY DENSITY, pef SATURATION, Z VOID RATIO DIAMETER, in HEIGHT, in	95.1 81.6 0.721 2.80	22.2 96.4 82.1 0.717 2.80 5.60	96.5 82.3 0.715 2.80
	WATER CONTENT. % ORY DENSITY. pef SATURATION, % VOID RATIO DIAMETER, in HEIGHT, in	96.1 114.3 0.721 2.80	30.1 96.4 111.1 0.717 2.80 5.60	96.5 108.5 0.715 2.80
)	Strain rate, %/min EFF CELL PRESSURE, taf FAIL. STRESS. tsf TOTAL PORE PR., tsf STRAIN, % ULT, STRESS, tsf TOTAL PORE PR., tsf STRAIN, %	0.10 0.72 0.89	0.10 1.05 1.20 3,93	0.10 1.44 1.42 4.51
	Ö1 FAILURE, tsf Ö3 FAILURE. tsf	1.Q9 0.20	1.95 0.75	

CLIENT: Ciminelli

PROJECT: McKenna Landfill

SAMPLE LOCATION: Wolck Brothers Clay

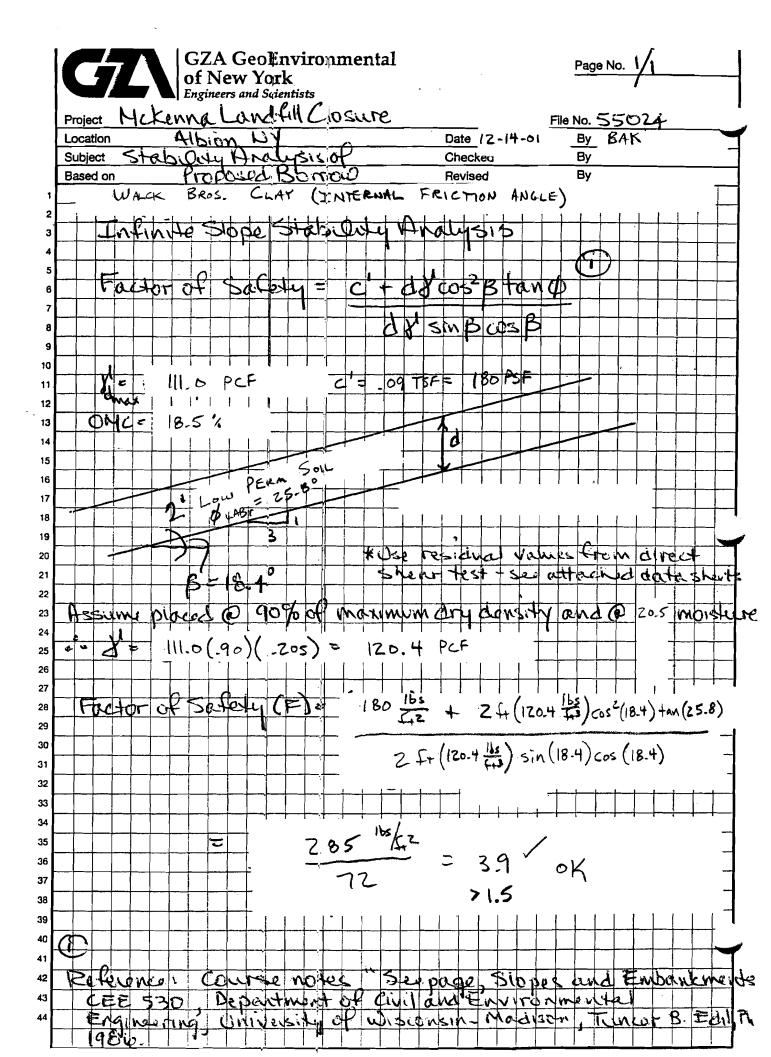
PROJ. NO.: 00-1024

DATE: 8-25-00

TRIAXIAL SHEAR TEST REPORT

CLYNN GEOTECHNICAL ENGINEERING

Tested By:





# TRIAXIAL PERMEABILITY ASTM D - 5084

PROJECT: McKENNA LANDFILL	DATE REPORTED:	AUGUST 10, 2000	
LOCATION: ALBION, NEW YORK	PROJECT NO.:	00 - 1027	
CLIENT: CIMINELLI	SAMPLE NO.:	00 - 09	
DATE RECEIVED: MAY 31, 2000	DEPTH:	NOT PROVIDED	
SAMPLE DESCRIPTION: LOW PERMEABILITY SOIL	MATERIAL - WALCK BRO	THERS	
SAMPLE CLASSIFICATION: ELASTIC SILT - MH			

INITIAL I	DATA	
Initial Height	7.6	cm
Initial Diameter	7.1	cm
Moisture Content	22.2	-%
Wet Density	117.6	pcf
% Proctor	89.9	%

FINAL DA	TA	
Final Height	7.7	cm
Final Diameter	7.1	cm
Moisture Content	32.5	%
Wet Density	126.3	pcf
Minimum Saturation	98	%

TEST DATA	A	
Confining Pressure	53	psi
Head Water Pressure	48	psi
Tail Water Pressure	45	psi
Average Gradient, I	30	

NOTES	
MATERIAL COMPACTED TO DESIRED DENSITY VIA MANUAL COMPACTION METHODS.	_
DEAIRED WATER WAS UTILIZED AS THE PERMEANT LIQUID.	

RESULTS				
AVERAGE PERMEABILITY, K =	1.5 x 10 <sup>-7</sup>	(cm/sec) at 20° c		

REPORTED BY:

DOCFILE:TELAXRPT

ALAN R. HOPKINS

REVIEWED BY:

A.R.H. / MARK W. GLYNN, P.E.

## GLYNN GEOTECHNICAL ENGINEERING



# CK BROS. AG.SERVICE II

Agricultural Limit Products

1080 HINMAN ROAD P. O. BOX 512 - SANBORN, NEW YORK 14132

## REPORT OF MATERIALS TESTING

Material:

A sample of Clay Material was delivered to on July 24, 1996 from

Bowen Road, Lockport, New York. The proposed material was tested in accordance with the proper ASTM requirements. The sample was classified after testing as Clay, some silt, trace

sand, trace gravel (CL).

Water (Moisture) Content of Soils and Rock - ASTM D 2216

Water Content (As received) - 24.1 %

## Particle Size Analysis of Soils - ASTM D 422

Sieve Size		Percent Passing
1.5"		100
1.0*		99.7
.75"		99.6
.5"		99.6
.375"		99.4
.25"		99.2
# <del>4</del>		99.1
#10		99.0
#20		98.6
#40		98.0
#100		96.5
#200	•	95.1
Description of Material:		
Clay		
Silt		66.7 %
_	•	28.3 1/4
Sand		4.1 %
Gravei		0.9 %

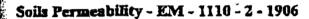
## Modified Proctor - ASTM D 1557

Maximum Dry Density

114.9 PCF.

Optimum Moisture Content

15.2 %



Average Hydraulic Conductivity

 $3.6 \times 10^{-4}$  cm/sec.

## Liquid Limit, Plastic Limit, and Plusticity Index of Soils - ASTM D 4318

Liquid Limit

35

Plastic Limit

17

Plasticity Index

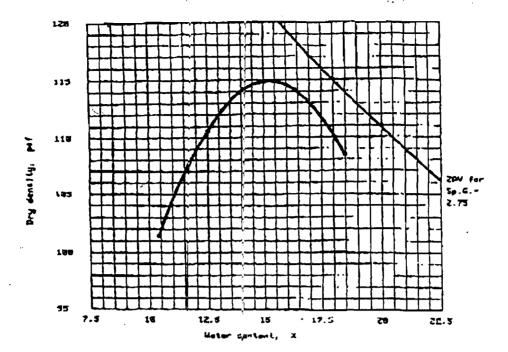
18

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

Respectfully Submitted,

James T. Handzlik

Civil Manager



Method of Test:

Modified Proctor ASTM 1557

Procedure Used: Optimum Water Content: 15.2%

Method "A"

Maximum Dry Density:

Rammer used:

114.9 pcf.

#### Chemical Characterization Test Results for Walck Clay

#### McKenna Landfill Remedial Closure Project Albion, New York

Parameter	Recommended Soil Cleanup Objective	Eastern USA Background	Walck Clay (pre-construction)	Walck Clay - 5000	Walck Clay - 10,000	Walck Clay - 15,000
	· 1		05/30/2000	08/16/2000	08/30/2000	09/13/2000
*	ppm	ppm	ppm	ppm	ppm	ppm
VOC - EPA Metho	od 8260 (mg/kg)			1.7		
Methylene Chloride	0.1	N/A	0.012	0.025	0.025	0.020
Acetone	0.2	N/A	0.024	0.035	ND	ND
2-Butanone	0.3	N/A	N/D	ND	ND	ND
SVOC - EPA Meth	od 8270 (mg/kg)					
No Comp	ounds Detected	N/A	N/D	NA	NA I	NA NA
HERBICIDES - EI	A Method 8150 (mg/kg	)				
25 Charles C. 12 Charles Charles C. 12 Charles Cha	ounds Detected	N/A	N/D	NA	NA NA	NA
	oclors EPA Method 808	(mø/kg)				
Carlotter Commence and Friends and	ounds Detected	N/A	N/D	NA NA	NA NA	NA
	Metals (mg/kg)					
Aluminum	SB	33,000	21000	23,000	23,000	25,000
Antimony	SB	N/A	48	55	46	56
Arsenic	7.5 or SB	3-12	2.5	6.9	5	
Barium	300 or SB	15-600	190	140	170	220
Beryllium	0.16 or SB	0-1.75	1.1	1.6	1.5	1.8
Cadmium	1 or SB	0.1-1	4.3	8.4	6.8	8
Calcium	SB	130-35,000	58,000	68,000	73,000	70,000
Chromium	10 or SB	1.5-40	31	45	43	45
Cobalt	30 or SB	2.5-60	83	86	70	82
Соррег	25 or SB	1-50	26	30	20	27
Iron	2000 or SB	2000-550,000	26,000	31,000	25,000	32,000
Lead	SB	See Note 5	N/D	ND	ND	ND
Magnesium	SB	100-5000	12,000	15,000	15,000	15,000
Manganese	SB	50-5000	400	550	510	490
Mercury	0.1	0.001-0.2	N/D	0.22	0.19	0.22
Nickel	13 or SB	0.5-25	43	60	54	61
Potassium	SB	8500-43,000	3900	4300	4000	4900
Selenium	2 or SB	0.1-3.9	N/D	ND	ND	ND
Silver	SB	N/A	N/D	8.6	7.8	7.9
Sodium	SB	6000-8000	340	630	540	530
Thallium	SB	N/A	0.65	ND	ND	ND
Vanadium	150 or SB	1-300	36	57	51	54
Zinc	20 or SB	9-50	64	83	81	77

#### Notes:

Only compounds detected in one or more samples are presented on this table. Refer to original data sheets for list of all compounds included in analysis.

<sup>2.</sup> Analytical testing completed by Upstate Laboratories, Inc.

<sup>3.</sup> Recommended soil cleanup objectives are based on the Division Technical and Administrative Guidance Memorandum

<sup>(</sup>TAGM) 4046 on Determination of Soil Cleanup Objectives and Cleanup Levels in its final form.

<sup>4.</sup> ND = not detected, N/A = not available, NA = not applicable

Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4-61 ppm. Average background levels in metropolitan or suburban areas or near highways are much higher and typically range from 200-500 ppm.

<sup>6.</sup> mg/kg = parts per million (ppm)

Upstate Laboratories, Inc. Analysis Results

Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ - - -

QC: 67 \_ Lab I.D.: 10170

Sampled by: Client

ID: 15200020 Mat: Solid	29-00-0002 MCKENNA	LANDFILL WALCH CLAY	1430H 05/30/00 G

\_\_\_\_\_\_

PAI	RAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
~ -	Percent Solids	93%	06/01/00		WD0453
	Total Cyanide	<1.1mg/kg dw	06/13/00		WD0468
Total	Aluminum	21000mg/kg dw	06/09/00		MB2436
Total	Antimony	48mg/kg dw	06/09/00		MB2436
Total	Arsenic by furnace method	2.5mg/kg dw	06/09/00		MB2438
Total	Barium	190mg/kg dw	06/09/00		MB2436
Total	Beryllium	1.1mg/kg dw	06/09/00		MB2436
Total	Cadmium	4.3mg/kg dw	06/09/00		MB2436
Total	Calcium	58000mg/kg dw	06/09/00		MB2436
Total	Chromium	31mg/kg dw	06/09/00		MB2436
Total	Cobalt	83mg/kg dw	06/09/00		MB24? "
Total	Copper	26mg/kg dw	06/09/00		MB24
Total	Iron	26000mg/kg dw	06/09/00		MB2436
Total	Lead	<11mg/kg dw	06/09/00		MB2436
Total	Magnesium	12000mg/kg dw	06/09/00		MB2436
Total	Manganese	400mg/kg dw	06/09/00		MB2436
Total	Mercury	<0.3mg/kg dw	06/06/00		MB2420
Total	Nickel	43mg/kg dw	06/09/00		MB2436
Total	Potassium	3900mg/kg dw	06/12/00		MB2443
Total	Selenium by furnace method	<0.2mg/kg dw	06/09/00		MB2439
Total	Silver	<5.3mg/kg dw	06/09/00		MB2436
Total	Sodium	340mg/kg dw	06/12/00		MB2443
Total	Thallium by furnace method	0.65mg/kg dw	06/14/00		ME2870
Total	Vanadium	36mg/kg dw	06/09/00		MB2436
Total	Zinc	64mg/kg dw	06/09/00		MB2436
	TCL Volatiles by EPA Method 8260				
	Chloromethane	<3ug/kg dw	06/06/00		VM2909
	Bromomethane	<3ug/kg dw	06/06/00		VM2909
	Vinyl Chloride	<2ug/kg dw	06/06/00		VM2909
	Chloroethane	<3ug/kg dw	06/06/00		VM2909
	Methylene Chloride	12ug/kg dw	06/06/00	44	VM2909
	Acetone	24ug/kg dw	06/06/00	44	VM2909
	Carbon Disulfide	<3ug/kg dw	06/06/00		VM2909
	1,1-Dichloroethene	<3ug/kg dw	06/06/00		VM2909

Unatate Laboratories, Inc.

ysis Results

Right Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_\_\_\_ QC: - \( \bar{\gamma} = \bar{\text{Lab}} \) \( \bar{\text{I.D.}} : 10170 \)

Sampled by: Client

ID:15200020 Mat:Solid 29-00-0002 MCKENNA LANDFILL WALCH CLAY 1430H 05/30/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
1,1-Dichloroethane	<3ug/kg dw	06/06/00		VM2909
trans-1,2-Dichlorcethene	<3ug/kg dw	06/06/00		VM2909
cis-1,2-Dichloroethene	<3ug/kg dw	06/06/00		VM2909
Chloroform	<3ug/kg dw	06/06/00		VM2909
1,2-Dichlorosthane	<3ug/kg dw	06/06/00		VM2909
2-Butanone	<11ug/kg dw	06/06/00		VM2909
1,1,1-Trichloroethane	<3ug/kg dw	06/06/00		VM2909
Carbon Tetrachloride	<3ug/kg dw	06/06/00		VM2909
Bromodichloromethane	<3ug/kg dw	06/06/00		VM2909
1,2-Dichloropropane	<3ug/kg dw	06/06/00		VM2909
cis-1,3-Dichloropropene	<3ug/kg dw	06/06/00		VM2909
Trichloroethena	<3ug/kg dw	06/06/00		VM2909
Dibromochloromethane	<3ug/kg dw	06/06/00		VM2909
1,1,2-Trichloroethane	<3ug/kg dw	06/06/00		VM2909
Benzene	<3ug/kg dw	06/06/00		VM2909
trans-1,3-Dichloropropene	<3ug/kg dw	06/06/00		VM2909
Bromoform	<3ug/kg dw	06/06/00		VM2909
4-Methyl-2-pentanone	<l1ug dw<="" kg="" td=""><td>06/06/00</td><td></td><td>VM2909</td></l1ug>	06/06/00		VM2909
2-Hexanone	<11ug/kg dw	06/06/00		VM2909
Tetrachloroethene	<3ug/kg dw	06/06/00		VM2909
1,1,2,2-Tetrachloroethane	<3ug/kg dw	06/06/00		VM2909
Toluene	<3ug/kg dw	06/06/00		VM2909
Chlorobenzene	<3ug/kg dw	06/06/00		VM2909
Ethylbenzene	<3ug/kg dw	06/06/00		VM2909
Styrene	<3ug/kg dw	06/06/00		VM2909
m-Xylene and p-Xylene	<3ug/kg dw	06/06/00		VM2909
o-Xylene	<3ug/kg dw	06/06/00		VM2909
TCL Semivolatiles by EPA Method 8270				
Phenol	<360ug/kg dw	06/07/00		SA2432
bis(2-Chloroethyl)ether	<360ug/kg <b>dw</b>	06/07/00		SA2432
2-Chlorophenol	<360ug/kg dw	06/07/00		SA2432
1,3-Dichlorobenzene	<360ug/kg dw	06/07/00		SA2432
1,4-Dichlorobenzene	<360ug/kg dw	06/07/00		SA2432
1,2-Dichlorobenzene	<360ug/kg dw	06/07/00		SA2432
2-Methylphenol	<360ug/kg dw	06/07/00		SA2432
<pre>2,2'-Oxybis(1-Chloropropane)</pre>	<360ug/kg dw	06/07/00		SA2432
4-Methylphenol	<360ug/kg dw	06/07/00		SA2432
n-Nitrosodi-n-propylamine	<360ug/kg dw	06/07/00		SA2432
Hexachloroethane	<360ug/kg dw	06/07/00		5A2432
Nitrobenzene	<360ug/kg dw	06/07/00		SA2432
Isophorone	<360ug/kg dw	06/07/00		SA2432 S
2-Nitrophenol	<360ug/kg dw	06/07/00		SA2432
2,4-Dimethylphenol	<360ug/kg dw	06/07/00		SA2432

Upstate Laboratories, Inc.

Analysis Results

Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL: \_ ~ - -

Sampled by: Client

ID:15200020 Mat:Solid 29-00-0002 MCKENNA LANDFILL WALCH CLAY 1430H 05/30/00 G

UON 17 2000 NEW O. OE ... O. D. ... 2000 NEW DESCRIPTION OF THE PROPERTY OF TH

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
bis (2-Chloroethoxy) methane	<360ug/kg dw	06/07/00		SA2432
2,4-Dichlorophenol	<360ug/kg dw	06/07/00		SA2432
1.2.4-Trichlorobenzene	<360ug/kg dw	06/07/00		SA2432
Naphthalene	<360ug/kg dw	06/07/00		SA2432
4-Chloroaniline	<360ug/kg dw	06/07/00		SA2432
Hexachlorobutadiene	<360ug/kg dw	06/07/00		SA2432
4-Chloro-3-methylphenol	<360ug/kg dw	06/07/00		SA2432
2-Methylnaphthalene	<360ug/kg dw	06/07/00		SA2432
Hexachlorocyclopentadiene	<360ug/kg dw	06/07/00		SA2432
2,4,6-Trichlorophenol	<360ug/kg dw	06/07/00		SA2432
2,4,5-Trichlorophenol	<360ug/kg dw	06/07/00		SA2432
2-Chloronaphthalene	<360ug/kg dw	06/07/00		SA2432
2-Nitroaniline	<3600ug/kg dw	06/07/00		SA2432
Dimethylphthalate	<360ug/kg dw	06/07/00		SA2432
Acenaphthylene	<360ug/kg dw	06/07/00		SA2432
2,6-Dinitrotoluene	<360ug/kg dw	06/07/00		SA2432
3-Nitroaniline	<3600ug/kg dw	06/07/00		SA2432
Acenaphthene	<360ug/kg dw	06/07/00		SA2432
2,4-Dinitrophenol	<3600ug/kg dw	06/07/00		SA2432
4-Nitrophenol	<3600ug/kg dw	06/07/00		SA243
Dibenzofuran	<360ug/kg dw	06/07/00		SA241
2.4-Dinitrotoluene	<360ug/kg dw	06/07/00		SA2432
Diethylphthalate	<360ug/kg dw	06/07/00		SA2432
4-Chlorophenylphenylether	<360ug/kg dw	06/07/00		SA2432
Fluorene	<360ug/kg dw	06/07/00		SA2432
4-Nitroaniline	<3600ug/kg dw	06/07/00		SA2432
2-Methyl-4,6-dinitrophenol	<3600ug/kg dw	06/07/00		SA2432
n-Nitrosodiphenylamine	<360ug/kg dw	06/07/00		SA2432
4-Bromophenylphenylether	<360ug/kg dw	06/07/00		SA2432
Hexachlorobenzene	<360ug/kg dw	06/07/00		SA2432
Pentachlorophenol	<720ug/kg dw	06/07/00		SA2432
Phenanthrene	<360ug/kg dw	06/07/00		SA2432
Anthracene	<360ug/kg <b>dw</b>	06/07/00		SA2432
Carbazole	<360ug/kg dw	06/07/00		SA2432
di-n-butylphthalate	<360ug/kg dw	06/07/00		SA2432
Fluoranthene	<360ug/kg dw	06/07/00		SA2432
Pyrene	<360ug/kg dw	06/07/00		5A2432
Butylbenzylphthalate	<360ug/kg dw	06/07/00		SA2432
3,3'-Dichlorobenzidine	<360ug/kg dw	06/07/00		SA2432
Benzo(a) anthracene	<360ug/kg dw	06/07/00		SA2432
Chrysene	<360ug/kg dw	06/07/00		SA2432
bis(2-Ethylhexyl)phthalate	<360ug/kg dw	06/07/00		SA2432
di-n-octylphthalate	<360ug/kg dw	06/07/00		SA2432
Benzo (b) fluoranthene	<360ug/kg dw	06/07/00		SA2432

U- tate Laboratories, Inc.
Lysis Results
Report Number: 14000079
Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_\_\_\_

QC: () \_ \_ Lab I.D.: 10170

Sampled by: Client

ID:15200020 Mat:Solid 29-00-0002 MCKENNA LANDFILL WALCH CLAY 1430H 05/30/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Benzo(k) fluoranthene	<360ug/kg dw	06/07/00		SA2432
Benzo(a)pyrene	<360ug/kg dw	06/07/00		SA2432
Indeno(1,2,3-cd)pyrene	<360ug/kg dw	06/07/00		SA243
Dibenzo (a, h) anthracene	<360ug/kg dw	06/07/00		SA243
Benzo(ghi)perylene	<360ug/kg dw	06/07/00		SA243
EPA Method 8150				
2,4-D	<3.5ug/kg dw	06/13/00		GA013
2,4,5-T	<3.5ug/kg dw	06/13/00		GA013
2,4,5-TP (Silvex)	<3.5ug/kg dw	06/13/00		GA013
Dinoseb	<3.5ug/kg dw	06/13/00		GA013
TCL Pesticides/Aroclors by EPA 8	080			
	<1.8ug/kg dw	06/12/00		67.0
BHC (a-isomer)	<1.8ug/kg dw	06/13/00		GA012
BHC (b-isomer)	<1.8ug/kg dw	06/13/00		GA012
BHC (d-isomer)		06/13/00		GA012
BHC (g-isomer)	<1.8ug/kg dw	06/13/00		GA012
Heptachlor	<1.8ug/kg dw	06/13/00		GA012
Aldrin	<1.8ug/kg dw	06/13/00		GA0129
Heptachlor Epoxide	<1.8ug/kg dw	06/13/00		GA012
Endosulfan I	<1.8ug/kg dw	06/13/00		GA012
Dieldrin	<3.5ug/kg dw	06/13/00		GA012
4,4'-DDE	<3.5ug/kg dw	06/13/00		GA012
Endrin	<3.5ug/kg dw	06/13/00		GA0129
Endosulfan II	<3.5ug/kg dw	06/13/00		GA012
4,4'-DDD	<3.5ug/kg dw	06/13/00		GA0129
Endosulfan Sulfate	<3.5ug/kg dw	06/13/00		GA012
4,4'-DDT	<3.5ug/kg dw	06/13/00		GA012
Methoxychlor	<18ug/kg dw	06/13/00		GA012
Endrin Ketone	<3.5ug/kg dw	06/13/00		GA0129
Endrin Aldehyde	<3.5ug/kg dw	06/13/00		GA012
alpha-Chlordane	<1.8ug/kg dw	06/13/00		GA012
gamma-Chlordane	<1.8ug/kg dw	06/13/00		GA0129
Toxaphene	<183ug/kg dw	06/13/00		GA012
Aroclor 1016	<1.8ug/kg dw	06/13/00		GA0129
Aroclor 1221	<1.8ug/kg dw	06/13/00		GAD129
Aroclor 1232	<1.8ug/kg dw	06/13/00		GA0129
Aroclor 1242	<1.8ug/kg dw	06/13/00		GA0129
Aroclor 1248	<1.8ug/kg dw '	06/13/00		GA0129
Aroclor 1254	<1.8ug/kg dw	06/13/00		GA0129
Aroclor 1260	<1.9ug/kg dw	06/13/00		GA0129

## Upstate Laboratories inc.

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Buffalo (716) 649-2533 Rochester (716) 436-9070 New Jersey (201) 703-1324

FACSIMILE TRANSMITTAL

TO:

Tom Andrews/John Lang

Ciminelli Services Corp.

FAX NO:

716-447-7005

RE:

McKenna Landfill Analytical Results

FROM:

Phil Shaw

DATE:

October 20, 2000

TIME:

9:30 AM

TIME: 9:30 AM

NUMBER OF PAGES (including this sheet): 13

#### MESSAGE:

Included are results for the Mckenna Landfill, sampled 8/16/00-9-13/00.

If you have any questions concerning this matter, please give me a call at 315-437-0255.

Thank You, Phil Shaw

PA Lab ID 68375

Upstate Laboratories, Inc. Analysis Results

ort Number: 26200206

ent I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ \_ \_ \_ QC: (1) - Lab I.D.: 10170 Sampled by: Client

ID:26200206 Mat:Soil 29-00-0002 MCKENNA LANDFILL LOW PERM CLAY 5000 0800H 08/16/00 G

	RAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
~-	Percent Solids	80%	09/20/00		WD1834
Total	Aluminum	23000mg/kg dw	10/02/00		MB2870
Total	Antimony	55mg/kg dw	10/02/00		MB2870
Total	Arsenic by furnace method	6.9mg/kg dw	10/16/00		MB2916
Total	Barium	140mg/kg dw	10/02/00		MB2870
Total	Beryllium	1.6mg/kg dw	10/02/00		MB2870
Total	Cadmium	8.4mg/kg dw	10/02/00		MDB2870
Total	Calcium	68000mg/kg dw	10/02/00		MB2870
Total	Chromium	45mg/kg dw	10/02/00		MB2870
Total	Cobalt	86mg/kg dw	10/16/09		MB2933
Total	Copper	30mg/kg dw	10/02/00		MB2870
rotal	Iron	31000mg/kg dw	10/02/00		MB2870
rotal	Lead	<11mg/kg dw	10/02/00		MB2870
Cotal	Magnesium	15000mg/kg dw	10/02/00		MB2870
otal	Manganese	550mg/kg dw	10/02/00		MB2870
Cotal	Mercury	0.22mg/kg	09/28/00		MB2866
Cotal	Nickel	60mg/kg dw	10/02/00		MB2870
Cotal	Potassium	4300mg/kg dw	10/04/00		MB2878
otal	Selenium by furnace method	<0.2mg/kg dw	10/12/00		MB2910
otal	Silver	8.6mg/kg dw	10/02/00		MB2870
otal	Sodium	630mg/kg dw	10/04/00		MCB2878
otal	Thallium by furnace method	<0.4mg/kg dw	10/04/00		ME3190
otal	Vanadium	57mg/kg dw	10/02/00		MB2870
otal	Zínc	83mg/kg dw	10/02/00		MB2870
	TCL Volatiles by EPA Method 8260				
	Chloromethane	<4ug/kg dw	09/25/00		VM3056
	Bromomethane	<4ug/kg dw	09/25/00		VM3056
	Vinyl Chloride	<3uq/kg dw	09/25/00		VM3056
	Chloroethane	<4ug/kg dw	09/25/00		VM3056
	Methylene Chloride	25ug/kg dw	09/25/00	44	VM3056
	Acetone	35ug/kg dw	09/25/00	44	VM3056
	Carbon Disulfide	<4ug/kg dw	09/25/00		VM3056
	1,1-Dichloroethene	<4ug/kg dw	09/25/00		VM3056
	1,1-Dichloroethane	<4ug/kg dw	09/25/00		VM3056
	trans-1,2-Dichloroethene	<4ug/kg dw	09/25/00		VM3056
	cis-1,2-Dichloroethene	<4ug/kg dw	09/25/00		VM3056
	Chloroform	<4ug/kg dw	09/25/00		VM3056
	1,2-Dichloroethane	<4ug/kg dw	09/25/00		VM3056
		<del>-</del>	09/25/00		VM3056
	2-Butanone	<13ug/kg dw	02/22/40		
		<13ug/kg dw <4ug/kg dw	09/25/00		VM3056
	2-Butanone	<b>T</b>	• •		
	2-Butanone 1,1,1-Trichloroethane	<4ug/kg dw	09/25/00		VM3056

Upstate Laboratories, Inc.

Analysis Results

Report Number: 26200206

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_\_\_\_\_ QC: \ \ \ \bar{\text{Lab}} \bar{\text{T}}.D.: 10170 Sampled by: Client

ID:26200206 Mat:Soil 29-00-0002 MCCKENNA LANDFILL LOW PERM CLAY 5000 0800H 08/16/00 G

Ob Mac:SOII	29-00-0002 ACCREMINA	MANDETLII LOW PERM CHAI	AUUU UUUE	08/16/00	G
PARAMETERS		RESULTS	DATE ANAL.	KEY	file#
-4 - 4 - 5	<b></b>	4 . /3 . 3	00/05/00		
•	Dichloropropene	<4ug/kg dw	09/25/00		VM3056
Trichlor		<4ug/kg dw	09/25/00		VM3056
	hloromethane	<4ug/kg dw	09/25/00		VM3056
	ichloroethane	<4ug/kg dw	09/25/00		VM3056
Benzana		<4ug/kg dw	09/25/00		VM3056
	3-Dichloropropene	<4ug/kg dw	09/25/00		VM3056
Bromofor		<4ug/kg dw	09/25/00		VM3056
	-2-pentanone	<13ug/kg dw	09/25/00		VM3056
2-Hexano		<13ug/kg dw	09/25/00		VM3056
	oroethene	<4ug/kg dw	09/25/00		VM3056
	Tetrachloroethane	<4ug/kg dw	09/25/00		VM3056
Toluene		<4ug/kg dw	09/25/00		VM3056
Chloroba		<4ug/kg dw	09/25/00		VM3056
Ethylben	zene	<4ug/kg dw	09/25/00		VM3056
Styrene		<4ug/kg dw	09/25/00		VM3056
-	and p-Xylene	<4ug/kg dw	09/25/00		VM3056
o-Xylene		<4ug/kg dw	09/25/00		VM3056
TCL Semivo	latiles by EPA Method 82	70			
Phenol		<420ug/kg dw	09/28/00		SA2575
bis(2-Ch	loroethyl) ether	<420ug/kg dw	09/28/00		SA2F
2-Chloro	<del>-</del>	<420ug/kg dw	09/28/00		SA2
1,3-Dich	lorobenzene	<420ug/kg dw	09/28/00		9A2575
1,4-Dich	lorobenzene	<420ug/kg dw	09/28/00		SA2575
1,2-Dich	lorobenzene	<420ug/kg dw	09/28/00		SA2575
2-Methyl	phenol	<420ug/kg dw	09/28/00		SA2575
2,2'-0xy	bis(1-Chloropropane)	<420ug/kg dw	09/28/00		SA2575
4-Methyl	_ <del>_</del>	<420ug/kg dw	09/28/00		SA2575
	odi-n-propylamine	<420ug/kg dw	09/28/00		SA2575
	roethane	<420ug/kg dw	09/28/00		SA2575
Nitroben	zene	<420ug/kg dw	09/28/00		SA2575
Isophoro	ne	<420ug/kg dw	09/28/00		SA2575
2-Nitrop	heno1	<420ug/kg dw	09/28/00		SA2575
_	thylphenol	<420ug/kg dw	09/28/00		SA2575
bis(2-Ch	loroethoxy) methane	<420ug/kg dw	09/28/00		SA2575
	lorophenol	<420ug/kg dw	09/28/00		SA2575
	ichlorobenzene	<420ug/kg dw	09/28/00		SA2575
Naphthal	ene	<420ug/kg dw	09/28/00		SA2575
4-Chloro		<420ug/kg dw	09/28/00		SA2575
Hexachlo	robutadiene	<420ug/kg dw	09/28/00		SA2575
	-3-methylphenøl	<420ug/kg dw	09/28/00		SA2575
	naphthalene	<420ug/kg dw	09/28/00		SA2575
	rocyclopentadiene	<420ug/kg dw	09/28/00		SA2575
	ichlorophenol	<420ug/kg dw	09/28/00		\$ <b>A</b> 2575
, -	•	<b>J</b> , <b>J</b>			

Upstate Laboratories, Inc.

Analysis Results

ort Number: 26200206

Tient I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ \_ \_ \_ 

Sampled by: Client

ID:26200206 Mat:Soil 29-00-0002 MCCKENNA LANDFILL LOW PERM CLAY 5000 0800H 08/16/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
2.4.5.894.51.5	42000/ha da	00/38/00		5A2575
2,4,5-Trichlorophenol 2-Chloronaphthalene	<420ug/kg dw <420ug/kg dw	09/28/00 09/28/00		8A2575
2-Chioronaphthalene 2-Nitroaniline	<4200g/kg dw	09/28/00		SA2575
Dimethylphthalate	<4200dg/kg dw	09/28/00		SA2575
Acenaphthylene	<420ug/kg dw	09/28/00		SA2575
2,6-Dinitrotoluene	<420ug/kg dw	09/28/00		SA2575
3-Nitroaniline	<4200ug/kg dw	09/28/00		SA2575
Acenaphthene	<420ug/kg dw	09/28/00		SA2575
2,4-Dinitrophenol	<4200ug/kg dw	09/28/00		SA2575
4-Nitrophenol	<4200ug/kg dw	09/28/00		SA2575
Dibenzofuran	<420ug/kg dw	09/28/00		SA2575
2,4-Dinitrotoluene	<420ug/kg dw	09/28/00		SA2575
Diethylphthalate	<420ug/kg dw	09/28/00		SA2575
4-Chlorophenylphenylether	<420ug/kg dw	09/28/00		SA2575
Fluorene	<420ug/kg dw	09/28/00		SA2575
4-Nitroaniline	<4200ug/kg dw	09/28/00		SA2575
2-Methyl-4,6-dinitrophenol	<4200ug/kg dw	09/28/00		SA2575
n-Nitrosodiphenylamine	<420ug/kg dw	09/28/00		SA2575
4-Bromophenylphenylether	<420ug/kg dw	09/28/00		SA2575
Hexachlorobenzene	<420ug/kg dw	09/28/00		SA2575
Pentachlorophenol	<830ug/kg dw	09/28/00		<b>SA2575</b>
Phenanthrene	<420ug/kg dw	09/28/00		SA2575
Anthracene	<420ug/kg dw	09/28/00		SA2575
Carbazole	<420ug/kg dw	09/28/00		SA2575
di-n-butylphthalate	<420ug/kg dw	09/28/00		SA2575
Fluoranthene	<420ug/kg dw	09/28/00		SA2575
Pyrene	<420ug/kg dw	09/28/00		SA2575
Butylbenzylphthalate	<420ug/kg dw	09/28/00		SA2575
3,3'-Dichlorobenzidine	<420ug/kg dw	09/28/00		SA2575
Benzo(a) anthracene	<420ug/kg dw	09/28/00		SA2575 SA2575
Chrysene	<420ug/kg dw	09/28/00		SA2575
bis (2-Ethylhexyl) phthalate	<420ug/kg dw	09/28/00		SA2575 SA2575
di-n-octylphthalate	<420ug/kg dw	09/28/00 09/28/00		SA2575
Benzo (b) fluoranthene	<420ug/kg dw <420ug/kg dw	09/28/00		SA2575
Benzo (k) fluoranthene	<420ug/kg dw	09/28/00		SA2575
Benzo (a) pyrene Indeno (1, 2, 3-cd) pyrene	<420ug/kg dw	09/28/00		SA2575
Dibenzo(a,h) anthracene	<420ug/kg dw	09/28/00		9A2575
Benzo (ghi) perylene	<420ug/kg dw	09/28/00		9A2575
	(12049) 35 4	03, 20, 00		
EPA Method 8150				
2,4-D	<41ug/kg dw	10/04/00		GA0358
2,4,5-T	<4lug/kg dw	10/04/00		GA0358
2,4,5-TP (Silvex)	<4lug/kg dw	10/04/00		GA0358
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Upstate Laboratories, Inc.

Analysis Results

Report Number: 26200206

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_\_\_\_ QC: 1 - Lab I.D.: 10170

Sampled by: Client

ID:26200206 Mat:Soil	<b>~29-00-0002</b>	MCCKENNA	LANDFILL LOW P	ERM CLAY 5000	0800H 08/16/00 G

PARAMETERS	RESULTS	DATE ANAL. KEY	FILE#
Dinoseb	<41ug/kg dw	10/04/00	GA0358
PCB (Aroclors) by EPA Method 80,80			
Aroclor 1016	<0.1mg/kg dw	10/03/00	GA0355
Aroclor 1221	<0.1mg/kg dw	10/03/00	GA0355
Aroclor 1232	<0.1mg/kg dw	10/03/00	GA0355
Aroclor 1242	<0.1mg/kg dw	10/03/00	GA0355
Aroclor 1248	<0.1mg/kg dw	10/03/00	GA0355
Aroclor 1254	<0.lmg/kg dw	10/03/00	GA0355
Aroclor 1260	<0.1mg/kg dw	10/03/00	GA0355
Total PCB	<0.1mg/kg dw	10/03/00	GA0355
TCL Pesticides by EPA Method 8080			
		/ /	
BHC (a-isomer)	<2.lug/kg dw	10/03/00	GA0353
BHC (b-isomer)	<2.lug/kg dw	10/03/00	GA0353
BHC (d-isomer)	<2.1ug/kg dw	10/03/00	GA0353
BHC (g-isomer)	<2.1ug/kg dw	10/03/00	GA0353
Heptachlor	<2.1ug/kg dw	10/03/00	GA0353
Aldrin	<2.lug/kg dw	10/03/00	GA0353
Heptachlor Epoxide	<2.lug/kg dw	10/03/00	GAO.
Endosulfan I	<2.lug/kg dw	10/03/00	GA0
Dieldrin	<4.1ug/kg dw	10/03/00	GA0353
4,4'-DDE	<4.lug/kg dw	10/03/00	GA0353
Endrin	<4.lug/kg dw	10/03/00	GA0353
Endosulfan II	<4.lug/kg dw	10/03/00	GA0353
4,4'-DDD	<4.lug/kg dw	10/03/00	GA0353
Endosulfan Sulfate	<4.1ug/kg dw	10/03/00	GA0353
4,4'-DDT	<4.lug/kg dw	10/03/00	GA0353
Methoxychlor	<2.lug/kg dw	10/03/00	GA0353
Endrin Ketone	<4.lug/kg dw	10/03/00	GA0353
Endrin Aldehyde	<4.1ug/kg dw	10/03/00	GA0353
alpha-Chlordane	<2.1ug/kg dw	10/03/00	GA0353 GA0353
gamma-Chlordane	<2.1ug/kg dw	10/03/00	
Toxaphene	<200ug/kg dw	10/03/00	GA0353

ID:26200207 Mat:Soil 29-00-0002 MCCKENNA LANDFILL LOW PERM CLAY 10000 0800H 08/30/00 G

PARAMETERS		RESULTS	DATE ANAL.	KEY	FILE#	
			~= ~ = = = = =			
	Percent Solids	81%	09/20/00		WD1834	
Total	Aluminum	23000mg/kg dw	10/02/00		MB2870	
Total	Antimony	46mg/kg dw	10/02/00		MB2870	
Total	Arsenic by furnace method	5.0mg/kg dw	10/16/00		MB2916	
Total	Barium	170mg/kg dw	10/02/00		MB2870	

Upstate Laboratories, Inc. Malysis Results

Report Number: 26200206

Tient I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_\_\_\_

QC: \ - \ \_ Lab I.D.: 10170

Sampled by: Client

10:26200207 Mat:Soil 29-00-0002 MCCKENNA LANDFILL LOW PERM CLAY 10000 0800H 08/30/00 G

PA:	RAMETERS	RESULTS	DATE ANAL.	REY	FILE#
Total	Beryllium	1.5mg/kg dw	10/02/00		MB2870
Total	Cadmium	6.8mg/kg dw	10/02/00		MB2870
Total	Calcium	73000mg/kg dw	10/02/00		MOB 2 87 0
Total	Chromium	43mg/kg dw	10/02/00		MB2870
Total	Cobalt	70mg/kg dw	10/19/00		MB2933
Total	Copper	20mg/kg dw	10/02/00		MB2870
Total	Iron	25000mg/kg dw	10/02/00		MB2870
Total	Lead	<12mg/kg dw	10/02/00		MB2870
Total	Magnesium	15000mg/kg dw	10/02/00		MB2870
Total	Manganese	510mg/kg dw	10/02/00		MB2870
Total	Mercury	0.19mg/kg	09/28/00		MB2866
Total	Nickel	54mg/kg dw	10/02/00		MB2870
Total	Potassium	4000mg/kg dw	10/04/00		MB2878
Total	Selenium by furnace method	<0.2mg/kg dw	10/12/00		MB2910
Total	Silver	7.8mg/kg dw	10/02/00		MB2870
Total	Sodium	540mg/kg dw	10/04/00		MB2878
Total	Thallium by furnace method	<0.4mg/kg dw	10/04/00		ME3190
Total	Vanadium	51mg/kg dw	10/02/00		MB2870
Total	Zinc	81mg/kg dw	10/02/00		MB2870
	CL Volatiles by EPA Method 8260	<4ug/kg dw	09/22/00		VM3051
	Chloromethane Bromomethane	<4ug/kg dw <4ug/kg dw	09/22/00		VM3051
	Vinyl Chloride	<2ug/kg dw	09/22/00		VM3051
	Chloroethane	<4ug/kg dw	09/22/00		VM3051
	Methylene Chloride	25ug/kg dw	09/22/00	44	VM3051
	Acetona	<12ug/kg dw	09/22/00		VM3051
	Carbon Disulfide	<4ug/kg dw	09/22/00		VM3051
	1,1-Dichloroethene	<4ug/kg dw	09/22/00		VM3051
	1,1-Dichloroethane	<4ug/kg dw	09/22/00		VM3051
	trans-1,2-Dichloroethene	<4ug/kg dw	09/22/00		VM3051
	cis-1,2-Dichloroethene	<4ug/kg dw	09/22/00		VM3051
	Chloroform	<4ug/kg dw	09/22/00		VM3051
	1,2-Dichloroethane	<4ug/kg dw	09/22/00		VM3051
	2-Butanone	<12ug/kg dw	09/22/00		VM3051
	1,1,1-Trichloroethane	<4ug/kg dw	09/22/00		VM3051
	Carbon Tetrachloride	<4ug/kg dw	09/22/00		VM3051
	Bromodichloromethane	<4ug/kg dw	09/22/00		VM3051
	1,2-Dichloropropane	<4ug/kg dw	09/22/00		VM3051
	cis-1,3-Dichloropropene	<4ug/kg dw	09/22/00		VM3051
	Trichloroethene	<4ug/kg dw	09/22/00		VM3051
	Dibromochloromethane	<4ug/kg dw	09/22/00		VM3051
	1,1,2-Trichloroethane	<4ug/kg dw	09/22/00		VM3051
	Benzene	<4ug/kg dw	09/22/00		VM3051

Upstate Laboratories, Inc.

Analysis Results

Report Number: 26200206

Client I.D.: CIMINELLI SERVICES GROUP CORP.

Sampled by: Client

ID:26200207 Mat:Soil 29-00-0002 MCCKENNA LANDFILL LOW PERM CLAY 10000 0800H 08/30/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
trans-1,3-Dichloropropene	<4ug/kg dw	09/22/00		VM3051
Bromoform	<4ug/kg dw	09/22/00		VM3051
4-Methyl-2-pentanone	<12ug/kg dw	09/22/00		VM3051
2-Hexanone	<12ug/kg dw	09/22/00		VM3051
Tetrachloroethene	<4ug/kg dw	09/22/00		VM3051
1,1,2,2-Tetrachloroethane	<4ug/kg dw	09/22/00		VM3051
Toluene	<4ug/kg dw	09/22/00		VM3051
Chlorobenzene	<4ug/kg dw	09/22/00		VM3051
Ethylbenzene	<4ug/kg dw	09/22/00		VM3051
Styrene	<4ug/kg dw	09/22/00		VM3051
m-Xylene and p-Xylene	<4ug/kg dw	09/22/00		VM3051
o-Xylene	<4ug/kg dw	09/22/00		VM3051
TCL Semivolatiles by EPA Method  8270				
Phenol	<410ug/kg dw	09/28/00		SA2575
bis(2-Chloroethyl)ether	<410ug/kg dw	09/28/00		SA2575
2-Chlorophenol	<410ug/kg dw	09/28/00		SA2575
1,3-Dichlorobenzene	<410ug/kg dw	09/28/00		SA2575
1,4-Dichlorobenzene	<410ug/kg dw	09/28/00		SA2575
1,2-Dichlorobenzene	<410ug/kg dw	09/28/00		SA2575
2-Methylphenol	<410ug/kg dw	09/28/00		SA2575
2,2'-Oxybis (1-Chloropropane)	<410ug/kg dw	09/28/00		SA2
4-Methylphenol	<410ug/kg dw	09/28/00		SA25

Upstate Laboratories, Inc.

Analysis Results

ort Number: 26200206

ent I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:

QC:

Lab I.D.: 10170

Sampled by: Client

ID:26200207 Mat:Soil 29-00-0002 MCCKENNA LANDFILL LOW PERM CLAY 10000 0800H 08/30/00 G

2,6-Dinitrotoluene	PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
3-Nitroaniline	2,6-Dinitrotoluene	<410ug/kg dw		-~-	
Acenaphthene					
2.4-Dinitrophenol					
4-Nitrophenol					
Dibenzofuran					
2,4-Dinitrotoluene	<del>"</del>	• • •			
Diethylphthalate	2,4-Dinitrotoluene	_ · _			
## -Chlorophenylphenylether					
Fluorane 4-Nitroaniline 4100ug/kg dw 09/28/00 SA2575 2-Methyl-4,6-dinitrophenol 4100ug/kg dw 09/28/00 SA2575 n-Mitrosodiphenylamine 4100ug/kg dw 09/28/00 SA2575 n-Mitrosodiphenylether 410ug/kg dw 09/28/00 SA2575 4-Bromophenylphenylether 410ug/kg dw 09/28/00 SA2575 Hexachlorobenzene 410ug/kg dw 09/28/00 SA2575 Pentachlorophenol 820ug/kg dw 09/28/00 SA2575 Phenanthrene 410ug/kg dw 09/28/00 SA2575 Anthracene 410ug/kg dw 09/28/00 SA2575 Anthracene 410ug/kg dw 09/28/00 SA2575 Carbazole 410ug/kg dw 09/28/00 SA2575 Fluoranthene 410ug/kg dw 09/28/00 SA2575 Fluoranthene 410ug/kg dw 09/28/00 SA2575 Pyrene 410ug/kg dw 09/28/00 SA2575 Pyrene 410ug/kg dw 09/28/00 SA2575 Butylbenzylphthalate 410ug/kg dw 09/28/00 SA2575 Senzo(a)anthracene 410ug/kg dw 09/28/00 SA2575 Chrysane 410ug/kg dw 09/28/00 SA2575 Chrysane 410ug/kg dw 09/28/00 SA2575 Dis(2-Ethylhexyl)phthalate 410ug/kg dw 09/28/00 SA2575 Dis(2-Ethylhexyl)phthalate 410ug/kg dw 09/28/00 SA2575 Benzo(b)fluoranthene 410ug/kg dw 09/28/00 SA2575 Denzo(a)pyrene 410ug/kg dw 10/04/00 GA0358 Dinoseb 410ug/kg dw 10/04/00 GA0358 Dinoseb 52.4,5-TP (Silvex) 41ug/kg dw 10/04/00 GA0358 Dinoseb 52.4,5-TP (Silvex) 41ug/kg dw 10/04/00 GA0358 PCE (Aroclors) by EPA Method 8080					
4-Nitroaniline			· · · · · · · · · · · · · · · · · · ·		
2-Methyl-4.6-dinitrophenol	4-Nitroaniline		The state of the s		
n-Nitrosodiphenylamine	2-Methyl-4,6-dinitrophenol				
### ### ##############################					
Hexachlorobenzene		_ : _ :			
Pentachlorophenol			•		
Phenanthrene					
Anthracene					•
Carbazole					
di-n-butylphthalate       <410ug/kg dw	Carbazole				
Fluoranthene	di-n-butylphthalate				
Pyrene		- · · · -			
Butylbenzylphthalate	Pyrene				
3,3'-Dichlorobenzidine					
Benzo(a) anthracene					
Chrysene					SA2575
bis(2-Ethylhexyl)phthalate					SA2575
di-n-octylphthalate       <410ug/kg dw					SA2575
Benzo(b) fluoranthene					SA2575
Benzo(k) fluoranthene					SA2575
Benzo(a) pyrene	Benzo(k) fluoranthene				SA2575
Indeno(1,2,3-cd)pyrene	Benzo(a) pyrene				SA2575
Dibenzo(a,h)anthracene					SA2575
Benzo (ghi) perylene <410ug/kg dw 09/28/00 SA2575  EPA Method 8150  2,4-D					SA2575
2,4-D					SA2575
2,4-D					
2,4,5-T		<41ug/kg dw	10/04/00		GA0358
2,4,5-TP (Silvex)	2,4,5-T				GA0358
Dinoseb <41ug/kg dw 10/04/00 GA0358  PCB (Aroclors) by EPA Method 8080  Aroclor 1016 <0.1mg/kg dw 10/03/00 GA0355	2,4,5-TP (Silvex)				GA0358
Aroclor 1016 <0.1mg/kg dw 10/03/00 GA0355	Dinoseb		10/04/00		GA0358
	PCB (Aroclors) by EPA Method 8080				
	Aroclor 1016	<0.1mg/kg dw	10/03/00		GA0355
	Aroclor 1221		10/03/00		GA0355

Upstate Laboratories, Inc. Analysis Results

Report Number: 26200206

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ \_ \_ QC; F Lab I.D.: 10170

Sampled by: Client

ID: 26200207 Mat: Soil 29-00-0002 MCCKENNA LANDFILL LOW PERM CLAY 10000 0800H 08/30/00 G

PARAMETERS	RESULTS	DATE ANAL,	KEX	FILE#
Aroclor 1232		10/03/00	~	GA035
Aroclor 1242	<0.1mg/kg dw	· ·		
	<0.lmg/kg dw	10/03/00		GA035
Aroclor 1248	<0.lmg/kg dw	10/03/00		GA035
Aroclor 1254	<0.1mg/kg dw	10/03/00		GA035
Aroclor 1260	<0.lmg/kg dw	10/03/00		GA0355
Total PCB	<0.1mg/kg dw	10/03/00		GA035!
TCL Pesticides by EPA Method 8080				
BHC (a-1somer)	<2.lug/kg dw	10/03/00		GA0353
BHC (b-isomer)	<2.lug/kg dw	10/03/00		GA0353
BHC (d-isomer)	<2.1ug/kg dw	10/03/00		GA0353
BHC (q-isomer)	<2.1ug/kg dw	10/03/00		GA0353
Heptachlor	<2.lug/kg dw	10/03/00		GA0353
Aldrin	<2.lug/kg dw	10/03/00		GA0353
Heptachlor Epoxide	<2.1ug/kg dw	10/03/00		GA0353
Endosulfan I	<2.lug/kg dw	10/03/00		GA0353
Dieldrin	<4.lug/kg dw	10/03/00		GA0353
4,4'-DDE	<4.lug/kg dw	10/03/00		GA0353
Endrin	<4.lug/kg dw	10/03/00		GA0353
Endosulfan II	<4.lug/kg dw	10/03/00		GA0353
4,4'-DDD	<4.lug/kg dw	10/03/00		GA03F7
Endosulfan Sulfate	<4.lug/kg dw	10/03/00		GAO:
4,4'-DDT	<4.lug/kg dw	10/03/00		GA035
Methoxychlor	<21.0ug/kg dw	10/03/00		GA0353
Endrin Ketone	<4.lug/kg dw	10/03/00		GA035
Endrin Aldehyde	<4.lug/kg dw	10/03/00		GA035
alpha-Chlordane	<2.lug/kg dw	10/03/00		GA0351
gamma-Chlordane	<2.lug/kg dw	10/03/00		GA035
Toxaphene	<200ug/kg dw	10/03/00		GA035

ID: 26200208 Mat: Soil 29-00-0002 MCCKENNA, LANDFILL LOW PERM CLAY 15000 1200H 09/13/00 G

ameters	RESULTS	DATE ANAL.	KEY	FILE#
Percent Solids	77%	09/20/00		WD1834
Aluminum	25000mg/kg dw	10/02/00		MB2870
Antimony	56mg/kg dw	10/02/00		MB2870
Arsenic by furnace method	5.2mg/kg dw	10/16/00		MB2916
Barium	220mg/kg dw	10/02/00		MB2870
Beryllium	1.8mg/kg dw	10/02/00		MB2870
Cadmium	8.0mg/kg dw	10/02/00		MB2870
Calcium	70000mg/kg dw	10/02/00		MB2870
Chromium	45mg/kg dw	10/02/00		MB2870
Cobalt	92mg/kg dw	10/19/00		MB2933
	Percent Solids Aluminum Antimony Arsenic by furnace method Barium Beryllium Cadmium Calcium Chromium	Percent Solids 77% Aluminum 25000mg/kg dw Antimony 56mg/kg dw Arsenic by furnace method 5.2mg/kg dw Barium 220mg/kg dw Beryllium 1.8mg/kg dw Cadmium 8.0mg/kg dw Calcium 70000mg/kg dw Chromium 45mg/kg dw	Percent Solids       77%       09/20/00         Aluminum       25000mg/kg dw       10/02/00         Antimony       56mg/kg dw       10/02/00         Arsenic by furnace method       5.2mg/kg dw       10/16/00         Barium       220mg/kg dw       10/02/00         Beryllium       1.8mg/kg dw       10/02/00         Cadmium       8.0mg/kg dw       10/02/00         Calcium       70000mg/kg dw       10/02/00         Chromium       45mg/kg dw       10/02/00	Percent Solids       77%       09/20/00         Aluminum       25000mg/kg dw       10/02/00         Antimony       56mg/kg dw       10/02/00         Arsenic by furnace method       5.2mg/kg dw       10/16/00         Barium       220mg/kg dw       10/02/00         Beryllium       1.8mg/kg dw       10/02/00         Cadmium       8.0mg/kg dw       10/02/00         Calcium       70000mg/kg dw       10/02/00         Chromium       45mg/kg dw       10/02/00

Upstate Laboratories, Inc. Analysis Results

ort Number: 26200206

mient I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_\_\_\_

Sampled by: Client

ID:26200208 MaE:Soil 29-00-0002 MCCKENNA LANDFILL LOW PERM CLAY 15000 1200H 09/13/00 G

	RAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Total	Copper	27mg/kg dw	10/02/00		MB2870
Total	Iron	32000mg/kg dw	10/02/00		MB2870
Total	Lead	<11mg/kg dw	10/02/00		M0B2870
Total	Magnesium	15000mg/kg dw	10/02/00		MB2870
Total	Manganese	490mg/kg dw	10/02/00		MB2870
Total	Mercury	0.22mg/kg	09/28/00		MB2866
Total	Nickel	61mg/kg dw	10/02/00		MB2870
Total	Potassium	4900mg/kg dw	10/04/00		MB2878
Total	Selenium by furnace method	<0.2mg/kg dw	10/12/00		MB2910
Total	Silver	7.9mg/kg dw	10/02/00		MB2870
Total	Sodium	530mg/kg dw	10/04/00		MB2878
Total	Thallium by furnace method	<0.4mg/kg dw	10/04/00		ME3190
Total	Vanadium	54mg/kg dw	10/02/00		MB2870
Total	Zinc	77mg/kg dw	10/02/00		MB2870
		, , <u></u> 3,3	,,		
	TCL Volatiles by EPA Method 8260				
	Chloromethane	<4ug/kg dw	09/22/00		VM3051
	Bromomethane	<4ug/kg dw	09/22/00		VM3051
	Vinyl Chloride	<3ug/kg dw	09/22/00		VM3051
	Chloroethane	<4ug/kg dw	09/22/00		VM3051
	Methylene Chloride	20ug/kg dw	09/22/00	44	VM3051
	Acetone	<13ug/kg dw	09/22/00		VM3051
	Carbon Disulfide	<4ug/kg dw	09/22/00		VM3051
	1,1-Dichloroethene	<4ug/kg dw	09/22/00		VM3051
	1,1-Dichloroethane	<4ug/kg dw	09/22/00		VM3051
	trans-1,2-Dichloroethene	<4ug/kg dw	09/22/00		VM3051
	cis-1,2-Dichloroethene	<4ug/kg dw	09/22/00		VM3051
	Chloroform	<4ug/kg dw	09/22/00		VM3051
	1,2-Dichloroethane	<4ug/kg dw	09/22/00		VM3051
	2-Butanone	<13ug/kg dw	09/22/00		VM3051
	1,1,1-Trichloroethane	<4ug/kg dw	09/22/00		VM3051
	Carbon Tetrachloride	<4ug/kg dw	09/22/00		VM3051
	Bromodichloromethane	<4ug/kg dw	09/22/00		VM3051
	1,2-Dichloropropane	<4ug/kg dw	09/22/00		VM3051
	cis-1,3-Dichloropropene	<4ug/kg dw	09/22/00		VM3051
	Trichloroethene	<4ug/kg dw	09/22/00		VM3051
	Dibromochloromethane	<4ug/kg dw	09/22/00		VM3051
	1,1,2-Trichloroethane	<4ug/kg dw	09/22/00		VM3051
	Benzene	<4ug/kg dw	09/22/00		VM3051
	trans-1,3-Dichloropropene	<4ug/kg dw	09/22/00		VM3051
	Bromoform	<4ug/kg dw	09/22/00		VM3051
	4-Methyl-2-pentanone	<13ug/kg dw	09/22/00		VM3051
	2-Hexanone	<13ug/kg dw	09/22/00		VM3051
	Tetrachloroethene	<4ug/kg dw	09/22/00		VM3051

Upstate Laboratories, Inc.

Analysis Results

Report Number: 26200206

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ \_ ~ ~

 $QC:= \sqrt{7} - \overline{Lab} \overline{1}.D.: 10170$ Sampled by: Client

ID:26200208 Mat:Soil 29-00-0002 MCCKENNA LANDFILL LOW PERM CLAY 15000 1200H 09/13/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
			~	
1,1,2,2-Tetrachloroethane	<4ug/kg dw	09/22/00		VM3051
Toluene	<4ug/kg dw	09/22/00		VM3051
Chlorobenzene	<4ug/kg dw	09/22/00		VM3051
Ethylbenzene	<4ug/kg dw	09/22/00		VM3051
Styrene	<4ug/kg dw	09/22/00		VM3051
m-Xylene and p-Xylene	<4ug/kg dw	09/22/00		VM3051
o~Xylene	<4ug/kg dw	09/22/00		VM3051
TCL Semivolatiles by EPA Method 8270				
Phenol	<430ug/kg dw	09/28/00		SA2575
bis (2-Chloroethyl) ether	<430ug/kg dw	09/28/00		SA2575
2-Chlorophenol	<430ug/kg dw	09/28/00		SA2575
1,3-Dichlorobenzene	<430ug/kg dw	09/28/00		SA2575
1,4-Dichlorobenzene	<430ug/kg dw	09/28/00		SA2575
1,2-Dichlorobenzene	<430ug/kg dw	09/28/00		SA2575
2-Methylphenol	<430ug/kg dw	09/28/00		SA2575
2,2'-Oxybis(1-Chloropropane)	<430ug/kg dw	09/28/00		SA2575
4-Methylphenol	<430ug/kg dw	09/28/00		SA2575
n-Nitrosodi-n-propylamine	<430ug/kg dw	09/28/00		SA2575
Hexachloroethane	<430ug/kg dw	09/28/00		SA2575
Nitrobenzene	<430ug/kg dw	09/28/00		SA2F
Isophorone	<430ug/kg dw	09/28/00		SA2
2-Nitrophenol	<430ug/kg dw	09/28/00		SA2575
2,4-Dimethylphenol	<430ug/kg dw	09/28/00		SA2575
bis(2-Chloroethoxy)methane	<430ug/kg dw	09/28/00		SA2575
2,4-Dichlorophenol	<430ug/kg dw	09/28/00		SA2575
1,2,4-Trichlorobenzene	<430ug/kg dw	09/28/00		SA2575
Naphthalene	<430ug/kg dw	09/28/00		SA2575
4-Chloroaniline	<430ug/kg dw	09/28/00		6A2575
Hexachlorobutadiene	<430ug/kg dw	09/28/00		SA2575
4-Chloro-3-methylpheno,L	<430ug/kg dw	09/28/00		SA2575
2-Methylnaphthalene	<430ug/kg dw	09/28/00		SA2575
Hexachlorocyclopentadiene	<430ug/kg dw	09/28/00		SA2575
2,4,6-Trichlorophenol	<430ug/kg dw	09/28/00		SA2575
2,4,5-Trichlorophenol	<430ug/kg dw	09/28/00		SA2575
2-Chloronaphthalene	<430ug/kg dw	09/28/00		SA2575
2-Nitroaniline	<4300ug/kg dw	09/28/00		SA2575
Dimethylphthalate	<430ug/kg dw	09/28/00		SA2575
Acenaphthylene	<430ug/kg dw	09/28/00		SA2575
2,6-Dinitrotoluene	<430ug/kg dw	09/28/00		SA2575
3-Nitroaniline	<4300ug/kg dw	09/28/00		SA2575
Acenaphthene	<430ug/kg dw	09/28/00		SA2575
2,4-Dinitrophenol	<4300ug/kg dw	09/28/00		SA2575
4-Nitrophenol	<4300ug/kg dw	09/28/00		SA2575
4-MICIOPHOROI	canoudal va am	03/20/00		JAZJIJ

Upstate Laboratories, Inc. Analysis Results

port Number: 26200206

dent I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_\_\_\_ QC: () \_ \_ Lab I.D.: 10170

Sampled by: Client

ID:26200208 Mat:Soil 29-00-0002 MCCKENNA LANDFILL LOW PERM CLAY 15000 1200H 09/13/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Dibenzofuran	<430ug/kg dw	09/28/00		SA2575
2,4-Dinitrotoluene	<430ug/kg dw	09/28/00		SA2575
Diethylphthalate	<430ug/kg dw	09/28/00		SA2575
4-Chlorophenylphenylether	<430ug/kg dw	09/28/00		SA2575
Fluorene	<430ug/kg dw	09/28/00		SA2575
4-Nitroaniline	<4300ug/kg dw	09/28/00		SA2575
2-Methyl-4,6-dinitrophenol	<4300ug/kg dw	09/28/00		SA2575
n-Nitrosodiphenylamine	<430ug/kg dw	09/28/00		SA2575
4-Bromophenylphenylether	<430ug/kg dw	09/28/00		SA2575
Hexachlorobenzene	<430ug/kg dw	09/28/00		SA2575
Pentachlorophenol	<870ug/kg dw	09/28/00		SA2575
Phenanthrene	<430ug/kg dw	09/28/00		SA2575
Anthracene	<430ug/kg dw	09/28/00		SA2575
Carbazole	<430ug/kg dw	09/28/00		SA2575
di-n-butylphthalate	<430ug/kg dw	09/28/00		SA2575
Fluoranthene	<430ug/kg dw	09/28/00		SA2575
Pyrene	<430ug/kg dw	09/28/00		SA2575
Butylbenzylphthalate	<430ug/kg dw	09/28/00		SA2575
3,3'-Dichlorobenzidine	<430ug/kg dw	09/28/00		<b>SA2575</b>
Benzo(a) anthracene	<430ug/kg dw	09/28/00		SA2575
Chrysene	<430ug/kg dw	09/28/00		SA2575
bis(2-Ethylhexyl)phthalate	<430ug/kg dw	09/28/00		SA2575
di-n-octylphthalate	<430ug/kg dw	09/28/00		SA2575
Benzo(b) fluoranthene	<430ug/kg dw	09/28/00		SA2575
Benzo(k) fluoranthene	<430ug/kg dw	09/28/00		SA2575
Benzo(a)pyrene	<430ug/kg dw	09/28/00		SA2575
Indeno(1,2,3-cd)pyrene	<430ug/kg dw	09/28/00		SA2575
Dibenzo(a,h)anthracene	<430ug/kg dw	09/28/00		9A2575
Benzo(ghi)perylene	<430ug/kg dw	09/28/00		SA2575
EPA Method 8150				
2,4-D	<43ug/kg dw	10/04/00		GA0358
2,4,5-T	<43ug/kg dw	10/04/00		GA0358
2,4,5-TP (Silvex)	<43ug/kg dw	10/04/00		GA0358
Dinogeb	<43ug/kg dw	10/04/00		GA0358
PCB (Aroclors) by EPA Method 8080				
Aroclor 1016	<0.1mg/kg dw	10/03/00		GA0355
Aroclor 1221	<0.1mg/kg dw	10/03/00		GA0355
Aroclor 1232	<0.1mg/kg dw	10/03/00		GA0355
Aroclor 1242	<0.1mg/kg dw	10/03/00		GA0355
Aroclor 1248	<0.1mg/kg dw	10/03/00		GA0355
Aroclor 1254	< 0.1 mg/kg dw	10/03/00		<b>GA</b> 0355
Aroclor 1260	<0.1mg/kg dw	10/03/00		GA0355

Upstate Laboratories, Inc.

Analysis Results

Report Number: 26200206

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_\_\_\_ QC: Y Lab I.D.: 10170

Sampled by: Client

ID:26200208 Mat:Soil 29-00-0002 MCCRENNA LANDFILL LOW PERM CLAY 15000 1200H 09/13/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
· · · · · · · · · · · · · · · · · · ·				~~~===
Total PCB	<0.1mg/kg dw	10/03/00		GA0355
TCL Pesticides by EPA Method 8080				
BHC (a-isomer)	<2.2ug/kg dw	10/03/00		GA0353
BHC (b-isomer)	<2.2ug/kg dw	10/03/00		GA0353
BHC (d-isomer)	<2.2ug/kg dw	10/03/00		GA0353
BHC (g-1somer)	<2.2ug/kg dw	10/03/00		GA0353
Heptachlor	<2.2ug/kg dw	10/03/00		GA0353
Aldrin	<2.2ug/kg dw	10/03/00		GA0353
Heptachlor Epoxide	<2.2ug/kg dw	10/03/00		GA0353
Endosulfan I	<2.2ug/kg dw	10/03/00		GA0353
Dieldrin	<4.3ug/kg dw	10/03/00		GA0353
4,4'-DDE	<4.3ug/kg dw	10/03/00		GA0353
Endrin	<4.3ug/kg dw	10/03/00		GA0353
Endosulfan II	<4.3ug/kg dw	10/03/00		GA0353
4,4'-DDD	<4.3ug/kg dw	10/03/00		GA0353
Endosulfan Sulfate	<4.3ug/kg dw	10/03/00		GA0353
4,4'-DDT	<4.3ug/kg dw	10/03/00		GA0353
Methoxychlor	<22.0ug/kg dw	10/03/00		GA0353
Endrin Ketone	<4.3ug/kg dw	10/03/00		GA0353
Endrin Aldehyde	<4.3ug/kg dw	10/03/00		GA0 ?~~
alpha-Chlordane	<2.2ug/kg dw	10/03/00		GAC
gamma-Chlordane	<2.2ug/kg dw	10/03/00		GA0353
Тохарнеле	<200ug/kg dw	10/03/00		GA0353

#### BARRIER PROTECTION SOIL/ SUITABLE FILL

Barrier protection soil (BPS) and suitable fill for the McKenna Landfill Remedial Closure Project construction was obtained from the following sources.

- 1. Recovery of existing cover soils;
- 2. Barre Stone Products borrow pit located in Barre, New York; and
- 3. The Brockport borrow pit located in Brockport, New York.

GZA estimates that approximately 49,000 cubic yards of BPS was used for barrier protection material construction and approximately 18,000 cubic yards of soil was used for suitable fill. Pre-construction and construction laboratory testing for each source consisted of natural moisture content (ASTM D2216), grain size analysis (ASTM D422), Atterberg limits (ASTM D4318), moisture-density relationship (ASTM D1557), remolded permeability (ASTM D5084), internal friction angle testing (minimum friction angle of 27 degrees required) and chemical characterization analysis. Based on the laboratory test results, GZA considered the borrow sources acceptable for use as BPS. Test results are summarized on the following pages.

### 1. EXISTING COVER SOILS

### Geotechnical Testing Summary

Approximately 5,000 and 6,500 cubic yards of the existing cover soil was used for BPS and suitable fill construction, respectively. Test frequencies are summarized on the following page. Table D7 summarizes the geotechnical laboratory test results.

Also included herein are results of triaxial compressive strength testing for the existing cover soils. The test shows that the soil has an effective internal angle of friction exceeding 27 degrees. The results of the geotechnical testing for the existing cover soils, therefore, indicate the soil was acceptable for use as barrier protection material and suitable fill.

# EXISTING COVER SOIL BPS & SUITABLE FILL GEOTECHNICAL LAB TESTING SUMMARY

Test Designation	Required Frequency	Number of Tests Done	Estimated Quantity of	Estimated Test Frequency
			Fill Placed	
Atterberg Limits	Ea. 2,500 Cubic	6	11,500 Cubic	Ea. 1,900 Cubic
(ASTM D4318)	Yards	)	Yards	Yards Placed
Moisture Content	Eε. 2,500 Cubic	6	11,500 Cubic	Ea. 1,900 Cubic
(ASTM D3017)	Yards		Yards	Yards Placed
Grain Size	Eε. 2,500 Cubic	6	11,500 Cubic	Ea. 1,900 Cubic
Analysis (ASTM	Yards		Yards	Yards Placed
D422)		1		
Moisture Density	Ea. 5,000 Cubic	4	11,500 Cubic	Ea. 2,900 Cubic
Relationship,	Yards		Yards	Yards Placed
Modified Proctor		1		
(ASTM D1557)				
Remolded	Ea. 5,000 Cubic	2	5,000 Cubic	2,500 Cubic
Permeability (For	Yards		Yards	Yards Placed
BPS Only)				
(ASTM D5084)				
Angle of Internal	per Borrow	1	11,500 Cubic	1 per Borrow
Friction	Source		Yards	Source

## Chemical Testing Summary

Pre-construction chemical characterization testing was done for the on-site cover soils. Chemical characterization testing was required for every 5,000 cubic yards of soil used. Six samples were tested for a test frequency of about 1 test per 1,900 cubic yards. The samples were tested for the following parameters.

Parameter	Extraction/Preparation (1)	Analysis (1)
TCL <sup>(2)</sup> Volatile Organic	5050	8260 (95-1)
Compounds		
TCL Semi-Volatile Organic	3540/3550	8270 (95-2)
Compounds		
Pesticides/PCB's	3540/3550	8080
Herbicides	3580	8150
TAL <sup>(3)</sup> Metals	3050	95-M
Cyanide		9012

<sup>&</sup>lt;sup>1</sup> EPA SW-846.

GZA reviewed the laboratory test results submitted by CSC's analytical laboratory, Upstate, and tabulated the compounds detected for each sample. A table of the compounds detected for each material type is included herein as Table D8, along with the laboratory data. GZA compared the reported chemical concentrations versus recommended soil cleanup objective values and eastern United States background values shown in the tables.

Based on GZA's review, the chemical characterization test results for this material was acceptable. Therefore, the on-site cover soil was considered acceptable for barrier protection soil and suitable fill.

<sup>&</sup>lt;sup>2</sup> TCL – Target Compound List.

<sup>&</sup>lt;sup>3</sup> TAL – Target Analyte List.

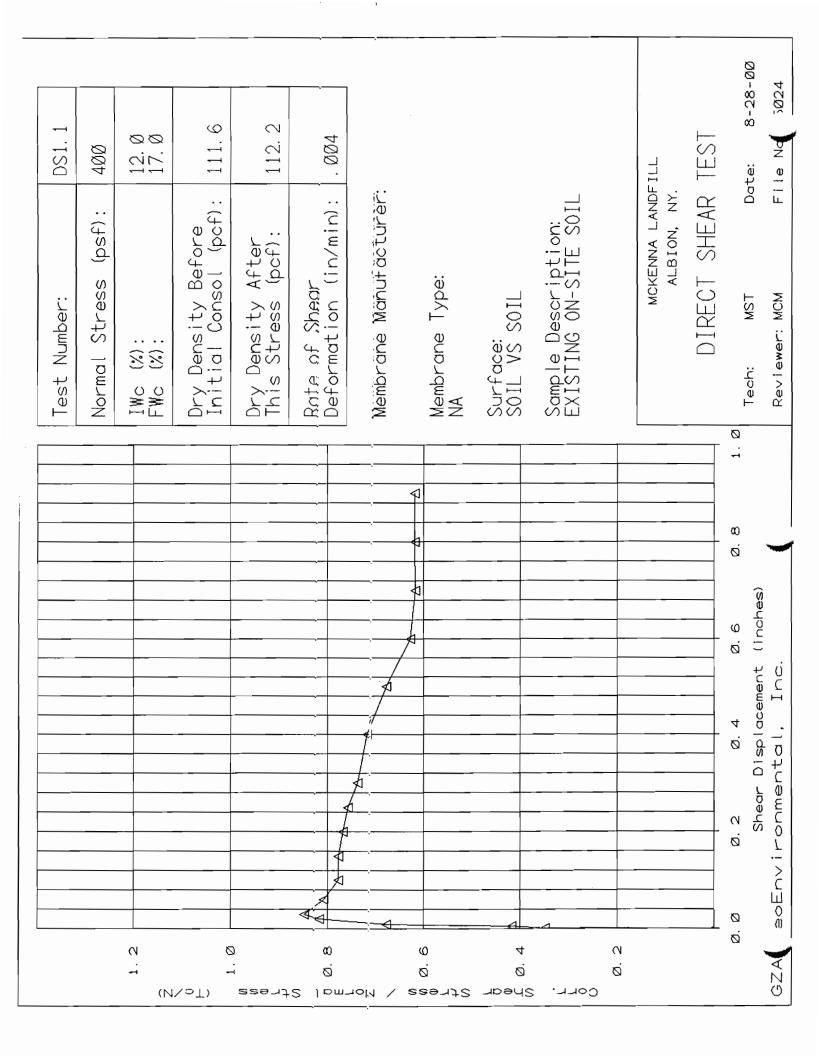
#### Table D7

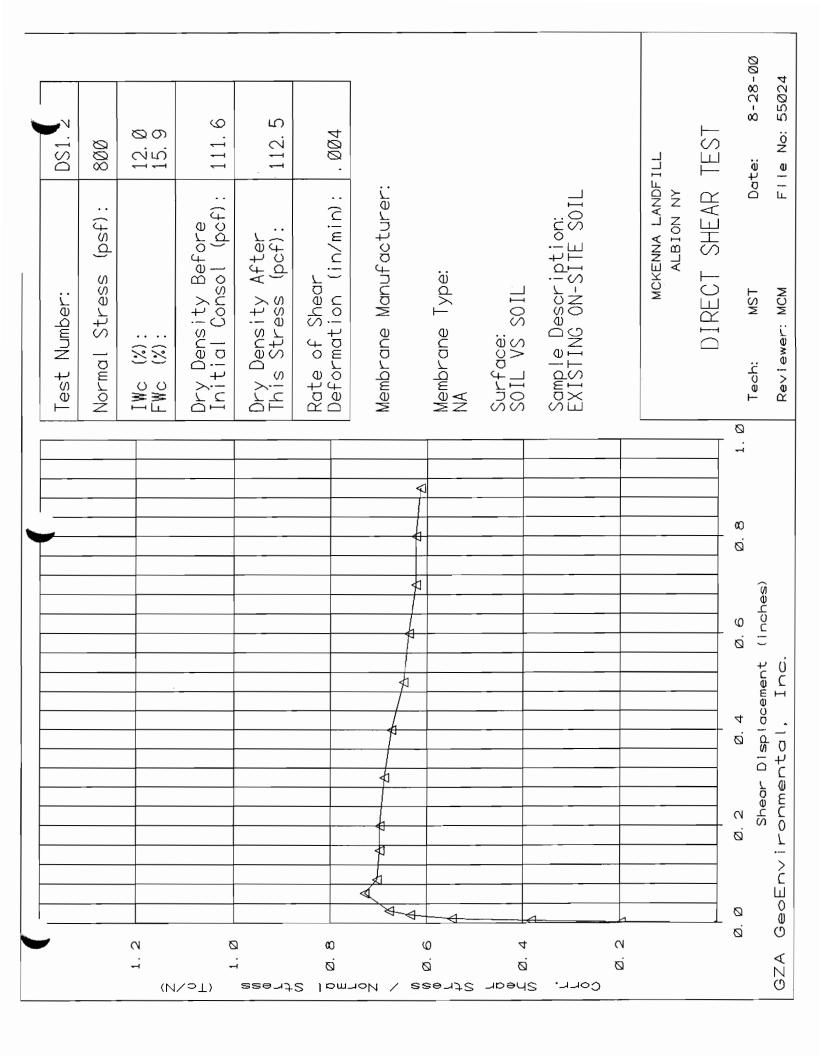
#### SUMMARY OF BULK SAMPLE LABORATORY TESTING ON-SITE COVER MATERIAL FOR BARRIER PROTECTION SOIL AND SUITABLE FILL

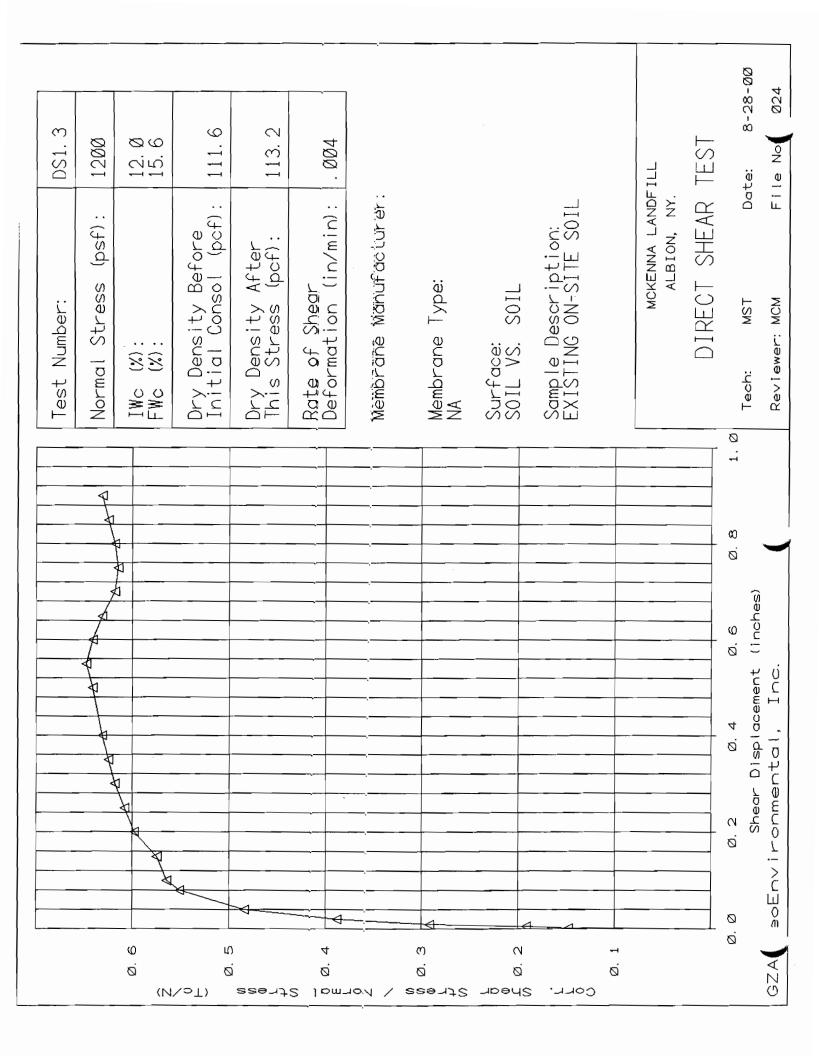
## WASTE MANAGEMENT OF NEW YORK MCKENNA LANDFILL REMEDIAL CLOSURE PROJECT

		Α	TTERBERG	LIMITS	GRAD/	ATION	MODIFIED	PROCTOR	RECO	NSTITUTED PER	RMEABILITY	_
SAMPLE NUMBER	NATURAL MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	% FINER THAN #200 SEIVE	% FINER THAN 2 MICRONS	MAXIMUM DRY DENSITY (PCF)	OPTIMUM MOISTURE CONTENT (%)	PERMEABILITY (CM/SEC)	CONFINING PRESSURE (PSF)	TEST DRY DENSITY (PCF)	TEST MOISTURE CONTENT (%)
05220-1	13.5	21	17	4	50		124.0	10.5	3.4E-06	7.2E+02	111.8	10.4
08070-1	14.4	35	13	22	60		120.0	12.0				
08070-2	11.6	26	11	15	43							
08070-3	7.6	26	13	13	37		126.5	9.5				
Ω <u>8</u> Ω7Ω <u>-4</u>	20 1	35	14	21	71	_						
12111-2	13.2	23	13	10	54		131.0	7.5	1.7E-07	7.2E+02	111.5	8.9

SHEAR STRESS, P. S. F. GZA GeoEnvironmental, 1000 1200 1400 1600 1800 2000 8ØØ 200 400 600 EXISTING ON-SITE SOIL Z Sample Description: Membrane Type: 200 400 600 NORMAL STRESS, J C 800 1000 1200 1400 1600 1800 2000 Ū. Ś . П 31.6 DS1. 2 DS1.3 DS1. 1 TEST NUMBER DS1. 2 DS1. 1 TEST NUMBER DS1. 3 Tech: Reviewer: MCM DIRECT SHEAR TEST  $\overline{\phantom{a}}$  $\times$  $\times$ MOHR ENVELOPE RESIDUAL STRESS: PSF TSM 847 PEAK STRESS: PSF 583 338 SHEAR SHEAR MCKENNA LANDFILL ALBION NY NORMAL 808 1321 NORMAL 402 Date: File No: 55024 RESIDUAL STRESS: PSF RESIDUAL STRESS: PSF SHEAR 288 881 SHEAR 8-28-00 NORMAL 941 NORMAL 470 1411







#### Chemical Characterization Results for On-Site Cover Soil Samples A16, E3, H17, A24, D14 and J5

#### McKenna Landfill Remedial Closure Project Albion, New York

Parameter	Recommended Soil Cleanup Objective ppm	Eastern USA Background ppm	A16	E3	H17	A24 ppm	D14 ppm	J5 ppm
VOC - EPA Metho			malabetara.	4.4 (1.04)	4 %	40.0		4.99
Methylene Chloride	0.1	N/A	0.013	0.013	0.008	0.011	0.015	0.011
Acetone	0.2	N/A	N/D	N/D	N/D	N/D	N/D	N/D
2-Butanone	0.3	N/A	N/D	N/D	N/D	N/D	N/D	N/D
SVOC - EPA Methe	od 8270 (ppm)		1. WE (7.	(6-6-33)	0.50	3 4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	13.19 (A. C. A. C.	5.68
No Compounds Detecte	ed	N/A	N/D	N/D	N/D	N/D	N/D	N/D
HERBICIDES - EP	A Method 8150 (ppm)	10.589	7	185.718	Secretary Secretary	100	1 2 2 2	1000
2,4 -D	0.5	N/A	N/D	N/D	N/D	N/D	N/D	N/D
TCL Pesticides/Aro	clors EPA Method 808	0 (ppm)	Market Carlo	100			100	
4,4' - DDE	2.1	N/A	N/D	N/D	N/D	N/D	N/D	N/D
Priority Pollutant M	letals (ppm)	4.40		14 16 95 de las			1112	200
Aluminum	SB	33,000	8,300	3,500	4,600	7,600	4,000	3,300
Antimony	SB	N/A	N/D	N/D	N/D	N/D	N/D	N/D
Arsenic	7.5 or SB	3-12	5.20	6.60	4.50	2.1	1.6	1.7
Barium	300 or SB	15-600	N/D	N/D	N/D	140	N/D	N/D
Beryllium	0.16 or SB	0-1.75	N/D	N/D	N/D	1	N/D	N/D
Cadmium	1 or SB	0.1-1	1.70	1.10	1.50	2	i	1
Calcium	SB	130-35,000	39,000	21,000	70,000	16,000	36,000	48,000
Chromium	10 or SB	1.5-40	13	7	- 11	14	7	6
Cobalt	30 or SB	2.5-60	39	21	25	38	24	21
Соррег	25 or SB	1-50	12	6.7	15	20	10	7
ron	2,000 or SB	2,000-550,000	12,000	6,500	7,800	12,000	6,100	4,900
.ead	SB	See Note 5	N/D	N/D	15	60	N/D	N/D
Magnesium	SB	100-5,000	5,100	4,300	10,000	6,000	7,500	2,800
Manganese	SB	50-5,000	340	330	250	330	360	370
Mercury	0.1	0.001-0.2	N/D	N/D	N/D	N/D	N/D	N/D
Vickel	13 or SB	0.5-25	24	12	21	19	15	14
otassium	SB	8,500-43,000	2,200	730	1,300	380	590	890
Selenium	2 or SB	0.1-3.9	0.23	0.16	N/D	0.22	N/D	0
Silver	SB	N/A	N/D	N/D	N/D	9	7	7
Sodium	SB	6,000-8,000	420	460	440	240	240	320
Challium	SB	N/A	N/D	N/D	1.30	N/D	1.4	1.4
/anadium	150 or SB	1-300	N/D	N/D	N/D	N/D	N/D	N/D
Zinc	20 or SB	9-50	45	86	50	76	42	46

1. Only compounds detected in one or more samples are presented on this table. Refer to original data sheets for list of all compounds included in analysis.

<sup>2.</sup> Analytical testing completed by Upstate Laboratories, Inc.

<sup>2.</sup> Analytical testing completed by Upstate Laboratories, Inc.

3. Recommended soil cleanup objectives are based on the Division Technical and Administrative Guidance Memorandum (TAGM) 4046 on Determination of Soil Cleanup Objectives and Cleanup Levels in its final form.

4. ND = not detected, NA = not available

5. Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4-61 ppm. Average background levels in metropolitan or suburban areas or near highways are much higher and typically range from 200-500 ppm.

<sup>6.</sup> mg/kg = ppm

DATE:

Upstate Laboratories, Inc.

Analysis Results

Report Number: 14000079

Client I,D.: CIMINFILI SERVICES GROUP CORF,

APPROVAL:\_\_\_

QC: ( 10170

Sampled by: Client

ID:15200015 Mat.Soil	29-00-0002 HCKENNA	LANDFILL GRID A-27	TOPSOIL 0700B 05/307	05. G ~ ~
	• •			

Paramenera	results	DATE ANAL, KE	Y FILE#
		44444	* *****
2,4,5-72 (Silvex)	<4. Sug/kg dw	06/13/00	GA0130
Dinoseb	<4.6ug/kg dw	05/13/90	GA0130
TCL Pesticides Arocloss by EPA BOS	0		
BHC (a-isomer)	<2.4ug/kg dw	06/13/00	GA0129
BHC (b-isomer)	<2.4 mg/kg dw	06/13/00	GA0129
BHC (d-isomer)	<2.4ug/kg dw/	06/13/00	GA0129
BHC (g-isomer)	<2,4ug/kg ga	06/13/00	GA0129
Heptachlor \	<2.4ug/kg/dw	06/13/00	<b>ወሕ01</b> 29
Aldrin	<2.4ug/Kg dw	06/13/00	GA0129
Reptachlor Epoxide	<2.4 yg/kg dw	06/13/00	GA0129
Endosulfan I	<2 / Lug/kg dw	06/13/00	GA0129
Dieldrin	se 6 6 mg/kg dw	06/13/00	GA0129
4,4'-DDE	<4.6ug/kg dw	06/13/00	GA0129
Endrin	c4. sug/kg dw	06/13/00	GA0129
Endosulfan II	<4 fug/kg dw	06/13/00	GA0129
4,4'-DDD	<4.6 mg/kg dw	06/13/00	GA0129
Endosulfan Sulfare	<4.6ug/kg dw	06/13/00	GA012
4,4'-DDT	<4. Sug/kg dw	06/13/00	GAD12
Methoxychlor	<24.0ug/kg de	06/13/00	GA0129
Endrin Ketone	<4.6ug/kg dw	06/13/00	GA0129
Endrin Aldehyde	<4. Eug/kg dw	06/13/00	GA0129
alpha-Chlordane	<2,4ug/kg dw	26/13/00	GA0129
gamma-Chlordane	<2.4ug/kg dw	06X13/00	GA0129
Toxaphene	<240.0ug/kg dw	06/13/00	GA0129
Aroclor 1015	<2.4ug/kg dw	06/13/00	GA0129
Aroclor 1221	<2.4ug/kg dw	06/13/00	GA0129
Aroclor 1232	<2.4ug/kg dw	06/13/00	GA0129
Aroclor 1242	<2.4ug/kg dw	05/13/00	GA0129
Arogior 1248	<2.4ug/kg dw	06/13/00	GA0129
Aroclor 1254	<2.4ug/kg dw	06/13/00	GA0129
Aroclor 1260	<2,4ug/kg dw	06/13/00	840129

ID:15200016 MAE: Soil 29-00-0002 MCKENNA LANDFILL GRID A-16 COVER 0700H 05/30/00 G

PAR	Rameters	rksults	DATE ANAL.	XEY	file#
	* · · · · · · · · · · · · · · · · · · ·		*****		***
	Percent Solids	78%	06/01/00		WDD453
	Total Cyanida	<1.2mg/kg dw	06/13/00		WD0468
Total	Aluminum	8300mg/kg dw	06/09/00		MB2436
Total	Antimony	<38mg/kg dw	06/09/00		MB2436
Total	Arsenio by furnace method	5,2mg/kg dw	06/09/00		MB2438
Total	Barium	<3Bmg/kg dw	06/09/00		MB2436
Total	Beryllium	<0.64mg/kg dw	06/09/00		MB2436

Upstate Laboratories, Inc.

Analysis Results

Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_\_\_\_

QC: 1 \_ Lab I.b,: 10170

ID:15200016	Waticail	29-00-0002	MCRENNA	LANDFILL GRID	A-16	COVER	0700X 05/	10/05 22
TO * TURE OF OF WA	STATE OF THE	W	<b>Amount Attitudes are seen</b>	ARTICLE ADD ALLER		AA A THE	a 1 4 4 777	38/00 3

PAI	RAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	# # # # # # # # # # # # # # # # # # #				
Total	Cadmium	1.7mg/kg dw	06/09/00		MB2436
Total	Calsium	39000mg/kg dw	06/09/00		MB2436
Total	Chromium	limg/kg dw	06/09/00		MB2436
Total	Cobalt	3 awa\ka <b>q</b> m	06/09/00		MB2436
Lotaj	Copper	12mg/kg dw	06/09/00		MB2436
Total	Iron	12000mg/kg dw	06/09/00		MB2436
Total	Lead	<13mg/kg dw	06/09/00		MB2436
Total	Magnesium	5100mg/kg dw	06/09/00		MB2436
Local	Manganese	340mg/kg dw	06/09/00		MB2436
Total	Mercury	<0.4mg/kg dw	06/06/00		MB2420
Total	Nickel	24mg/kg dw	06/09/00		MB2436
Total	Potassium	2200mg/kg dw	06/12/00		MB2443
Total	Selenium by furnace method	0.23mg/kg dw	06/09/00		MB2439
Total	Silver	<6.4mg/kg dw	06/09/00		MB2436
Total	Sodium	420mg/kg dw	06/12/00		MB2443
Total	Thallium by Eurnace method	<0.4mg/kg dw	06/14/00		ME2870
Total	Vanadium	<38mg/kg dw	06/09/00		MB2436
Total	Zinc	45mg/kg dw	96/09/00		MB2436
	Chloromethane	<4ug/kg dw	06/05/00		VM290 <i>6</i>
	Bromomethane	<4ug/kg dw	06/05/00		VM2906
	Vinyl Chloride	<3ug/kg dw	06/05/00		VM2906
	Chloroethene	<4ug/kg dw	05/05/00		AW5308
	Methylene Chlorida	13ug/kg dw	06/05/00	44	VM2906
	Acetone	<13 ug/kg dw	06/05/00	44	VM2906
	Carbon Disulfide	<4ug/kg dw	06/05/00		VM2906
	1,1-Dighlorosthene	<4ug/kg dw	06/05/00		VM2906
	1,1-Dichloroothane	<4ug/kg dw	06/05/00		
	trans-1,2-Dichloroathene	<4ug/kg dw	06/05/00		VM2906
	cis-1,2-Dichloroethene	<4ug/kg dw	06/05/00		VM2906
	Chloroform	<4ug/kg dw	Q6/05/00		VM2906
	1,2-Dichloroothane	<4ug/kg dw	06/05/00		VM2906
	2-Butanone	<li><li>13ug/kg dw</li></li>	06/05/00		VM2906
	1,1,1-Trichlorosthans	<4ug/kg dw	06/05/00		VM2906
	Carbon Tetrachloride	<4ug/kg dw	· .		VM2906
	Bromodichloromethane	<4ug/kg dw	06/05/00		AW3306
	1,2-Dichloropropane	<4ug/kg dw	06/05/00		VM2906
	cis-1,3-Dichloropropene		06/05/00		<b>VM</b> 2906
	Trichloroethene	<4ug/kg dw	06/05/00		<b>VM2</b> 90 <i>6</i>
	Dibromochloromethans	<4ug/kg dw	06/05/00		VM2906
,	1,1,2-Trichloroethana	<4ug/kg dw	06/05/00		<b>V</b> M2906
	Benzene	<4ug/kg dw	06/05/00		VM2906
	trans-1,3-Dichloropropens	<eug dw<="" kg="" td=""><td>06/05/00</td><td></td><td>VM2906</td></eug>	06/05/00		VM2906
		< 4 ug/kg dw	06/05/00		VM2906

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Upstate Laboratories, Inc. Analysis Results

Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ \_ \_ \_ QC: 97 Lab I.D., 10170

ID: 15200016 Mat. Soil	29-00-0002 MCKENNA	LANDFILL GRID A-16 COVER 0700H 05/3070	10 G
TO 4 10 10 10 10 10 10 10 10 10 10 10 10 10			, ,

Parameters	Resulta	date anal.	KEY	file#
44		~~~~~~		
Bromoform	<4ug/kg dw	06/05/00		VX(2906
4-Methyl-2-pentanona	<13ug/kg dw	06/05/00		4745 3 0 6
2-Hexanong	<13na\ka qm	06/05/00		VM2906
Tetrachlorosthene	<4ug/kg dw	06/05/00		V)42906
1,1,2,2-Tetrachloroethane	<4ug/kg dw	06/05/00		VM2906
Toluene	<4ug/kg dw	06/05/00		<b>VM2906</b>
Chloxobenzene	<4ug/kg dw	06/05/00		VM2906
Ethylbenzene	<4ug/kg dw	06/05/00		VM2906
Styrese	<4ug/kg dw	06/05/00		<b>VM2906</b>
m-Kylene and p-Kylene	<4ug/kg dw	06/05/00		VM2906
o-Xylene	<4ug/kg dw	06/05/00		VM2906
TCL Semivolatiles by EPA Method 827	70			
Phenol	<430ug/kg dw	06/07/00		SA2432
bis (2-Chloroethyl) other	<430ug/kg dw	05/07/00		5A2432
2-Chlorophenol	<430ug/kg dw	06/07/00		SA2432
1,3-Dichlorobenzene	<430ug/kg dw	06/07/00		8A2432
1,4-Dichlorobenzene	<430ug/kg dw	06/07/00		SA247
1,2-Dichlorobenzene	<43 Aug/kg dw	06/07/00		5X24
2-Methylphonol	<430ug/kg dw	06/07/00		SA2432
2,2'-Omybis(1-Chloropropana)	<430ug/kg dw	06/07/00		SA2432
4-Methylphenol	<430µg/kg dw	06/07/00		5A2432
n-Nitrosodi-n-propylamine	<430ug/kg dw	06/07/00		6A2432
Hexachloroethane	<420ug/kg dw	06/07/00		
Nitropersone				SA2432
	<430ug/kg dw	06/07/00		SA2432
Isophorone	<430ug/kg dw	06/07/00		5A2432
2-Nitrophenol	<430ug/kg dw	06/07/00		5 <b>324</b> 32
2,4-Dimethylphenol	<430ug/kg dw	05/07/00		SA2432
bis (2-Chloroethoxy) methane	<430ug/kg dw	06/07/00		SA2432
2.4-Dichlorophanol	<43pug/kg dw	06/07/00		SA2432
1,2,4-Trichlorobenzene	<430ug/kg dw	06/07/00		SA2432
Naphthalene	c430ug/kg dw	06/07/00		<b>9A</b> 2 <b>4</b> 32
4-Chloroaniline	<410ug/kg dw	06/07/00		SA2432
Hexachlorobutadiene	<430ug/kg dw	06/07/00		SA2432
4-Chloro-3-methylphonol	<430ug/kg dw	06/07/00		SA2432
2-Mathylnaphthalene	<430ug/kg &w	06/07/00		5A2432
Hexachlorocyclopentadiene	<#3 Qug/kg dw	06/07/00		924432
2,4,6-Trichlorophenal	<430ug/kg dw	06/07/00		SA2432
2,4,5-Trichlorophenol	<430ug/kg dw	96/07/00		SA2432
2-Chloronaphthalene	c430ug/kg dw	06/07/00		SA2432
2-Nitroaniline	<4300ug/kg dw	06/07/00		SA2432
Dimethylphthalate	<43 Oug/kg dw	06/07/00		SA2432
Acenaphthylene	<43 pug/kg dw	05/07/00		SA2432
2,6-Dinitrotoluene	<430ug/kg dw	06/07/00		SA2432

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Upstate Laboratories. Inc.

Analysis Results

Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ = -

QC:47 Lab I,D.: 10170

ID:15200016 Mat:Soil	29-00-0002 MCKENNA	LANDFILL GRID A-16	COVER 0700H 05/30/00 G

PARAMETERS	RESULTS	DATE ANAL,	KEY	FILE#
3-Mitrospiline	<4300ug/kg dw	06/07/00		SA2432
Acenaphthene	<430ug/kg dw	06/07/00		SA2432
2,4-Dinitrophenol	<4300µg/kg dw	06/07/00		SA2432
4-Nitrophenol	<4300ug/kg dw	06/07/00		9A2432
Dibenzofuran	<430ug/kg dw	06/07/00		5A2432
2,4-Dinitrotoluene	<430ug/kg dw	06/07/00		SA2432
Diethylphthalate	<430ug/kg dw	06/07/00		SA2432
4-Chlorophenylphenylether	<430ug/kg dw	06/07/00		SA2432
Fluorena	<410ug/kg dw	06/07/00		SA2432
4-Nitroaniline	<4300ug/kg dw	96/07/00		BA2432
2-Mathyl-4,6-dinitrophenol	<4300ug/kg dw	06/07/00		SA2432
n-Nitrosodiphenylamine	<430ug/kg dw	06/07/00		SA2432
4-Bromophenylphenylether	<43Qug/kg dw	06/07/00		SA2432
Hexachlorobenzene	<430ug/kg dw	06/07/00		SA2432
Pentachlorophenol	<860ug/kg dw	06/07/00		SA2432
Phenanthrena	<430ug/kg dw	06/07/00		SA2432
Anthracene	<430ug/kg dw	06/07/00		SA2432
Carbazole	<430ug/kg dw	06/07/00		SA2432
di-n-butylphthalate	<430ug/kg dw	06/07/00		5A2432
Fluorenthene	<430ug/kg dw	06/07/00		SA2432
Pytone	<430ug/kg dw	06/07/00		SA2432
Hutylbenzylphthalate	<430ug/kg dw	06/07/00		SA2432
3,3'-Dichlorobenzidine	<43 Oug/kg dw	06/07/00		8A2432
Benzo (a) anthracene	<43 Oug/kg dw	06/07/00		SA2432
Chrysene	<430ug/kg dw	06/07/00		SA2432
bis(2-Ethylhexyl)phthalate	<430ug/kg dw	06/07/00		5A2432
di-n-octylphthalate	<43 Oug/kg dw	06/07/00		SA2432
Benzo(b) fluoranthene	<430ug/kg dw	96/07/00		SA2432
Benzo (k) fluoranthene	<430ug/kg dur	06/07/00		SA2432
Benzo (a) pyrane	<410ug/kg dw	06/07/00		9A2432
Indeno(1,2,3-cd)pyrene	<430ug/kg dw	05/07/00		SA2432
Dibenzo (a, h) anthracena	<430µg/kg dw	05/07/00		SA2432
Benzo (ghi) perylene	<430ug/kg dw	06/07/00		SA2432
EPA Method 8150				
	45			
2,4-D	<4.2ug/kg dw	06/13/00		<b>GY013</b> 0
2,4,5-T	<4.2 ug/kg dw	06/13/00		GXQ130
2,4,5-TP (Silver)	<4.2ug/kg dw	06/13/00		GA0130
Dinoseb	<4.2ug/kg dw	06/13/00		G¥0130
TCL Pesticides/Aroclors by EPA 8080				
BHC (a-isomer)	an ham the day	00/47/00		#3.65 A.C
BHC (b-isomer)	<2,2ug/kg dw	06/13/00		GA0129
	<2.2hg/kg dw	06/13/00		GAQ129
BHC (d-lacmqr)	<2.2ug/kg dw	06/13/00		GA0129

Upgtate Laboratories, Inc. Analysis Results Report Number: 14000079 Client I.D.: CIMINELLI SERVICES GROUP CORP. APPROVAL:\_\_\_\_\_ QC: () - Lab I.D.: 10170

Sampled by: Client

ID:15200016 Mat:sell 29-00-0002 MCKENMA LANDFILL GRID A-16 COVER 0700H 05/30/00 G

results	DATE ANAL,	KRY	FILE#
# # # # # # F	****		
<2.2 ug/kg dw	06/13/00		GA0129
	06/13/00		GA0129
			GA0129
			GA0129
<2.2ug/kg dw	06/13/00		GA0129
<4.2ug/kg dw	96/13/99		GA0129
<4.2ug/kg dw	06/13/00		GA0129
<4.2ug/kg dw	06/13/00		GA0129
<4,24g/kg dw	06/13/00		GA0129
<4.2ug/kg dw	06/13/00		GA0129
<4,2ug/kg d⊌			GA0129
<4.2ug/kg dw			GA0129
<22.0ug/kg dw			<b>GA</b> 0129
<4.2µg/kg dw	06/13/00		GA0129
<4.2ug/kg dw	06/13/00		GA0129
<2.2ug/kg dw	06/13/00		GA0129
<2.2ug/kg dw	06/13/00		GA0129
<220ug/kg dw	06/13/00		GA012 n
<2.2ug/kg dw	06/13/00		GA01
<2.2ug/kg dw	06/13/00		GA01
<2,2ug/kg dw	06/13/00		GNDIZS
<2.24g/kg dw	06/13/00		GA0129
<2.24g/kg dw	06/13/00		GA0129
			GA0129
<2,2ug/kg dw	06/13/00		GA0129
	<pre>&lt;2.2ug/kg dw &lt;2.2ug/kg dw &lt;2.2ug/kg dw &lt;2.2ug/kg dw &lt;2.2ug/kg dw &lt;2.2ug/kg dw &lt;4.2ug/kg dw &lt;22.0ug/kg dw &lt;22.0ug/kg dw &lt;22.2ug/kg dw &lt;2.2ug/kg dw</pre>	<2.2ug/kg dw 06/13/00 <4.2ug/kg dw 06/13/00 <22.0ug/kg dw 06/13/00 <4.2ug/kg dw 06/13/00 <4.2ug/kg dw 06/13/00 <2.2ug/kg dw 06/13/00	<pre>&lt;2.2ug/kg dw</pre>

ID: 15200017 Hat: Soil 29-00-0002 MCKENNA LANDFILL GRID E-3 COVER 0700H 05/30/00 G

Parameters		RESULTS	DATE ANAL.	KEY	FILE#
		***			
	Percent Solids	86%	06/01/00		ND0453
	Total Cyanida	<1.lmg/kg dw	06/13/00		WD0468
Total	Aluminum	3500mg/kg dw	06/09/00		MB2436
Total	Antimony	<35mg/kg dw	06/09/00		<b>M</b> B2436
Total	Arsenic by furnace makhod	6.6mg/kg dw	06/09/00		MB2438
Total	Barium	<35mg/kg dw	06/09/00		MB2436
Total	Beryllium	<0.58mg/kg dw	06/09/00		MB2436
Total	Cadmium	1. Ling/kg dw	06/09/00		MB2436
Total	Calcium	21000mg/kg dw	06/09/00		MB2436
Total	Chromium	7.0mg/kg dw	06/09/00		MP2436
Total	Cobalt	ling/kg dw	06/09/00		MB2436
Total	Copper	6.7mg/kg dw	06/09/00		MB2436
Total	Iron	6500mg/kg dw	06/09/00		MB2436
Total	Lead	<12mg/kg dw	06/09/00		MB2436

P.11/25 Y. 10

DATE: / /

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Ipstate Laboratories, Inc. Analysis Results Report Number: 14000079

Client I.D.; CIMINELLI SERVICES GROUP CORP.

APPROVAL: 92; \$2 ~ Lab I.D.: 10170

Th: 15200017 Mat:Soil	29-00-0002 MCKENNA	LANDFILL GRID E-	3 COVER 0700H 05/30/00 G

PA	rameters	results	DATE ANAL.	KEY	FILE#
Total	Magnesium	4300mg/kg dw	06/09/00		MB2436
Total	Manganoso	330mg/kg dw	06/09/00		MB2436
Total	Mexcara	<0.3mg/kg dw	06/05/00		MB2420
Total	Nickel	12mg/kg dw	06/09/00		MB2436
Total	Pozasilum	730mg/kg dw	06/12/00		MB2443
Total	Sclenium by furnace method	0.16mg/kg dw	06/49/00		X92439
Total	Silver	<5.8mg/kg dw	06/09/00		M32436
Total	Sodium	460mg/kg dw	06/12/00		MB2443
Total	Thallium by furnace method	<0.4mg/kg dw	06/14/00		ME2870
Total	Vanadium	<35mg/kg dw	06/09/00		MB2436
Total	Zinc	86mg/kg dw	06/09/00		MB2436
	TCL Volatiles by EPA Method 8260				
	Chloromethane	<li>&lt;3ug/kg dw</li>	06/05/00		VM2906
	Bromomethane	«lug/kg dw	06/05/00		VM2906
	Vinyl Chloride	<2ug/kg dw	96/95/00		VM2906
	Chlorosthane	<3ug/kg dw	06/05/00		VM2906
	Methylene Chloride	13ug/kg dw	06/05/00	44	VM2906
	Acetone		06/05/00	**	VM2906
	Carbon Digulfide	<pre>&lt;3rd/fta qA</pre>	06/05/00		VM2906
	1,1-Dichlorosthene	<3ug/kg dw	06/05/0Q		VM2906
	1.1-Dichlorgethane	<pre>&lt;3ug/kg dw</pre>	06/05/00		VM2906
	trans-1,2-Dichloroethene	<3ug/kg dw	06/05/00		VM2906
	cis-1,2-Dichloroethene	<3ug/kg dw	06/05/00		VM2906
	Chloroform	<3ug/kg dw	06/05/00		VM2906
	1,2-Dichlorogthene	<3ug/kg dw	06/05/00		VM2906
	2-Butanone	<12ug/kg dw	06/05/00		VM2906
	1,1,1-Trichloroethane	<3ug/kg dw	06/05/00		VM2906
	Carbon Tetrachloride	<3ug/kg dw	06/05/00		VM2906
	Bromodichlogomethane	<3/2g/kg dw	06/05/00		VM2906
	1,2-Dichloropropane	<3ug/kg dw	06/05/00		VM2906
	cis-1,3-Dichloropropene	<3ug/kg dw	06/05/00		VM2906
	Trichlorogthene	<3ug/kg dw	P6/05/00		VM2906
	Dibromochloromethane	<3ug/kg dw	06/05/00		VN2906
	1,1,2-Trichloroethene	<3ug/kg dw	06/05/00		VM2906
	Benzene	<3ug/kg dw	06/05/00		VM2906
	trans-1,3-Dichloropropens	<3µg/kg dw	06/05/00		VM2906
	Bromoform	<3ug/kg dw	06/05/00		VM2906
	4-Wethyl-2-pentanona	<12ug/kg dw	06/05/00		VM2906
	2-Hexanone	<12µg/kg dw	06/05/00		VM2906
	Tetrachloroethone	<3ng/kg dw	96/05/00		V22906
	1,1,2,2-Tatrachloroethane	43ug/kg dw	06/05/00		VM2906
	Toluene	<3ug/kg dw	06/05/00		VM2906
	Chlorobenzene	<3ug/kg dw	06/05/00		VX2906

Upstate Laboratories, Inc. Analysis Regults Report Number: 14000079 Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_\_\_\_ QC: 10170 Sampled by: Client

				* ** ** ** *** ** *** **** ****
ID:15200017 Mat:Soil	29-00-0002	KCKEMNY	LANDFILL GRID K-3	COVER 0700H 05/30/00 G

Arameters	results	DATE ANAL.	KEY	PILE#
		Ad (05 (05		~~~~
Ethylbenzene	<a href="mailto:squares"><a href="mailto:squares"></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a></a>			

Upstate Laboratories, Inc.

Analysis Results

Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_\_\_\_ QC: 15 \_ Lab I.D.: 10170

			_ ~	<del></del>
ID:15200017 Mat:Soil	29-00-0002 MCKENNA	LANDFILL GRID	R-3 COVER	0700H 05/30/00 G

Parameters	results	DATE ANAL,	KEY	FILE#
# * * * * * * * * * * * * * * * * * * *	-200	06/07/00		
4-Chlorophenylphenylether	<390ug/kg dw			SA2432
Fluorene	<390ug/kg dw	06/07/00		SA2432
4-Nitroaniline	<3900µg/kg dw	05/07/00		FA2432
2-Methyl-4, 6-dimitrophenol	<3900ug/kg dw	06/07/00		SA2432
n-Nitrosodiphenylamine	<390ug/kg dw	06/07/00		SA2432
4-Bromophenylphenylether	<390ug/kg dw	06/07/00		BA2432
Hexachlorobenzene	<190ug/kg dw	06/07/00		SA2432
Pentachlorophenol	<780µg/kg dw	06/07/00		SA2432
Phenanthrene	<390ug/kg dw	06/07/00		SA2432
Anthracene	<390ug/kg dw	06/07/00		SA2432
Carbazole	<390ug/kg dw	06/07/00		SA2432
di-n-butylphthalate	<390ug/kg dw	06/07/00		SA2432
Flucranthene	c390ug/kg dw	06/07/00		SA2432
Pyrene	<390ug/kg dw	06/07/00		5 <b>3</b> 2432
Butylbenzylphthalate	<390ug/kg dw	06/07/00		5A2432
3,3'-Dichloxobenzidine	<pre>&lt;990ug/kg dw</pre>	06/07/00		SA2432
Bonzo(a) anthracene	<190ug/kg dw	06/07/00		5A2432
Chrysene	<390ug/kg dw	06/07/00		8A2432
his (2-Ethylhexyl) phthalate	<390mg/kg dw	06/07/00		BA2432
di-n-octylphthalate	<390µg/kg dw	06/07/00		SAZ432
Benzo (b) fluoranthene	<390ug/kg dw	06/07/00		SA2432
Benzo (k) fluoranthene	<390ug/kg dw	06/07/00		SA2432
Benzo(a) pyrene	<390ug/kg dw	06/07/00		SA2432
Indeno (1,2,3-cd) pyrene	<390µg/kg dw	06/07/00		SA2432
Dibenzo (a, h) anthracens	<390ug/kg dw	96/07/00		SA2432
Bonzo (ghi) perylene	<390ug/kg dw	06/07/00		<b>5A24</b> 32
EPA Method 8150				
2,4-D	<3.8 <b>ug/</b> kg dw	05/13/00		GADI30
a,4,5-T	43.8ug/kg dw	06/13/00		GA0130
2,4,5-TP (Silvex)	<3.8ug/kg dw	06/13/00		OLIOAD
Dinoseb	ca. Sug/kg dw	05/13/00		GA0130
TCL Pesticides/Aroclors by EPA 8080				
BHC (a-isomer)	<2.0ug/kg dw	06/13/00		GA0129
BHC (b-isomer)	<2.0ug/kg dw	06/13/00		GA0129
BHC (d-jsomer)	<2.0ug/kg dw	06/13/00		GA0129
BHC (g-lsomer)	<2.0ug/kg dw	06/13/00		GA0129
Reptachlor	<2.0ug/kg dw	06/13/00		GA,0129
Aldrin	<2.0ug/kg dw	06/13/00		GA0129
Heptachlor Epoxide	<2.0ug/kg dw	06/13/00		GA0129
Endosulfan I	<2.0ug/kg dw	06/13/00		GA0129
Dieldrin	<3.8ug/kg dw	06/13/00		GA0129
4,4'-DDE	<3.8ug/kg dw	06/13/00		GA0129
		44,44,44		4470 74 7

Upstate Laboratories, Inc. Analysia Results Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ \_ \_ 20: 12 - Lab I.p.: 10170

sampled by: Client

ID: 15200017 Mat: Soil 29-00-0002 MCKENNI LANDFILL GRID E-3 COVER 0700E 05/30/00 G

Parameters	results	PATE AMAL.	KEY	FILE#
Endrin	<3.8ug/kg dw	06/13/00		GA0129
Endosulian II	<3. aug/kg dw	06/13/00		GA0129
4,4'-DDD	<3.8ug/kg dw	06/13/00		GA0129
Endosulfan Sulfato	<3.8ug/kg dw	06/13/00		GAQ129
4,4'-DDT	<3.8ug/kg dw	00/E1/30		GAQ129
Methoxychlor	<20.0ug/kg dw	DE/13/00		GA0129
Endrin Ketone	<3.8ug/kg dw	06/13/00		GA0129
Endrin Aldehyde	<3. Bug/kg dw	06/13/00		GA0129
alpha-Chlordane	<2.0ug/kg dw	06/13/00	-	GA0129
gamma-Chlordane	<2.04g/kg dw	06/13/00		GA0129
Toxaphene	<200ug/kg dw	06/13/00		GA0125
Aroclor 1016	<2.0ug/kg dw	06/13/00		GA0129
Aroclor 1221	<2, Qug/kg dw	06/13/00		GA0129
Aroclor 1232	<2.04g/kg dw	-06/13/00		GA0129
Aroclor 1242	<2. Qug/kg dw	06/13/00		GA0129
Aroclor 1248	<2.0ug/kg dw	06/13/00		GADI29
Aroclor 1254	<2.0ug/kg dw	06/13/00		GA0129
Arodlor 1260	<2.0ug/kg dw	06/13/00		GA0129

ID: 15200018 MaE: Soil 29-00-0002 MCKENNA LANDFILL GRID H-17 COVER 0700H 05/30/00 G

PAR	RAMETERS	resulta	DATE ANAL.	KEY	FILE#
	4 <del>4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 </del>		~~~ <del>~~</del>		
	Percent Solids	80%	06/01/00		WD0453
	Total Cyanide	<1.2mg/kg dw	06/13/00		WD0468
Total	Aluminum	4600mg/kg dw	05/09/00		MB2436
Total	Antimony	<40mg/kg dw	Q6/09/00		MB2436
Total	Arsenic by furnace method	4.5mg/kg dw	06/09/00		MB2438
Total	Barium	<40mg/kg dw	06/09/00		MB2436
Total	Beryllium	<0.7mg/kg dw	06/09/00		MB2436
Total	Cadmium	1.5mg/kg dw	06/09/00		MB2436
Total	Calqium	70,000mg/kg dw	06/09/00		MB2436
Total	Chromium	ling/kg dw	06/09/00		MB2436
Total	Cobalt	25mg/kg dw	05/09/00		MB2436
Total	Copper	15mg/kg dw	06/09/00		MB2436
Total	Iron	7800mg/kg dw	06/09/00		<b>MB2436</b>
Total	Lead	15mg/kg dw	06/09/00		MB2436
Total	Magnesium	10,000mg/kg dw	06/09/00		MB2436
Total	Manganese	250mg/kg dw	06/09/00		MB2436
Total	Merchia	<0.4mg/kg dw	06/06/00		MB2420
Total	Nickel	21mg/kg dw	06/09/00		MB2436
Total	Potassium	1300mg/kg dw	06/12/00		MB2443
Total	Salenium by furnace method	<0.2mg/kg dw	06/09/00		MB2439
Total	Silver	<7mg/kg dw	06/09/00		MB2436

Opstate Laboratories, Inc.

Analysis Results

Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL: QC: \_ [7 \_ Lab I.D.: 10170

Sampled by; Client

ID:15200018 Mat:Soil 29-00-0002 MCKENNA LAMPFILL GRID R-17 COVER 0700H 05/30/00 G

PAI	rameters	results	DATE ANAL.	Key	PILE
		# N = = = = = = = = = = = = = = = = = =			<b></b>
otal	Sodium	440mg/kg dw	06/12/00		MB24
otal	Thallium by furnace mathod	1.3mg/kg dw	06/14/00		ME28
Chal	Vanadium	<40mg/kg_dw	06/09/00		MB24
otal	Zinc	50mg/kg dw	06/09/00		MB24
7	ICL Volatiles by EPA Method 8260				
# F		415	05/05/00		1944.5
	Chloromethane	<1ug/kg dw	06/06/00		VM35
	Bromomethane	<4ug/kg dw	06/06/00		VM25
	Vinyl Chloride	<3ug/kg dw	06/06/00		VM25
	Chlqroathane	<4ug/kg_dw	06/06/00		VM2 9
	Methylene Chloride	8ug/kg dw	06/06/00	44	AM3 8
	Acetone	<13ug/kg dw	06/06/00		VM2 9
	Carbon Disulfide	<4ug/kg dw	06/06/00		VM29
	1,1-Dichlorogthene	<41g/kg dw	06/06/00		VM25
	1,1-Dichloroethane	<4ug/kg dw	06/06/00		VM25
	trans-1,2-Dichlorosthene	<4ug/kg dw	06/06/00		VM2
	cig-1,2-Dichloroethene	<4ug/kg dw	06/06/00		VM25
	Chloroform	<4ug/kg dw	06/06/00		VM2
	1,2-Dichloroethans	<4ug/kg dw	06/06/00		VM25
	2-Buranone	<13 ug/kg dw	06/06/00		VM2
	1,1,1-Trichlorosthane	<4ug/kg dw	06/06/00		VM2
	Carbon Tetrachloride	<4ug/kg dw	06/06/00		VM2
	Bromodichloromethana	stug/kg dw	06/06/00		VM2
	1,2-Dichleropropane	<tug dw<="" kg="" td=""><td>06/06/00</td><td></td><td>VM2</td></tug>	06/06/00		VM2
	ois-1,3-Dichloropropens	<4ug/kg dw	06/06/00		VM25
	Trichloroetheno	<4ug/kg dw	96/06/00		VM29
	Dibromochloromethane	<4ug/kg dw	06/06/00		VM2
	1,1,2-Trichloroghane	<fug dw<="" kg="" td=""><td>06/06/00</td><td></td><td>VM2</td></fug>	06/06/00		VM2
	Benzene	<4ug/kg dw	05/05/00		VM2
	trans-1,3-Dichloropropene	<4ug/kg dw	D6/06/00		V±25
	Bromoform	<4ug/kg dw	06/06/00		VM2
	4-Methyl-2-pentanone	<13ug/kg dw	06/06/00		VM2
	2-Hexanone	<13ug/kg dw	06/06/00		VM2
	Tetrachloroethene	<4ug/kg dw	06/06/00		VM2
		<4ug/kg dw	06/06/00		VM2
	1,1,2,2-Tetrachlorosthane		06/06/00		VM2
	Toluene	<4ug/kg dw	06/06/00		VM2
	Chlorobenzene	<4ug/kg dw			
	Ethylbenxene	ctug/kg dw	06/06/00		VM2 9
	Styrene	<4ug/kg dw	06/06/00		VM25
	m-Xylene and p-Xyleno	<4ug/kg dw	06/06/00		VM2
	o-Xylene	<4ug/kg dw	05/06/00		VH2
,	TCL Semivolatiles by EPA Method 8.	270			
	Phenol	<420ug/kg dw	06/07/00		5A24

Upstate Laboratories, Inc. Analysia Resulta Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL: QC: 1 - Tab T.D.: 10170

Sampled by: Client

ID:15200018 Mat: Soil 25-00-0002 MCKENNA LANDFILL GRID H-17 COVER 070DH 05/30/00 G

PARAMETERS	results	DATE ANAL.	KEY	file#
		A		*****
bis (2-Chlorosthyl) atter	<420ug/kg dw	05/07/00		SA2432
2-Chlorophenol	<420ug/kg dw	06/07/00		SA2432
1,3-Dichlorobenzene	c420ug/kg dw	06/07/00		SA2432
1,4-Dichlorobensene	<420ug/kg dw	06/07/00		SA2432
1,2-Dichlorobenzena	<420ug/kg dw	06/07/00		SA2432
2-Methylphenol	<420ug/kg dw	06/07/00		SA2432
2,2'-Oxybis (1-Chloropropane)	<420ug/kg dw	06/07/00		SA2432
4-Methylphenol	<420ug/kg dw	06/07/00		SA2432
n-Nitrosodi-n-propylamine	<450nd/kd qm	06/07/00		5A2432
Hexachlorosthane	<420ug/kg dw	06/07/00		5 <b>A24</b> 32
Nitrobenzene	<420ug/kg dw	96/07/00		SA2432
Ispphorone	<420ug/kg dw	06/07/00		SA2432
2-Ni trophenol	<420ug/kg dw	96/07/00		SA2432
2,4-Dimethylphenol	<420ug/kg dw	06/07/00		SA2432
bis (2-Chloroethoxy) makhane	<420ug/kg dw	06/07/00		SA2432
2,4-Dichlorophenol	<420ug/kg dw	06/07/00		SA2432
1,2,4-Trichlorobenzens	<420ug/kg dw	06/07/00		BA2432
Naphthalene	<420ug/kg dw	06/07/00		SA2437
4-Chloroaniline	<420ug/kg dw	06/07/00		63.24
Hexachlorobutadiene	<420ug/kg dw	06/07/00		SA243
4-Chloro-3-mathylphenal	<420ug/kg dw	06/07/00		SA2432
2-Mathylnaphthalens	<420ug/kg dw	06/07/00		SA2432
Hexachlorocyclopentadione	<420ug/kg dw	06/07/00		9A2432
2,4,6-Trichlorophenol	<420ug/kg dw	06/07/00		5A2432
2,4,5-Trichlorophenol	<420ug/kg dw	06/07/00		SA2432
2-Chloronaphthalene	<420ug/kg dw	06/07/00		8A2432
2-Nitrosniline	<4200ug/kg dw	06/07/00		SA2432
Dimethylphthalate	<420ug/kg dw	06/07/00	,	SA2432
Acenaphthylene	<420ug/kg dw	06/07/00		SA2432
2,6-Dinitrotoluene	<420ug/kg dw	06/07/00		SA2432
3-Nitrospiline	<4200ug/kg dw	06/07/00		SA2432
Adenaphthene	<4204g/kg dw	06/07/00		SA2432
2,4-Dinitrophenol	<4200ug/kg dw	06/07/00		9A2432
4-Nitrophenol	<4200ug/kg dw	96/07/00		SA2432
Dibenzofuran	<42Qug/kg dw	06/07/00		SA2432
2,4-Dinitrotoluene		06/07/00		SA2432
*	<420ug/kg dw	06/07/00		
Diethylphthalate	4420ug/kg dw			SA2432
4-Chlorophonylphenylether	<420ug/kg dw	06/07/00		SA2432
Fluorene	<420ug/kg dw	06/07/00		SA2432
4-Nitroaniline	<4200ug/kg dw	06/07/00		SA2432
2-Methyl-4,6-dinitrophenol	<4200ug/kg dw	06/07/00		SA2432
n-Nitrosodiphenylamine	<420ug/kg dw	06/07/00		SA2432
4-Bromophenylphenylether	<420ug/kg dw	06/07/00		SA2432
Hexachlorobenzene	<420ug/kg dw	06/07/00		<b>SA2432</b>

Upstate Laboratories, Inc. Analysis Results Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_\_\_\_\_

- Lab I,D,: 10170

Sampled by: Client

ID:15200018 Mat:8011 29-00-0007 MCKENNA LANDFILL GRID H-17 COVER 0700H 05/30/00 G

Parameters	results	DATE ANAL.	KEY	FILE#
n fe pp an 中華 中国 智 M			~ • *	
Pentachlorophenol	<840ug/kg dw	06/07/00		BA2432
Phenanthrong	<420ug/kg dw	96/97/90		5 <b>A2432</b>
Anthracens	<420vg/kg dw	06/07/00		SA2432
Carbazole	<420ug/kg dw	06/07/00		8A2432
di-n-butylphthalate	<420 ug/kg dw	06/07/00		SA2432
Fluoranthene	<420ug/kg dw	06/07/00		EA2432
Pyrene	<420ug/kg dw	06/07/00		SA2432
Butylbenzylphthalate	<420 ug/kg dw	06/07/00		SA2432
3,3'-Dighlorobenzidino	<42Qug/kg dw	06/07/00		SA2432
Benzo (a) anthracene	<420ug/kg dw	06/07/00		SA2432
Chrysene	<420ug/kg dw	05/07/00		SA2432
bis(2-Ethylhexyl)phthalate	<420ug/kg dw	06/07/00		SA2432
di-n-octylphthalate	<420ug/kg dw	06/07/00		6A2432
Benzo (b) fluoranthene	<420ug/kg dw	06/07/00		SA2432
Benzo (k) fluoranthene	<420ug/kg dw	06/07/00		SA2432
Henzo (a) pyrene	<420ug/kg dw	06/07/00		SA2432
Indeno (1,2,3-cd) pyrene	<420ug/kg dw	06/07/00		SA2432
Dibenzo (a, h) anthracene	<420ug/kg dw	05/07/00		BA2432
Banzo (ghi) perylene	<420ug/kg dw	06/07/00		SA2432
ballyde I Amet hat have		04/4//40		mark 17 b
EPA Method 8150	•			
0.4.0	. 4 . 4	05/12/00		
2,4-D	<1.1ug/kg dw	06/13/00		GA0130
2,4,5-T	<4.lug/kg dw	06/13/00		GA0130
2,4,5-TF (Silvex)	<4.lug/kg dw	06/13/00		GA0130
Dinoseb	<4.lug/kg dw	06/13/00		GAQ130
TCL Pesticides/Aroclors by EPA 8080				
SHC (a-isomer)	<2.lug/kg dw	06/13/00		GA0129
BHC (b-isomer)	<2.lug/kg dw	06/13/00		GA0129
BHC (d-isomer)	<2.lug/kg dw	06/13/00		GA0129
BHC (g-isomer)	<2.111g/kg dw	06/13/00		GAOLAS
Heptachlor	<5.8ug/kg dw	06/13/00		GA0129
Aldrin	<2.1ug/kg dw	05/13/00		GA0129
Heptachlor Epoxids	<2.1µg/kg dw	06/13/00		GA0129
Endosulfan I	<2.lug/kg dw	Q6/13/Q0		GA0129
Dieldrin	<4.lug/kg dw	06/13/00		GA0129
4,4'-DDE	<4.lug/kg dw	06/13/00		GA0129
Endrin	<4.1ug/kg dw	06/13/00		GA0129
Endosulfan II	<4.lug/kg dw	06/13/00		GA0129
4,4'-DDD	<4.lug/kg dw	06/13/00		GA0129
Endosulfan Sulfate	<4.lug/kg dw	06/13/00		GA0129
4,4'-DDT	<4.lug/kg dw	06/13/00		GA0129
Methexychlor	<21ug/kg dw	06/13/00		GA0129
Endrin Ketone	<4.lug/kg dw	25/13/00		GA0129
MARKET THE WAS PARTED	CATTOLLE CA	A9\T3\AA		GMULZE

06/06/00

VM2909

DATE: / /

Upstate Laboratories, Inc. Analysis Rosults Report Number: 14000079 Client I.D.; CIMINELLI SERVICES GROUP CORP. APPROVAL:\_\_\_\_\_ QC: 1 - Lab I.D.: 10170 Sampled by: Client

TD:15200018 Mat: Soil 29-00-0002 MCKENNA LANDFILL GRID H-17 COVER 0700H 05/30/00 G

Parameters	results	DATE ANAL.	KEY	FILLE
***		****	<b></b>	****
Endrin Aldehyda	<4.1ug/kg dw	06/13/00		GA0125
alpha-Chlordane	<2.lug/kg dw	06/13/00		GA0129
gamma-Chlordane	<2.1ug/kg dw	06/13/00		GA0129
Toxaphene	<200ug/kg dw	06/13/00		GA0129
Arodler 1016	<2.lug/kg dw	06/13/00		GA0129
Aroclor 1221	<2.lug/kg dw	06/13/00		GA0129
Aroclor 1232	<2,1ug/kg dw	06/13/00		GA0129
Aroclor 1242	<2.10g/kg dw	06/13/00		GA0129
Aroclor 1248	<2.lug/kg dw	96/13/00		GA0129
Aroclar 1254	<2.lug/kg dw	06/13/00		GA0129
Aroclor 1260	<2.lug/kg dw	06/13/00		GA0129

ID: 15200019 Mat. Soil 29-00-0002 MCKENNA LANDFILL GRID D-9 TOPSOIL 0700H 05/30/00 G

PAI	RAMETERS	results	DATE ANAL,	KEY	LITE
		*****			
	Percent Solids	75%	06/01/00		WD0453
	Total Cyanide	<1.3mg/kg dw	06/13/00		WD0468
Total	Aluminum	<300mg/kg dw	06/09/00		MB243
Total	Antimony	<40 mg/kg dw	06/09/00		MB2436
Total	Arsenia by furnace mathod	2.5mg/kg dw	06/09/00		MH2438
Total	Barium	6lmg/kg dw	06/09/00		MB2436
Total	Beryllium	<0.66mg/kg dw	06/09/00		MB2436
Total	Cadmium	1.7mg/kg dw	05/09/00		M32436
Total	Calcium	5900mg/kg dw	06/09/00		MB2436
Total	Chromium	ling/kg dw	05/09/00		MB2436
Total	Cobalt	32mg/kg dw	06/09/00		MB2436
rotal	Copper	13mg/kg dw	Q6/Q9/DO		MB2436
Total	Iron	10000mg/kg dw	06/09/00		<b>MB24</b> 36
Total	Lead	<13mg/kg dw	06/D9/ <b>00</b>		MB2436
Total	Magnesium	2300mg/kg dw	06/09/00		<b>MB</b> 2436
Total	Manganese	380mg/kg dw	06/09/00		MB2436
Total	Mercury	<0.4mg/kg đư	06/06/00		MB2420
Total	Nickel	17mg/kg dw	06/09/00		MB2436
Total	Potassium	730mg/kg dw	06/12/00		MB2443
Total	Selenium by furnace method	0.10mg/kg dw	06/09/00		MB2439
Total	Silver	c6.6mg/kg dw	06/09/00		MB2436
Total	Sodium	330mg/kg dw	06/12/00		MB2443
Total	Thallium by furnace method	0.79mg/kg dw	06/14/00		ME2870
Total	Vanadium	<40mg/kg dw	06/09/00		MB2436
Total	Zinc	40mg/kg dw	06/09/00		KB2436
	TCL Volatiles by EPA Method 8260				

<4ug/kg dw

Chloromothane

parte Laboratories, Inc.

malysis Results

leport Number: 14000079

lient I.D.: CIMINELLI SERVICES GROUP CORP. Sampled by: Clienc

APPROVAL:\_\_\_\_

D:15300042 Mat:Soil 29-00-0002 MCKENNA LANDFILL GRID J-5 COVER 1300H 05/31/00 G

	RAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	Percent Solids	96%	06/01/00		WD0454
	Total Cyanide	<1.0mg/kg dw	06/01/00		WD0454
Total	Aluminum	3300mg/kg dw	06/14/00		WD0468
Total	Antimony	<31mg/kg dw	06/14/00		MB2460
Total	Arsenic by furnace method	1.7mg/kg dw	06/09/00		MB2460
Total	Barium	<31mg/kg dw	06/14/00		MB2438 MB2460
Total	Beryllium	<0.52mg/kg dw	06/14/00		
Total	Cadmium	0.97mg/kg dw	06/14/00		MB2460
Total	Calcium	48000mg/kg dw	06/14/00		MB2460 MB2460
Total	Chromium	6.2mg/kg dw	06/14/00		
Total	Cobalt	21mg/kg dw	06/14/00		MB2460
Total	Copper	7.3mg/kg dw	06/14/00		MB2460 MB2460
Total	Iron	4900mg/kg dw	06/14/00		
Total	Lead	<10mg/kg dw	06/14/00		MB2460
Total	Magnesium	2800mg/kg dw	06/14/00		MB2460
Total	Manganese	370mg/kg dw	06/14/00		M52460 MB2460
Total.	Mercury	<0.3mg/kg dw	06/06/00		MB2420
Total	Nickel	14mg/kg dw	06/14/00		MB2420
Total	Potassium	890mg/kg dw	06/14/00		MB2461
Total	Selenium by furnace method	0.11mg/kg dw	06/09/00		MB2439
Total	Silver	· 6.6mg/kg dw	06/14/00		MB2460
Total	Sodium	320mg/kg dw	06/14/00		MB2461
Total	Thallium by furnace method	1.4mg/kg dw	06/14/00		ME2870
Total	Vanadium	<31mg/kg dw	06/14/00		MB2460
Total	Zinc	46mg/kg dw	06/14/00		MB2460
1	TCL Volatiles by EPA Method 8260				
	Chloromethane	<3ug/kg dw	06/06/00		VM2909
	Bromomethane	<3ug/kg dw	06/06/00		VM2909
	Vinyl Chloride	<2ug/kg dw	06/06/00		VM2909
	Chloroethane	<3ug/kg dw	06/06/00		VM2909
	Methylene Chloride	11ug/kg dw	06/06/00	44	VM2909
	Acetone	<10ug/kg dw	06/06/00		VM2909
	Carbon Disulfide	<3ug/kg dw	06/06/00		VM2909
	1,1-Dichloroethene	<3ug/kg dw	06/06/00		VM2909
	1,1-Dichloroethanc	<3ug/kg dw	06/06/00		VM2909
	trans-1,2-Dichloroethene	<3ug/kg dw	06/06/00		V:42909
	cis-1,2-Dichloroethene	<3ug/kg dw	06/06/00		VM2909
	Chloroform	<3ug/kg dw	06/06/00		VM2909
	1,2-Dichloroethane	<3ug/kg dw	06/06/00		VM2909
	2-Butanone	<10ug/kg dw	06/06/00		VM2909
	1,1,1-Trichlorocthane	<3ug/kg dw	06/06/00		VM2909
	Carbon Tetrachloride	<3ug/kg dw	06/06/00		VM2909
	Bromodichloromethane	<3ug/kg dw	06/06/00		VM2909

VM2909

DATE: / /

Upstate Laboratories, Inc.

Analysis Results

Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

o-Xylene

APPROVAL:\_\_\_\_ Sampled by: Client

ID:15300042 Mat:Soil 29-00-0002 MCKENNA LANDFILL GRID J-5 COVER 1300H 05/31/00 G

06/06/00

Parameters	RESULTS	DATE ANAL.	KEY	FILE#
1,2-Dichloropropage	<3ug/kg dw	06/06/00		VM2909
cis-1,3-Dichloropropene	<3ug/kg dw	06/06/00		VM2909
Trichloroethene	<3ug/kg dw	06/06/00		VM2909
Dibromochloromethane	<3ug/kg dw	06/06/00		VM2909
1,1,2-Trichloroethane	<3ug/kg dw	06/06/00		VM2909
Renzene	<3ug/kg dw	06/05/00		VM2909
trans-1,3-Dichloropropene	<3ug/kg dw	06/06/00		VM2909
Bromoform	<3ug/kg dw	06/06/00		VM2909
4-Methyl-2-pentanone	<10ug/kg dw	06/06/00		VM2909
2-Hexanone	<10ug/kg dw	06/06/00		VM2909
Tetrachloroethene	<3ug/kg dw	06/06/00		VM2909
1,1,2,2-Tetrachloroethame	<3ug/kg dw	06/06/00		VM2909
Toluene	<3ug/kg dw	06/06/00		VM2909
Chlorobenzene	<3ug/kg dw	06/06/00		VM2909
Ethylbonzeno	<3ug/kg dw	06/06/00		VM2909
Styrene	<3ug/kg dw	06/06/00		VM2909
m-Xylene and p-Xylene	<3ug/kg dw	०६/०६/००		VM2909

	,		
Phenol	<350ug/kg dw	06/09/00	SA24
bis(2-Chloroethyl)ether	<350ug/kg dw	05/09/00	SA24
2-Chlorophenol	<350ug/kg dw	06/09/00	SA24
1,3-Dichlorobenzene	<350ug/kg dw	06/09/00	SA24
1,4-Dichlorobenzene	<350ug/kg dw	06/09/00	SA24
1,2-Dichlorobenzene	<350ug/kg dw	06/09/00	SA24
2-Methylphenol	<350ug/kg dw	06/09/00	5A24
2,2'-Oxybis(1-Chloropropane)	<350ug/kg dw	06/09/00	SA24
4-Methylphenol	<350ug/kg dw	06/09/00	SA2
n-Nitrosodi-n-propylamine	<350ug/kg dw	06/09/00	SA2
Hexachloroethane	<350ug/kg dw	06/09/00	SA2
Nitrobenzena	<350ug/kg dw	06/09/00	SA2
Isophorone	<350ug/kg dw	06/09/00	SA2
2-Nitrophenol	<350ug/kg dw	06/09/00	SA2
2,4-Dimerhylphenol	<350ug/kg dw	06/09/00	SA2
bis(2-Chloroethoxy)methane	<350\ug/kg dw	06/09/00	SAZ
2,4-Dichlorophenol	<350ug/kg dw	06/09/00	SA2
1,2,4-Trichlorobenzene	<350ug/kg dw	06/09/00	SA2
Naphthalene	<350ug/kg dw	06/09/00	SA2
4-Chloroaniline	<350ug/kg dw	06/09/0 <b>0</b>	SA2
Hexachlorobutadiene	<350ug/kg dw	06/09/00	SA2
4-Chloro-3-methylphenol	<350ug/kg dw	06/09/00	SAZ
2-Methylnaphthalene	<350ug/kg dw	06/09/00	SA2
Hexachlorocyclopentadieme	<350ug/kg dw	06/09/00	SA2

Unate Laboratories, Inc.

Report Number: 14000079 Client I.D.: CIMINELLI SERVICES GROUP CORP. APPROVAL:\_\_\_\_

Sampled by: Client

ID:15300042 Mat:Soil 29-00-0002 MCKENNA LANDFILL GRID J-5 COVER 1300H 05/31/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
2,4,6-Trichlorophenol	<350ug/kg dw	06/09/00		SA2433
2,4,5-Trichlorophenol	<350ug/kg dw	06/09/00		SA2433
2-Chloronaphthalene	<350ug/kg đ₩	06/09/00		SA2433
2-Nitroaniline	<3500ug/kg dw	06/09/00		SA2433
Dimethylphthalate	<350ug/kg dw	06/09/00		SA2433
Acenaphthylene	<350ug/kg dw	06/09/00		SA2433
2,6-Dinitrotoluene	<350ug/kg dw	06/09/00		SA2433
3-Nitroaniline	<3500ug/kg dw	06/09/00		SA2433
Acenaphthene	<350ug/kg dw	06/09/00		SA2433
2,4-Dinitrophenol	<3500ug/kg dw	06/09/00		SA2433
4-Nitrophenol	<3500ug/kg dw	06/09/00		SA2433
Dibenzofuran	<350ug/kg dw	06/09/00		SA2433
2,4-Dinitrotoluene	<350ug/kg dw	06/09/00		SA2433
Dicthylphthalate	<350ug/kg dw	06/09/00		SA2433
4-Chlorophenylphenylether	<350ug/kg dw	06/09/00		SA2433
Fluorene	<350ug/kg dw	06/09/00		SA2433
4-Nitroaniline	<3500ug/kg dw	06/09/00		SA2433
2-Methyl-4,6-dinitrophenol	<3500ug/kg dw	06/09/00		SA2433
n-Nitrosodiphenylamine	<350ug/kg dw	06/09/00		SA2433
4-Bromophenylphenylether	<350ug/kg dw	06/09/00		SA2433
Hexachlorobenzene	<350ug/kg dw	06/09/00		SA2433
Pentachlorophenol	<700ug/kg dw	06/09/00		SA2433
Phenanthrene	<350ug/kg <b>dw</b>	06/09/00		SA2433
Anthracene	<350ug/kg <b>dw</b>	06/09/00		SA2433
Carbazole	<350ug/kg <b>d</b> w	06/09/00		SA2433
di-n-butylphthalate	<350ug/kg dw	06/09/00		SA2433
Fluoranthene	<350ug/kg dw	06/09/00		SA2433
Pyrene	<350ug/kg dw	06/09/00		SA2433
Butylbenzylphthalate	<350ug/kg dw	06/09/00		SA2433
3,3'-Dichlorobenzidine	<350ug/kg dw	06/09/00		SA2433
Benzo(a) anthracene	<350ug/kg dw	06/09/00		SA2433
Chrysene	<350ug/kg dw	06/09/00		SA2433
bis(2-Ethylhexyl)phthalate	<350ug/kg dw	06/09/00		SA2433
di-n-octylphthalate	<350ug/kg dw	06/09/00		SA2433
Benzo (b) fluoranthene	<350ug/kg dw	06/09/00		SA2433
Benzo(k) fluoranthene	<350ug/kg dw	06/09/00		\$A2433
Benzo(a)pyrene	<350ug/kg dw	06/09/00		SA2433
Indeno(1,2,3-cd)pyrene	<350ug/kg dw	06/09/00		£
Dibenzo(a, h) anthracene	<350ug/kg dw	06/09/00		٤
Benzo(ghi)perylena	<350ug/kg dw	06/09/00		٤
EPA Method 8150	e e			
2.4.5	a Anatha du	06/13/00		G
2,1-D	<3.4ug/kg dw	06/13/00		G.
2,1,5-T	<3.4ug/kg dw	00/13/00		G.

Upstate Laboratories, Inc.

Analysis Results

Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ \_ \_ \_

Sampled by: Client

ID:15300012 Mat:Soil 29-00-0002 MCKENNA LANDFILL GRID J-5 COVER 1300H 05/31/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
				••
2,4,5-TP (Silvex)	<3.4ug/kg dw	06/13/00		GA0130
Dinoseb	<3.4ug/kg dw	06/13/00		GN0130
TCL Posticides/Aroclors by EPA 8080		,		
BHC (a-isomer)	<1.8ug/kg dw	06/13/00		GA0129
BHC (b-isomer)	<1.8ug/kg dw	06/13/00		GA0129
BHC (d-isomer)	<1.8ug/kg dw	06/13/00		GA0129
BHC (g-isomer)	<1.8ug/kg dw	06/13/00		GA0129
Heptachlor	<1.8ug/kg dw	06/13/00		GA0129
Aldrin	<1.8ug/kg dw	06/13/00		GA0129
Heptachlor Epoxide	<1.8ug/kg dw	06/13/00		GA0129
Endosulfan I	<1.8ug/kg dw	06/13/00		GA0129
Dieldrin	<3.4ug/kg dw	06/13/00		GA0129
1,4'-DDE	<3.4ug/kg dw	06/13/00		GA0129
Endrin	<3.4ug/kg dw	06/13/00		GA0129
Endosulfan II	<3.4ug/kg dw	06/13/00		GA0129
1,1'-DDD	<3.4ug/kg dw	06/13/00		GA0129
Endosulfan Sulfate	<3.4ug/kg dw	06/13/00		GA012
4,4'-DDT	<3.4ug/kg dw	06/13/00		GAOL
Methoxychlor	·<18ug/kg dw	06/13/00		GA0129
Endrin Ketone	<3.4ug/kg dw	06/13/00		GA0129
Endrin Aldehyde	<3.4ug/kg dw	06/13/00		GA0129
alpha-Chlordane	<1.8ug/kg dw	06/13/00		GA0129
gamma-Chlordane	<1.8ug/kg dw	06/13/00		GA0129
Toxaphene	<180ug/kg dw	06/13/00		GA0129
Araclor 1016	<1.8ug/kg dw	06/13/00		GA0129
Aroclor 1221	<1.8ug/kg dw	06/13/00		GA0129
Aroclor 1232	<1.8ug/kg dw	06/13/00		GA0129
Aroclor 1242	<1,8ug/kg dw	06/13/00		GA0129
Aroclor 1248	<1.8ug/kg dw	06/13/00		GA0129
Aroclor 1254	<1.8ug/kg dw	06/13/00		GA0129
Arcclor 1260	<1.8ug/kg dw	05/13/00		GA0129

ID:15300043 Mat:Soil 29-00-0002 MCKENNA LANDFILL GRID A-24 COVER 1300H 05/31/00 G

£A£	RAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	Percent Solids	98\$	06/01/00		WD0151
	Total Cyanide	<1.0mg/kg dw	06/13/00		WD0466
Total	Aluminum	7600mg/kg dw	06/14/00		MB2460
Total	Antimony	<31mg/kg dw	06/14/00		MB2460
Total	Arsenic by furnace method	2.1mg/kg dw	06/09/00		MB2438
Total	Barium	140mg/kg dw	06/14/00		MB2460
Total	Beryllium	0.65mg/kg dw	06/14/00		MB2460

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Report Number: 14000079

mient I.D.: CIMINELLI SERVICES GROUP CORP.

Sampled by: Client

29-00-0002 MCKENNA	LANDFILL GRID A-24	COVER 1300H 05/31/00 G

PA	RAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Total	Cadmium	2.1mg/kg dw	06/14/00		MB2460
Total	Calcium	16000mg/kg dw	06/14/00		M52460
Total	Chromium	14mg/kg dw	06/14/00		MB2460
Total	Cobalt	38mg/kg dw	06/14/00		MB2460
Total	Copper	20mg/kg dw	06/14/00		MB2460
Total	Iron	12000mg/kg dw	06/14/00		MB2460
Total	Lead	60mg/kg dw	06/14/00		MB2460
Total	Magnesium	6000mg/kg dw	06/14/00		MB2460
Total	Manyanese	330mg/kg dw	06/14/00		MB2460
Total	Mercury	< 0.3 mg/kg dw	06/06/00		MB2420
Total	Nickel	19mg/kg dw	06/14/00		MB2460
Total	Potassium	380mg/kg dw	06/14/00		MB2461
Total	Selenium by furnace method	0.22mg/kg dw	06/09/00		MB2439
Total	Silver	8.6mg/kg dw	06/14/00		MB2460
Total	Sodium	240mg/kg dw	06/14/00		MB2461
Total	Thallium by furnace method	<0.4mg/kg dw	06/14/00		ME2870
Total	Vanadium	<31mg/kg dw	06/14/00		MB2450
Total	Zinc	76mg/kg dw	06/14/00		MB2460
	TCL Volatiles by EPA Method 8260 Chloromethane	<3ug/kg dw	06/06/00		VM2909
	Bromomethane	<3ug/kg dw	06/06/00		VM2909
	Vinyl Chloride	<2ug/kg dw	06/06/00		VM2909
	Chloroethane	<3ug/kg dw	06/06/00		VM2909
	Mothylene Chloride	llug/kg dw	06/06/00	44	VM2909
	Acetone	<10ug/kg dw	06/06/00		VM2909
	Carbon Disulfide	<3ug/kg đw	06/06/00		VM2909
	1,1-Dichloroethene	<2ug/kg dw	06/06/00		VM2909
	1,1-Dichloroethane	<3ug/kg dw	06/06/00		VM2909
	trans-1,2-Dichloroethene	<3ug/kg dw	06/06/00		VM2909
	cis-1,2-Dichloroethene	<3ug/kg dw	06/06/00		VM2909
	Chloroform	<3ug/kg dw	06/06/00		VM2509
	1,2-Dichloroethane	<3ug/kg dw	06/06/00		VM2909
	2-Butanone	<10ug/kg dw	06/06/00		VM2909
	1,1,1-Trichloroethane	<3ug/kg dw	06/06/00		VM2909
	Carbon Tetrachloride	<3ug/kg dw	06/06/00		VM2909
	Bromodichloromethane	<3ug/kg dw	06/06/00		VM2909
	1,2-Dichloropropane	<3ug/kg dw	06/05/00		VM2909
	cis-1,3-Dichloropropene	<3ug/kg dw	06/06/00		VM2909
•	Trichloroethene	<3ug/kg dw	06/06/00		VM2909
	Dibromochloromethane \	<jug dw<="" kg="" td=""><td>06/06/00</td><td></td><td>VM2509</td></jug>	06/06/00		VM2509
	1,1,2-Trichloroethane	<3ug/kg dw	06/06/00		VM2909
	Renzene	<3ug/kg dw	06/06/00		VM2909
	trans-1,3-Dichloropropene	<3ug/kg dw	06/06/00	-	VM2909

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Analysis Results

Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ \_ \_ \_ 

ID:15300043 Mat:Soil	29-00-0002 MCKENNA	LANDFILL GRID A-24 COVER 1300H 05/31/00 G
2D. + D D D O 4 3 1 I I I I C . D O T T	,, , , , , , , , , , , , , , , , , , , ,	

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Bromoform	<3ug/kg dw	06/06/00		VM2909
4-Methyl-2-pentanone	<10ug/kg dw	06/06/00		VM2.909
2-Hexanone	<10ug/kg dw	06/06/00		VM2909
Tetrachlorocthene	<3ug/kg dw	06/06/00		VM2909
1,1,2,2-Tetrachloroethame	<3ug/kg dw	06/06/00		VM2 9 0 9
Toluene ·	<3ug/kg dw	06/06/00		VM2909
Chlorobenzene	<3ug/kg dw	06/06/00		VM2909
Ethylbenzene	<3ug/kg dw	06/06/00		VM2909
Styrenc	<3ug/kg dw	06/06/00		VM2909
m-Xylene and p-Xylene	<3ug/kg dw	06/06/00		VM2909
o-Xylene	<3ug/kg dw	06/06/00		VM2909
TCL Semivolatiles by EPA Method 827	.0			
Phenol	<340ug/kg dw	06/09/00		SA2433
bis(2-Chlorocthyl)ether	<340ug/kg dw	06/09/00		SA2433
2-Chlorophenol	<340ug/kg dw	06/09/00		SA2433
1,3-Dichlorobenzene	<340ug/kg dw	06/09/00		SA2433
1,4-Dichlorobenzene	<340ug/kg dw	06/09/00		SA2433
1,2-Dichlorobenzene	<340ug/kg dw	06/09/00		SA24
2-Methylphenol	. <340ug/kg dw	06/09/00		SA24
2,2'-Oxybis(1-Chloropropane)	<340ug/kg dw	06/09/00		SA2433
4-Methylphenol	<340ug/kg dw	06/09/00		SA2433
n-Nitrosodi-n-propylamine	<340ug/kg dw	06/09/00		SA2433
Hexachloroethane	<340ug/kg dw	06/09/00		SA2433
Nitrobenzene	<340ug/kg dw	06/09/00		SA2433
Isophorone	<340ug/kg dw	06/09/00		SA2433
2-Nitrophenol	<340ug/kg dw	06/09/00		SA2433
2,4-Dimethylphenol	<340ug/kg dw	06/09/00		SA2433
bis(2-Chlorocthoxy)methane	<340ug/kg dw	06/09/00		SA2433
2,4-Dichlorophenol	<340ug/kg dw	06/09/00		SA2433
1,2,4-Trichlorobenzene	<340ug/kg dw	06/09/00		SA2433
Naphthalene	<340ug/kg dw	06/09/00		SA2433
4-Chloroaniline	<340ug/kg dw	06/09/00		SA2433
Hexachlorobutadiene	<340ug/kg dw	06/09/00		SA2433
4-Chloro-3-methylphenol	<340ug/kg dw	06/09/00		SA2433
2-Methylnaphthalene	<340ug/kg dw	06/09/00		SA2433
Hexachlorocyclopentadiene	<340ug/kg dw	06/09/00		SA2433
2,4,6-Trichlorophenol	<340ug/kg dw	06/09/00		SA2433
2,4,5-Trichlorophenol	<340ug/kg dw	06/09/00		SA2433
2-Chloronaphthalene	<340ug/kg dw	06/09/00		SA2433
2-Nitroaniline	<3400ug/kg dw	06/09/00		SA2433
Dimethylphthalate	<340ug/kg dw	06/09/00		SA2433 SA2433
Acenaphthylens	<340ug/kg dw	06/09/00 06/09/00		SA2413 SA2433
2,6-Dinitrotoluene	<340ug/kg dw	06/03/00		2W7477

te Laboratories, Inc. Report Number: 14000079 Client I.D.: CIMINELLI SERVICES GROUP CORP. APPROVAL:\_ \_ \_ ~ QC: Lab I.D.: 10170

Sampled by: Client

ID:15300043 MaE:Soil 29-00-0002 MCKENNA LANDFILL GRID A-24 COVER 1300H 05/31/00 G

73 Mal; Soll 23-00-0002 MCKEMMA	ALLEN CHAP II DI	1211 130011 037	31,00 3	
PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
2 Without ilina	<3400ug/kg dw	06/09/00		232422
3-Nitroaniline	<340ug/kg dw	06/09/00		SA2433
Acenaphthenc	<3400g/kg dw	06/09/00		SA2433 SA2433
2,1-Dinitrophenol	<3400ug/kg dw	06/09/00		
4-Nitrophenol		06/09/00		SA2433
Dibenzofuran	<340ug/kg dw	06/09/00		SA2433
2,1-Dinitrotoluene	<340ug/kg dw		-	SA2433
Diethylphthalate	<340ug/kg dw	06/09/00 06/09/00		SA2433
4-Chlorophenylphenylether	<340ug/kg dw <340ug/kg dw	06/09/00		SA2433
Pluorene	• •			SA2433
4-Nitroaniline	<3400ug/kg dw	06/09/00		SA2433
2-Mcthyl-4,6-dinitrophenol	<3400ug/kg dw	06/09/00		SA2433
n-Nitrosodiphenylamine	<310ug/kg dw	06/09/00		SA2433
4-Bromophenylphenylether	<340ug/kg dw	06/09/00		SA2433
Hexachlorobenzene	<340ug/kg dw	06/09/00		SA2433
Pentachlorophenol	<680ug/kg dw	06/09/00		SA2433
Phonanthrene	<340ug/kg dw	06/09/00		SA2433
Anthraceno	<340ug/kg dw	06/09/00		SA2433
Carbazole	<340ug/kg dw	06/09/00		SA2433
di-n-butylphthalate	<340ug/kg dw	06/09/00		SA2433
Fluoranthenc	<340ug/kg dw	06/09/00		SA2433
Pyrene	.<340ug/kg dw	06/09/00		\$A2433
Butylbenzylphthalate	<340ug/kg dw	06/09/00		SA2433
3,3'-Dichlorobenzidine	<340ug/kg dw	06/09/00		SA2433
Bonzo(a) anthracene	<340ug/kg dw	06/09/00		SA2433
Chrysene	<340ug/kg dw	06/09/00		SA2433
bis(2-Ethylhexyl)phthalate	<340ug/kg dw	06/09/00		SA2433
di-n-octylphthalate	<340ug/kg dw	06/09/00		SA2433
Ecnzo(b) fluoranthene	<340ug/kg dw	06/09/00		SA2433
Benzo(k) fluoranthene	<340ug/kg dw	06/09/00		SA2433
Benzo (a) pyrene	<340ug/kg dw	06/09/00		SA2433
Indeno(1,2,3-cd)pyrene	<340ug/kg dw	06/09/00		SA2433
Dibenzo (a, h) anthracene	<340ug/kg dw	06/09/00		SA2433
Benzo(ghi)perylene	<340ug/kg dw	06/09/00		SA2433
EPA Method 8150				
2,4-D	<3.4ug/kg dw	06/13/00		GA013C
2,4,5-T	<3.4ug/kg dw	06/13/00		GA0130
2,4,5-TP (Silvex)	<3.4ug/kg dw	06/13/00		GA013(
Dinoseb	<3.4ug/kg dw	06/13/00		GA013(
TCL Pesticides/Aroclors by EPA 80	80			
		06/12/22		ana.
BHC (a-isomer)	<1.7ug/kg dw	06/13/00		GA0125
BHC (b-isomer)	<1.7ug/kg dw	06/13/00		GA0129
BHC (d-isomer)	<1.7ug/kg dw	06/13/00		GAC129

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Analysis Results

Report Number: 14000079

Tlient I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ - - -

Sampled by: Client

ID:15300043 Mat:Soil 29-00-0002 MCKENNA LANDFILL GRID A-24 COVER 1300H 05/31/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
BHC (g-isomer)	<1.7ug/kg dw	06/13/00		GA0129
Heptachlor	<3.6ug/kg dw	06/13/00		GA0129
Aldrin	<1.7ug/kg dw	06/13/00		GA0129
Heptachlor Epoxide	<1.7ug/kg dw	06/13/00		GA0129
Endosulfan I	<1.7ug/kg dw	06/13/00		GA0129
Dieldrin	<3.4ug/kg dw	05/13/00		GA0129
4,4' -DDE	<3.7ug/kg dw	06/13/00		GA0129
Endrin	<3.4ug/kg dw	06/13/00		GA0129
Endosulfan II	<3.4ug/kg dw	06/13/00		GA0129
4,4'-DDD	<3.4ug/kg dw	06/13/00		GAC129
Endosulfan Sulfate	<3.4ug/kg dw	06/13/00		GA0129
4,4'-DDT	<3.4ug/kg dw	06/13/00		GA0129
Methoxychlor	<17ug/kg dw	06/13/00		GA0129
Endrin Ketone	<3.1ug/kg dw	06/13/00		GA0129
Endrin Aldehyde	<3.4ug/kg dw	06/13/00		GA0129
alpha-Chlordane	<1.7ug/kg dw	06/13/00		GA0129
gamma-Chlordane	<1.7ug/kg dw	06/13/00		GA0129
Toxaphene	<170ug/kg dw	06/13/00		GA0129
Aroclor 1016	<1.7ug/kg dw	06/13/00		GAC129
Aroclor 1221	<1.7ug/kg dw	06/13/00		GA017
Arcclor 1232	<1.7ug/kg dw	06/13/00		GA012
Aroclor 1242	<1.7ug/kg dw	06/13/00		GA0129
Aroclor 1248	<1.7ug/kg dw	06/13/00		GA0129
Aroclor 1254	<1.7ug/kg dw	06/13/00		GA0129
Aroclor 1260	<1.7ug/kg dw	06/13/00		GA0129

ID:15300044 Mat:Soil 29-00-0002 MCKENNA LANDFILL GRID D-14 COVER 1300H 05/31/00 G

PΛ	RAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
				<b>-</b>	
	Percent Solids	97∜	06/01/00		WD0454
	Total Cyanide	<1.0mg/kg dw	06/13/00		WD0468
Total	Aluminum	4000mg/kg dw	06/14/00		M22460
Total	Antimony	<31mg/kg dw	06/14/00		ME2460
Total	Arsenic by furnace method	1.6mg/kg dw	06/09/00		MB2438
Total	Barium	<31mg/kg dw	06/14/00		MB2460
Total	Beryllium	<0.52mg/kg dw	06/14/00		MB2460
Total	Cadmium	1.2mg/kg dw	06/14/00		MB2460
Total	Calcium	35000mg/kg dw	06/14/00		MB2460
Total	Chromium	7.4mg/kg dw	06/14/00		MB2460
Total	Cobalt	24mg/kg đw	06/14/00		MB2460
Total	Copper	9.6mg/kg dw	06/14/00		ME2460
Total	Iron	6100mg/kg dw	06/14/00		ME2460
Total	Lead	<10mg/kg dw	06/14/00		MB2460

nte Laboratories, Inc. Analysis Results

Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_\_\_\_

QC: N - Lab I.D.: 10170

Sampled by: Client

06/05/00

06/06/00

05/06/00

06/06/00

VM2909

VM2909

VM2909

VM2909

PA	RAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Total	Magnesium	7500mg/kg dw	06/14/00		MB2160
Total	Manganeso	360mg/kg dw	06/14/00		M82460
Total	Mercury	<0.3mg/kg dw	06/06/00		MB2420
Total	Nickel	15mg/kg dw	06/14/00		MB2460
Total	Potassium	590mg/kg dw	06/14/00		MB2461
Total	Selenium by furnace method	<0.2mg/kg dw	06/09/00		MB2439
Total	Silver	6.8mg/kg dw	06/14/00		MB2460
Total	Sodium	240mg/kg dw	06/14/00		MB2461
Total	Thallium by furnace method	1.4mg/kg dw	06/14/00		ME2870
Total	Vanadium	<31mg/kg dw	06/14/00		MB2460
Total	Zinc	42mg/kg dw	06/14/00		MB2460
	TCL Volatiles by EPA Mothod 8260				
		».			
	Chloromethane	<3ug/kg dw	06/06/00		VM2909
	Bromomethane	<3ug/kg dw	06/06/00		VM2909
	Vinyl Chloride	<2ug/kg dw	06/06/00		VM2909
	Chloroethane	<3ug/kg dw	06/06/00		VM2909
	Methylane Chloride	15ug/kg dw	06/06/00		VM2909
_	Acetone	<10ug/kg dw	06/06/00		VM2909
	Carbon Disulfide	<3ug/kg dw	06/06/00		VM2909
	1,1-Dichloroethene	<3ug/kg dw	06/06/00		VM2909
	1,1-Dichloroethane	<3ug/kg dw	06/06/00		VM2909
	trans-1,2-Dichloroethene	<3ug/kg dw	06/06/00		VM2909
	cis-1,2-Dichloroethene	<3ug/kg dw	06/06/00		VM2909
	Chloroform	<3ug/kg dw	06/06/00		VM2909
	1,2-Dichloroethane	<2ug/kg dw	06/06/00		VM2909
	2-Butanona	<10ug/kg dw	06/06/00		VM2909
	1,1,1-Trichloroethane	<3ug/kg dw	06/05/00		VM2909
	Carbon Tetrachloride	<3ug/kg dw	06/06/00		VM2909
	Bromodichloromethane	<3ug/kg dw	06/06/00		VM2909
	1,2-Dichloropropane	<3ug/kg dw	06/06/00		VM2909
	cis-1,3-Dichloropropene	<3ug/kg dw	06/06/00		VM2909
	Trichloroethene	<3ug/kg dw	06/06/00		VM2909
	Dibromochloromethane	<3ug/kg dw	06/06/00		VM2909
	1,1,2-Trichlorcethane	<3ug/kg dw	06/06/00		VM2909
	Benzene	<3ug/kg dw	06/06/00		VM2909
	trans-1,3-Dichloropropene	<3ug/kg dw	06/06/00		VM2509
	Bromoform	<3ug/kg dw	06/06/00		VM2909
	4-Methyl-2-pentanone	<10ug/kg dw	06/06/00		VM2909
	2-Hexanone	<10ug/kg dw	06/06/00		VM2909
	_	-,-	- 11		

<3ug/kg dw

<3ug/kg dw

<3ug/kg dw

<3ug/kg dw

ID:15300044 Mat:Soil 29-00-0002 MCKENNA LANDFILL GRID D-14 COVER 1300H 05/31/00 G

Tetrachloroethene

Chlorobenzene

Toluene

1,1,2,2-Tetrachloroethane

Jpstate Laboratories, Inc.

Analysis Results

leport Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ \_ \_ \_

Sampled by: Clicat

ID:15300044 Mat:Soil 29-00-0002 MCKENNA LANDFILL GRID D-14 COVER 1300H 05/31/00 G

AMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Ethylbenzene	<3ug/kg dw	06/06/00		VM290
Styrene	<3ug/kg dw	06/06/00		VM290
m-Xylene and p-Xylene	<3ug/kg dw	06/06/00		VM290
o-Xylene	<3ug/kg dw	06/06/00		VM290
CL Semivolatiles by EPA Method 6270				
Phenol	<340ug/kg dw	06/09/00		SA243
bis(2-Chloroethyl)ether	<340ug/kg dw	06/09/00		SA243
2-Chlorophenol	<340ug/kg dw	06/09/00		SA243
1,3-Dichlorobenzene	<340ug/kg dw	06/09/00		SA243
1,4-Dichlorobenzene	<340ug/kg dw	06/09/00		SAZ43
1,2-Dichlorobenzana	<340ug/kg dw	06/09/00		SA243
2-Methylphenol	<340ug/kg dw	06/09/00		SA243
2,2'-Oxybis(1-Chloropropane)	<340ug/kg dw	06/09/00		SA243
4-Methylphenol	<340ug/kg dw	06/09/00		SA243
n-Nitrosodi-n-propylamine	<340ug/kg dw	06/09/00		SA243
Hexachloroathane	<340ug/kg dw	06/09/00		SA243
Nitrobenzene	<340ug/kg dw	06/09/00		SA243
Isophorone	<340ug/kg dw	06/09/00		SA243
2-Nitrophenol	<340ug/kg dw	06/09/00		SA243
2,4-Dimethylphenol	<340ug/kg dw	06/09/00		SA243
bis (2-Chloroethoxy) methane	<310ug/kg dw	06/09/00		SA243
2,4-Dichlorophenol	<340ug/kg dw	06/09/00		SA243
1,2,4-Trichlorobenzene	<340ug/kg dw	06/09/00		SA243
Naphthalene	<340ug/kg dw	06/09/00		SA243
4-Chloroaniline	<340ug/kg dw	06/09/00		SA243
Hexachlorobutadiene	<340ug/kg dw	06/09/00		SA243
4-Chloro-3-methylphenol	<340ug/kg dw	06/09/00		SA243
2-Methylnaphthalene	<240ug/kg dw	06/09/00		SA243
Hexachlorocyclopentadiene	<340ug/kg dw	06/09/00		SA243
2,4,6-Trichlorophenol	<340ug/kg dw	06/09/00		SA243
2,4,5-Trichlorophenol	<310ug/kg dw	06/09/00		SA243
Z-Chloronaphthalene	<340ug/kg dw	06/09/00		SA243
2-Nitroaniline	<3400ug/kg dw	06/09/00		SA243
Dimethylphthalate	<340ug/kg dw	05/09/00		SA243
Acenaphthylene	<340ug/kg dw	05/09/00		SA243
2,6-Dinitrocoluene	<340ug/kg dw	06/09/00		SA243
3-Nitroaniline	<3400ug/kg dw	06/09/00		SA243
Acenaphthene	<340ug/kg dw	05/09/00		SA243
2,4-Dinitrophenol	<3400ug/kg dw	06/09/00		SA243
4-Nitrophenol	<3400ug/kg dw	06/09/00		5A243
Dibenzofuran	<310ug/kg dw	06/09/00		SA243
2,4-Dinitrotoluene	<340ug/kg dw	06/03/00		SA243
Diethylphthalace	<340ug/kg dw	06/09/00		5A243

P. 12

Inte Laboratories, Inc. unalysis Results

Report Number: 14000079

lient I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_\_\_\_

QC: A \_ Lab I.D.: 10170

Sampled by: Client

	~ ~ ~ ~							_
[D:15300044	Mat:Soil	29-00-0002 MC	CKENNA 1	LANDFILL GRID D-14	4 COVER	1300H 05	/31/00 G	

RAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
4-Chlorophanylphenylether	<340ug/kg dw	05/09/00		SA2433
Fluorene	<340ug/kg dw	06/09/00		SA2433
4-Nitroaniline	<3400ug/kg dw	06/09/00		SA2433
2-Methyl-4,6-dinitrophenol	<3400ug/kg dw	06/09/00		SA2433
n-Nitrosodiphenylamine	<340ug/kg dw	06/09/00		SA2433
4-Bromophenylphenylether	<340ug/kg dw	06/09/00		SA2433
Hexachlorobenzene	<340ug/kg dw	06/09/00		SA2133
Pentachlorophenol	<580ug/kg dw	06/09/00		SA2433
Phenanthrene	<340ug/kg dw	06/09/00		SA2433
Anthracene	<340ug/kg dw	06/09/00		SA2433
Carbazole	<340ug/kg dw	06/09/00		SA2433
di-n-butylphthalate	<340ug/kg dw	06/09/00		SA2433
Fluoranthene	<340ug/kg dw	06/09/00		SA2433
Pyrene	<340ug/kg dw	06/09/00		SA2433
Butylbenzylphthalate	<340ug/kg dw	06/09/00		SA2433
3,3'-Dichlorobenziding	<340ug/kg dw	06/09/00		SA2433
Benzo (a) anthracene	<340ug/kg dw	06/09/00		SA2433
Chrysene	<340ug/kg dw	06/09/00		SA2433
bis(2-Ethylhexyl)phthalate	<340ug/kg dw	06/09/00		SA2433
di-n-octylphthalate	<340ug/kg dw	06/09/00		SA2433
Bonzo(b)fluoranthene	`<340ug/kg dw	06/09/00		SA2433
Benzo(k) fluoranthene	<340ug/kg dw	06/09/00		SA2433
Renzo(a)pyrene	<340ug/kg dw	06/09/00		SA2433
Indeno(1,2,3-cd)pyrene	<340ug/kg dw	06/09/00		SA2433
Dibenzo (a, h) anthracene	<340ug/kg dw	05/09/00		SA24:
Benzo(ghi)perylene	<340ug/kg dw	06/09/00		SA24:
EPA Mothod 8150				
2,4-D	<3.4ug/kg dw	06/13/00		GA01
2,4,5-T	<3.4ug/kg dw	06/13/00		GAOL
2,4,5-TP (Silvax)	<3.4ug/kg dw	06/13/00		GA01
Dinoseb	<3.4ug/kg dw	06/13/00		GA01
TCL Festicides/Aroclors by EPA 8090				
BHC (a-isomer)	<1.8ug/kg dw	05/13/00		GAO:
BHC (b-isomer)	<1.8ug/kg dw	06/13/00		GA0123
BHC (d-isomer)	<1.Sug/kg dw	06/13/00		GA0129
BHC (g-isomer)	<1.8ug/kg dw	06/13/00		GA0129
Heptachlor	<1.8ug/kg dw	06/13/00		GA0129
Aldrin	<1.8ug/kg dw	06/13/00		GA0129
		00/10/		GA0129
Hoptachlor Epoxide	<1.8ug/kg dw	06/13/00		
Hoptachlor Epoxide Endosulfan I	<1.8ug/kg dw	06/13/00		GA0129

Dry weight

Upstate Laboratories, Inc.

Analysis Results

Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

AFPROVAL:\_ \_ \_ ¬

Sampled by: Client

ID:15300044 Mat:5011 29-00-0002 MCKENNA LANDFILL GRID D-14 COVER 1300H 05/31/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
**				
Endrin	<3.1ug/kg dw (	06/13/00		GA0129
Endosulfan II	<3.4ug/kg dw	06/13/00		GA0129
4,4'-DDD	<3.4ug/kg dw	06/13/00		GA0129
Endosulfan Sulfate	<3.4ug/kg dw	06/13/00		GA0129
4,4DDT	<3.4ug/kg dw	06/13/00		GA0129
Methoxychlor	<19ug/kg dw	06/13/00		GA0129
Endrin Ketone	<3.4ug/kg dw	06/13/00		GA0129
Endrin Aldehyde	<3.4ug/kg dw	06/13/00		GA0129
alpha-Chlordane	<1.8ug/kg dw	06/13/00		GA0129
gamma-Chlordane	<1.8ug/kg dw	06/13/00		GA0129
Toxaphene	<175ug/kg dw	06/13/00		GA0129
Aroclor 1016	<1.8ug/kg dw	06/13/00		GA0129
Aroclor 1221	<1.8ug/kg dw	06/13/00		GA0129
Aroclor 1232	<1.Sug/kg dw	06/13/00		GA0129
Aroclor 1242	. <1.8ug/kg dw	06/13/00		GA0129
Aroclor 1248	<1.8ug/kg dw	06/13/00		GA0129
Aroclor 1254	<1.8ug/kg dw	06/13/00		GA0129
Aroclor 1260	<1.Sug/kg dw	06/13/00		GA0129

#### 2. BARRE STONE PRODUCTS BPS

#### Geotechnical Testing Summary

Approximately 13,000 and 10,500 cubic yards of the Barre Stone Products soil was used for BPS and suitable fill construction, respectively. Test frequencies are summarized below. Table D9 summarizes the geotechnical laboratory test results.

Also included herein is pre-construction lab testing provided by CSC, including results of triaxial compressive strength testing for the existing cover soils. The strength test shows that the soil has an effective internal angle of friction exceeding 27 degrees. The results of the geotechnical testing for the Barre Stone Products soil, therefore, indicate the soil was acceptable for use as barrier protection material and suitable fill.

## BARRE STONE PRODUCTS BPS AND SUITABLE FILL GEOTECHNICAL LAB TESTING SUMMARY

Test Designation	Required Frequency	Number of Tests Done	Estimated Quantity of	Estimated Test Frequency
	rrequestey	1 csts D one	Fill Placed	requency
Atterberg Limits	Ea. 2,500 Cubic	18	23,500 Cubic	Ea. 1,300 Cubic
(ASTM D4318)	Yards		Yards	Yards Placed
Moisture Content	Ea. 2,500 Cubic	18	23,500 Cubic	Ea. 1,300 Cubic
(ASTM D3017)	Yards		Yards	Yards Placed
Grain Size	Ea. 2,500 Cubic	18	23,500 Cubic	Ea. 1,300 Cubic
Analysis (ASTM	Yards		Yards	Yards Placed
D422)				
Moisture Density	Ea. 5,000 Cubic	9	23,500 Cubic	Ea. 2,600 Cubic
Relationship,	Yards		Yards	Yards Placed
Modified Proctor				
(ASTM D1557)				
Remolded	Ea. 5,000 Cubic	9	13,000 Cubic	Ea. 1,400 Cubic
Permeability (For	Yards		Yards	Yards Placed
BPS Only)				
(ASTM D5084)				
Angle of Internal	l per Borrow	1	23,500 Cubic	1 per Borrow
Friction	Source		Yards	Source

#### Chemical Testing Summary

Pre-construction chemical characterization testing was done for the Barre Stone Products soil. Chemical characterization testing was required for every 5,000 cubic yards of soil used. Four samples were tested for a test frequency of about 1 test per 5,900 cubic yards<sup>2</sup>. The samples were tested for the following parameters.

<sup>&</sup>lt;sup>2</sup> Barre soil used for portions of the suitable fill located outside the landfill (i.e. road subbase) was mostly rock material screened out from material to be used as BPS. GZA estimates that approximately 4,000 cubic yards of the screened rock material was used as suitable fill. Therefore, approximately 19,500 cubic yards of "soily" material from Barre was suitable for chemical testing. This would mean that chemical testing was done at a rate of about 1 test per 5,000 qubic yards. It is GZA's opinion, therefore, that sufficient chemical characterization testing was done for this material.

Parameter	Extraction/Preparation (1)	Analysis (1)
TCL <sup>(2)</sup> Volatile Organic	5050	8260 (95-1)
Compounds		
TCL Semi-Volatile Organic	3540/3550	8270 (95-2)
Compounds		
Pesticides/PCB's	3540/3550	8080
Herbicides	3580	8150
TAL <sup>(3)</sup> Metals	3050	95-M
Cyanide		9012

<sup>&</sup>lt;sup>1</sup> EPA SW-846.

GZA reviewed the laboratory test results submitted by CSC's analytical laboratory, Upstate, and tabulated the compounds detected for each sample. A table of the compounds detected for each material type is included herein as Table D10, along with the laboratory data. GZA compared the reported chemical concentrations versus recommended soil cleanup objective values and eastern United States background values shown in the tables.

Based on GZA's review, the chemical characterization test results for this material was acceptable. Therefore, the Barre Stone Products soil was considered acceptable for barrier protection soil and suitable fill.

<sup>&</sup>lt;sup>2</sup> TCL – Target Compound List.

<sup>&</sup>lt;sup>3</sup> TAL – Target Analyte List.

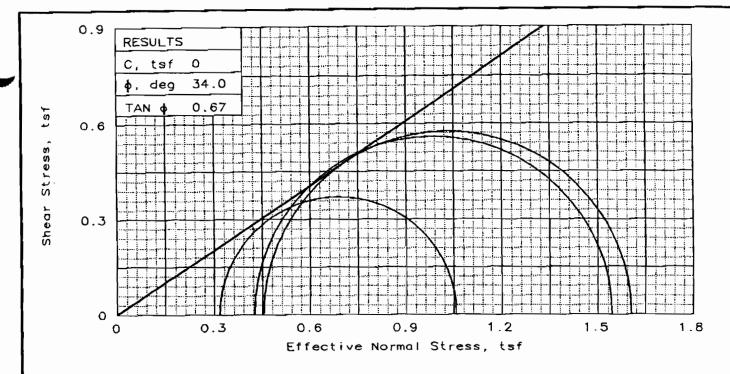
# Table D9

# SUMMARY OF BULK SAMPLE LABORATORY TESTING BARRE STONE PRODUCTS BARRIER PROTECTION MATERIAL AND SUITABLE FILL

WASTE MANAGEMENT OF NEW YORK MCKENNA LANDFILL REMEDIAL CLOSURE PROJECT

									_				_									
		TEST MOISTURE	CONTENT (%)	12.3	15.0	16.1			8:3	6.9	6.9	6.9	F 4	6.2								
	MEABILITY	TEST DRY	(PCF)	109.4	109.7	107.3			118.6	118.9	119.1	118.5	1180	118.3								
	RECONSTITUTED PERMEABILITY	CONFINING	(PSF)	720	720	720			720	720	720	720	720	720								
	RECO	PERMEABILITY	(CM/SEC)	1.2F-05	7.1E-07	1.5E-06			. 6.6F±07	1.4E-06	8.0E-07	1.1E-06	5.9E-07	7.6E-07								
NO2ECT	MODIFIED PROCTOR	OPTIMUM MOISTURE	CONTENT (%)	12.5	13.0	14.0			7.5	8.0	7.5	7.5	7.5	6.5								
MONEINING LAINDFILL NEIMEDIAL OLOGONE FROJECI	MODIFIED	MAXIMUM DRY	DENSITY (PCF)	121.5	122.0	119.5			134.5	135.0	134.5	135.0	135.5	137.0								
יבר יאבואובטיא	ATION	% FINER	MICRONS						13	12	13	13	14	=	12	13	12	12	12	12	11	
TONION WHILE	GRADATION	% FINER	SEIVE	06	91	93	90	86	22	55	29	57	- 22	54	57	25	56	99	54	58	52	
MOM	IMITS	PLASTICITY	INDEX	0	6	19	15	13	8	7	5	8	8	7	7	8	7	7	8	8	9	
	ATTERBERG LIMITS	PLASTIC	(%)	12	1	12	11	11	6	10	11	11	11	#	11	11	6	11	10	10	11	
	A	LIQUID	(%)	21	50	31	56	24	17	17	16	19	19	18	18	19	16	18	18	18	17	i
		NATURAL	CONTENT (%)	20.0	19.5	21.2	17.8	16.3	11.8	13.2	73.8	14.1	13.2	11.7	10.4	10.1	10.6	10.2	10.8	10.4	11	
		O DOMAN	SAIMITLE NOIMBER	08180-1	08180-2	08180-3	08180-4	08180-5	05071-1	05071-2	05071-3	05071-4	05071-5	9-1/020	05091-1	05091-2	05091-3	05091-4	05091-5	05091-6	05091-7	
														7								





SAMPLE NO.:

	1.2	ļ
	1.0	
te te	0.8	
Stress,	0.6	
Deviator S	0.4	
De v	0.2	
	0 1 2 3	<u> </u>
	Axial Strain, %	•

TYPE OF TEST:

CU with Pore Pressures

SAMPLE TYPE: Recompacted

DESCRIPTION: Silty Sand - SM

SPECIFIC GRAVITY= 2.5

REMARKS: 90% Proctor @ 2% Over

Tested By:

			_		
	DRY DENSITY, pcf SATURATION, % VOID RATIO DIAMETER, in	8.9 119.0 71.5 0.311 2.80 5.60	118.8 71.0 0.314 2.80	118.9 74.1 0.297 2.80	
ΤΕ	WATER CONTENT, % DRY DENSITY, pcf SATURATION, % VOID RATIO	11.9 119.0 95.6 0.311 2.80 5.60	118.8 99.2 0.314 2.80	118.9 95.4 0.297 2.80	
EF FA UL	roin rate, %/min F CELL PRESSURE, tsf IL. STRESS. tsf TOTAL PORE PR., tsf STRAIN, % T. STRESS, tsf TOTAL PORE PR., tsf STRAIN, %	0.72 0.74 4.36	1.44 1.12	1.08 1.15 4.59	
∂₃	FAILURE, tsf FAILURE, tsf		1.54 0.42		
II C L	TENT: Ciminalli				

CLIENT: Ciminelli

PROJECT: McKenno Landfill

SAMPLE LOCATION: Barrier Protection

Barre Pit

PROJ. NO.: 00-1027

DATE: 8-1-00

TRIAXIAL SHEAR TEST REPORT

GLYNN GEOTECHNICAL ENGINEERING



#### Grain Size Analysis ASTM D-422

**Project No.: 00-1027** 

Project: Materials Testing

Client: Ciminelli Services Corp.

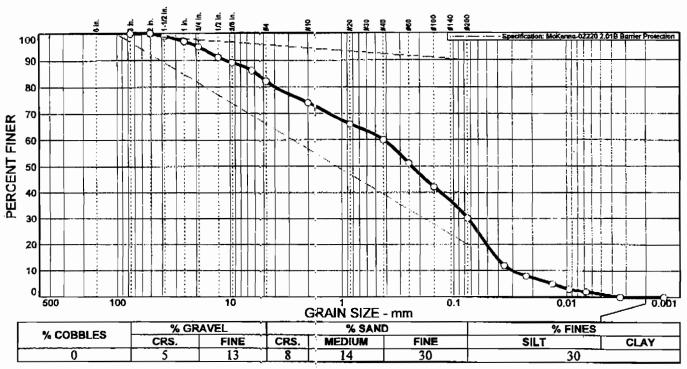
Sample No: 00-07

Source of Sample:

Location: Barrier Protection Layer Material-Barre

Date: 7/14/00

Elev./Depth:



SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X×NO)
3.25.14.2.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.	100 100 97 95 98 882 74 660 51 42	20 - 90	

Silty sand with g	Soil Description gravel	
PL=	Atterberg Limits	PI= N.P.
D <sub>85</sub> = 5.87 D <sub>30</sub> = 0.0750 C <sub>u</sub> = 14.02	D <sub>60</sub> = 0.425 D <sub>15</sub> = 0.0414 C <sub>c</sub> = 0.44	D <sub>50</sub> = 0.237 D <sub>10</sub> = 0.0303
USCS= SM	Classification AASHT	O=
	Remarks	

GLYNN GEOTECHNICAL ENGINEERING 415 South Transit Street. Lockport. New York 14094

voice 716.625.6933 / fax 716.625.6983 www.glynngroup.com

Reported/Reviewed by

McKenna-02220 2.01B Barrier Protection



#### **COMPACTION TEST DATA**

ASTM D - 698 - 78 / ASTM D - 1557 - 78

110,201							DATE REPORTED: PROJECT NO.:				JULY 18, 2000														
		_				NDF	ILL											00 - 1027 00 - 07							
CLE			CIM			200									SAMPLE NO.: 00 - 07 DEPTH: UNKNOWN										
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	SAMPLE DESCRIPTION: BORROW MATERIAL - BARRE  SAMPLE CLASSIFICATION: SILTY SAND WITH GRAVEL - SM																								
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### TRIAXIAL PERMEABILITY ASTM D - 5084

PROJECT: McKENNA LANDFILL	DATE REPORTED:	AUGUST 1, 2000	
LOCATION: ALBION, NEW YORK	PROJECT NO.:	00 - 1027	
CLIENT: CIMINELLI	SAMPLE NO.:	00 - 07	
DATE RECEIVED: JULY 11, 2000	DEPTH:	NOT PROVIDED	
SAMPLE DESCRIPTION: BORROW MATERIAL - BARRE			
SAMPLE CLASSIFICATION: SILTY SAND WITH GRAVEL-SM			

INITIAL DATA		
Initial Height	7.6	С'n
Initial Diameter	7.1	Cin
Moisture Content	8.9	46
Wet Density	129.3	p f
% Proctor	90.0	96

GGE

FINAL DATA						
Final Height	7.4	cm.				
Final Diameter	7.0	cm				
Moisture Content	10.8	%				
Wet Density	140.9	pcf				
Minimum Saturation	95	%				

	TEST	DATA			
Confining Pressure			Ć	53	psi
Head Water Pressure			5	68	psi
Tail Water Pressure			5	55	psi
Average Gradient, i			7	28	

,	NOTES	
	MATERIAL COMPACTED TO DESIRE? DENSITY VIA MANUAL COMPACTION METHODS.	
	DEAIRED WATER WAS LITILIZED A! THE PERMEANT LIQUID.	

RESULTS							
AVERAGE PERMEABILITY, K =	4-1 x 10 <sup>-5</sup>	(cm/sec) at 20° c					

REPORTED BY:

DOCFILE:TRIAXIUT

ALAN R. HOPKINS

REVIEWED BY:

A.R.H. / MARK W. GLYNN, P.E.

GLYNN GEOTECHNICAL ENGINEERING



#### Grain Size Analysis **ASTM D-422**

Project: Materials Testing

**Project No.: 00-1027** 

Client: Ciminelli Services Corp.

Sample No:

00-08

Source of Sample:

Date: 7/14/00 Elev./Depth:

Location: Barrier Protection Layer - Albion School

100 90 80 70 PERCENT FINER 60 30 20 10 100 0.001

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SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X≂NO)
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Sandy silt	Soil Description	
PL= 21	Atterberg Limits LL= 23	P <b>i=</b> 2
D <sub>85</sub> = 2.00 D <sub>30</sub> = 0.0398 C <sub>U</sub> = 18.92	Coefficients D <sub>60</sub> = 0.133 D <sub>15</sub> = 0.0100 C <sub>c</sub> = 1.68	D <sub>50</sub> = 0.0699 D <sub>10</sub> = 0.0070
USCS= ML	Classification AASHTO	)=
	Remarks	

GLYNN GEOTECHNICAL ENGINEERING 415 South Transit Street, Lockport, New York 14094

voice 716.625.6933 / fax 716.625.6983 www.glynngroup.com

McKenna-02220 2.01B Barrier Protection



# COMPACTION TEST DATA ASTM D - 698 - 78 / ASTM D - 1357 - 78

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EDWARD LOVER



# TRIAXIAL PERMEABILITY ASTM D - 5084

PROJECT: McKENNA LANI	DFILL	DATE REPORTED:	AUGUST 1, 2000	
LOCATION: ALBION, NEW	YORK	PROJECT NO .:	00 - 1027	
CLIENT: CIMINELLI		SAMPLE NO.:	00 - 08	
DATE RECEIVED: JULY 11	, 2000	DEPTH:	NOT PROVIDED	
SAMPLE DESCRIPTION:	BORROW MATERIAL - ALBIO	N SCHOOLS		
SAMPLE CLASSIFICATION:	SILT WITH SAND - ML			

INITIAL I	DATA	
Initial Height	7.6	cm
Initial Diameter	7.1	cm
Moisture Content	11.9	%
Wet Density	122.4	pcf
% Proctor	89.3	%

FINAL DA	TA	
Final Height	7.7	cm.
Final Diameter	7.0	cm
Moisture Content	18.6	%
Wet Density	130.0	pcf
Minimum Saturation	96	%

TEST DATA	A	
Confining Pressure	63	psi
Head Water Pressure	58	psi
Tail Water Pressure	55	psi
Average Gradient, i	30	

NOTES	
MATERIAL COMPACTED TO DESIRED DENSITY VIA MANUAL COMPACTION METHODS.	
DEAIRED WATER WAS UTILIZED AS THE PERMEANT LIQUID.	

RES	FULTS	
AVERAGE PERMEABILITY, K =	1.8 x 10 <sup>6</sup>	(cm/sec) at 20° c

REPORTED BY:

ALAN R. HOPKINS

REVIEWED BY:

A.R.H. / MARK W. GLYNN, P.E.

DOCFILE-TRIAXRPT

# GLYNN GEOTECHNICAL ENGINEERING



### Grain Size Analysis ASTM D-422

**Project:** Materials Testing

**Project No.: 00-1027** 

Client: Ciminelli Services Corp.

Sample No: 00-09

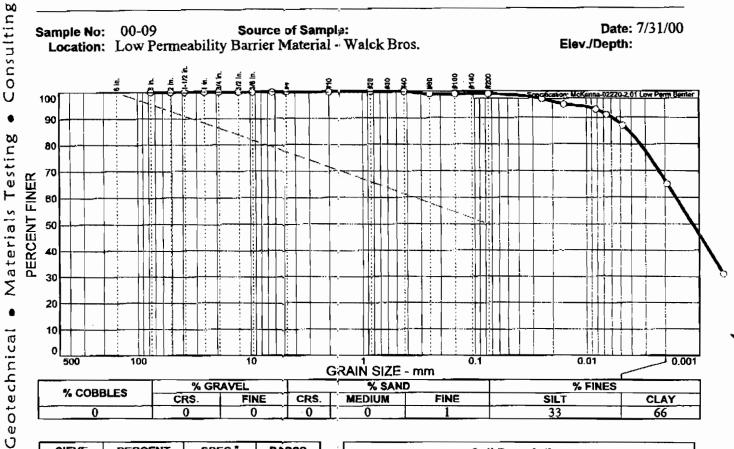
Structural

Source of Sample:

Date: 7/31/00

Location: Low Permeability Barrier Material - Walck Bros.

Elev./Depth:



SIEVE	PERCENT	SPEC."	PASS?
SIZE	FINER	PERCENT	(X⊱NO)
3 in. 2 in. 1.5 in. 1.7 in. 3/8 in. 1/2 #40 #40 #40 #60 #100 #200	100 100 100 100 100 100 100 100 100 100	50 - 100	

Elastic silt	Soil Description	
PL= 30	Atterberg Limits LL= 54	PI= 24
D <sub>85</sub> = D <sub>30</sub> = C <sub>u</sub> =	Coefficients D <sub>60</sub> = D <sub>15</sub> = C <sub>c</sub> =	D <sub>50</sub> = D <sub>10</sub> =
USCS= MH	Classification AASHTO	)=
As Recieved Mo	$\frac{\text{Remarks}}{\text{isture}} = 13.7 \%$	

McKenna-02220-2.01 Low Perm Barrier

GLYNN GEOTECHNICAL ENGINEERING 415 South Transit Street, Lockport, New York | 4094

voice 716.625.6933 / fax 716.625.6983 www.glynngroup.com

Reported/Reviewed by



# COMPACTION TEST DATA ASTM D - 691 - 78 / ASTM D - 1557 - 78

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#### Chemical Characterization Results for Barre Stone Borro V Site - Barrier Protection Material Barre-Pre-Constituction, Barre-1, Barre-2, Barre-3

#### McKenna Landfill Remedial Closure Project Albion, New York

Parameter	Recommended Soil Cleanup Objective	Ea <sub>i</sub> itern USA Background	Barre (pre-construction)	Вагте-1	Barre-2	Barre-3
	ppm	ppm	ppm	ppm	ppm	ppm
VOC - EPA Metho		7.00		4.4		P
Methylene Chloride	0.1	N/A	ND T	0.009	0.012	0.011
Acetone	0.2	N/A	ND	ND	ND	ND
2-Butanone	0.3	N/A	ND	ND	ND	ND
Tetrachloroethane	1.4	N/A	ND	ND	0.003	ND
SVOC - EPA Metho	od 8270 (ppm)		Sec. 1. Sec. 1			
No Compounds Detect	A CO. STATE OF THE PARTY OF THE	N/A	ND	ND	ND	ND
HERBICIDES - EP	A Method 8150 (ppm)		A STATE OF THE STA			
2,4 -D	0.5	N/A	ND	ND	ND	ND
TCL Pesticides/Arc	clors EPA Method 8080	(ppm)		* A POST	Maria Contract	
4,4' - DDE	2.1	N/A ·	ND	ND	ND	ND
Priority Pollutant N	Metals (ppm)					
Aluminum	SB	33,000	1,800	6,300	5,800	7,200
Antimony	SB	N/A	ND	ND	ND	48
Arsenic .	7.5 or SB	3-12	ND	2.9	2.4	2.5
Barium	300 or SB	15-600	ND	42	38	48
Beryllium	0.16 or SB	0-1.75	ND	ND	ND	ND
Cadmium	1 or SB	0.1-1	0.89	1.5	1.5	1.8
Calcium	SB	130-35,000	52,000	46,000	42,000	41,000
Chromium	10 or SB	1,5-40	6.9	12	10	13
Cobalt	30 or SB	2.5-60	16	38	34	35
Copper	25 or SB	1-50	10	15	11	13
íron	2,000 or SB	2,000-550,000	5,000	11,000	10,000	12,000
Lead	SB	See Note 5	6	ND	ND	ND
Magnesium	SB	100-5,000	11,000	14,000	11,000	10,000
Manganese	SB	5)-5,000	300	370	320	340
Mercury	0.1	0,001-0.2	ND	ND	ND	ND
Nickel	13 or SB	).5-25	11	17	14	17
Potassium	SB	8,540-43,000	450	1,400	1,400	1,700
Selenium	2 or SB	0.1-3.9	ND	ND	ND	ND
Silver	SB	N/A	ND	ND	ND	ND ND
Sodium	SB	6,000-8,000	310	500	400	420
Thallium	SB	N/A	ND	ND	ND	ND
Vanadium	150 or SB	1-300	ND	ND ND	ND	ND
Zinc	20 or SB	9-50	23	35	32	42

#### Notes:

- 1. Only compounds detected in one or more samples are presented on this table. Refer to original data sheets for list of all compounds included in analysis.
- Analytical testing completed by Upstate Laboratories, Inc.
- 3. Recommended soil cleanup objectives are based on the Division Technical and Administrative Guidance Memorandum (TAGM) 4046 on Determination of Soil Cleanup Objectives and Cleanup Levels in its final form.
- 4. ND = not detected, NA = not available
- 5. Background levels for lead vary widely. Average levels in undeveloped, rupal areas may range from 4-61 ppm. Average background levels in metropolitan or suburban areas or near highways are much higher and typically range from 200-500 ppm.
- 6. mg/kg = ppm

Upstate Laboratories, Inc. Analysis Results

port Number: 19400086

fient I.D.: CIMINELLI SERVICES GROUP CORP. MCKENNA LF ALBION NY

BARRIER SJOW 1500H 07/10/00 G Sampled by: Client

	I.D.: 19400086	Matrix: Solid			
PAF	RAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	Percent Solids	100%	07/12/00		WD0939
Total	Aluminum	1800mg/kg dw	08/04/00		MB2671
Total	Antimony by furnace method	< 0.4 mg/kg dw	08/07/00		MB2677
Total	Arsenic	<50mg/kg dw	08/04/00		MB2671
Total	Barium	<30mg/kg dw	08/04/00		MB2671
Total	Beryllium	<0.50mg/kg dw	08/04/00		MB2671
Total	Cadmium	0.89mg/kg dw	08/04/00		MB2671
Total	Calcium	52000mg/kg dw	08/04/00		MB2671
Total	Chromium	6.9mg/kg dw	08/04/00		MB2671
Total	Cobalt	16mg/kg dw	08/04/00		MB2671
Total	Copper	10mg/kg dw	08/04/00		MB2671
Total	Iron	5000mg/kg dw	08/04/00		MB2671
Total	Lead by furnace method	6.3mg/kg dw	08/07/00		MB2678
Total	Magnesium	11000mg/kg dw	08/04/00		MB2671
Total	Manganese	300mg/kg dw	08/04/00		MB2671
Total	Nickel	11mg/kg dw	08/04/00		MB2671
Total	Potassium	450mg/kg dw	08/08/00		MB2681
Total	Selenium	<50mg/kg dw	08/04/00		MB2671
Total	Silver	<5.0mg/kg dw	08/04/00		MB2671
Total	Sodium	310mg/kg dw	08/08/00		MB2681
Total	Thallium by furnace method	<0.4mg/kg dw	08/11/00		ME3003
Total	Vanadium	<30mg/kg dw	08/04/00		MB2671
Total	Zinc	23mg/kg dw	08/04/00		MB2671
מ	CCL Volatiles by EPA Method 8260				
		2 /1 1	07/14/00		1740 OF F
	Chloromethane	<3ug/kg dw	07/14/00		VM2955
	Bromomethane	<3ug/kg dw	07/14/00		VM2955
	Vinyl Chloride	<2ug/kg dw	07/14/00		VM2955
	Chloroethane	<3ug/kg dw	07/14/00		VM2955
	Methylene Chloride	<3ug/kg dw	07/14/00		VM2955
	Acetone	<10ug/kg dw	07/14/00		VM2955

<3ug/kg dw

<3ug/kg dw

<3ug/kg dw

<3ug/kg dw

<3ug/kg dw

<3ug/kg dw

<3ug/kg dw

<10ug/kg dw

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07/14/00

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07/14/00

07/14/00

07/14/00

VM2955

VM2955

VM2955

VM2955

VM2955

VM2955

VM2955

VM2955

VM2955

dw = Dry weight

Chloroform

2-Butanone

Carbon Disulfide

1,1-Dichloroethene

1,1-Dichloroethane

1,2-Dichloroethane

1,1,1-Trichloroethane

trans-1,2-Dichloroethene

cis-1,2-Dichloroethene

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Upstate Laboratories, Inc.

Analysis Results

Report Number: 19400086

Client I.D.: CIMINELLI SERVICES GROUP CORP MCKENNA LF ALBION NY

Sampled by: Client BARRIER SJOW 1500H 07/10/00 G

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LI 1.D.: 19400086	Macrix. Borid			
ARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Carbon Tetrachloride	<3ug/kg dw	07/14/00		VM2955
Bromodichloromethane	<3ug/kg dw	07/14/00		VM2955
1,2-Dichloropropane	<3ug/kg dw	07/14/00		VM2955
cis-1,3-Dichloropropen@	<3ug/kg dw	07/14/00		VM2955
Trichloroethene	<3ug/kg dw	07/14/00		VM2955
Dibromochloromethane	<3ug/kg dw	07/14/00		VM2955
1,1,2-Trichloroethane	<3ug/kg dw	07/14/00		VM2955
Benzene	<3ug/kg dw	07/14/00		VM2955
trans-1,3-Dichloropropene	<3ug/kg dw	07/14/00		VM2955
Bromoform	<3ug/kg dw	07/14/00		VM2955
4-Methyl-2-pentanone	<10ug/kg dw	07/14/00		VM2955
2-Hexanone	<10ug/kg dw	07/14/00		VM2955
Tetrachloroethene	<3ug/kg dw	07/14/00		VM2955
1,1,2,2-Tetrachloroethane	<3ug/kg dw	07/14/00		VM2955
Toluene	<3ug/kg dw	07/14/00		VM2955
Chlorobenzene	<3ug/kg dw	07/14/00		VM2955
Ethylbenzene	<3ug/kg dw	07/14/00		VM2955
Styrene	<3ug/kg dw	07/14/00		VM2955
m-Xylene and p-Xylene	<3ug/kg dw	07/14/00		VM2955
o-Xylene	<3ug/kg dw	07/14/00		VM2955
CCL Semivolatiles by EPA Method 8270				
Phenol	<330ug/kg dw	07/21/00		SA2470
bis (2-Chloroethyl) ether	<330ug/kg dw	07/21/00		SA2470
2-Chloropheno1	<330ug/kg dw	07/21/00		SA2470
1,3-Dichlorobenzene	<330ug/kg dw	07/21/00		SA2470
1,4-Dichlorobenzene	<330ug/kg dw	07/21/00		SA2470
1,2-Dichlorobenzene	<330ug/kg dw	07/21/00		SA2470
2-Methylphenol	<330ug/kg dw	07/21/00		SA2470
2,2'-Oxybis(1-Chloropropane)	<330ug/kg dw	07/21/00		SA2470
4-Methylphenol	<330ug/kg dw	07/21/00		SA2470
n-Nitrosodi-n-propylamine	<330ug/kg dw	07/21/00		SA2470
Hexachloroethane	<330ug/kg dw	07/21/00		SA2470
Nitrobenzene	<330ug/kg dw	07/21/00		SA2470
Isophorone	<330ug/kg dw	07/21/00		SA2470
2-Nitrophenol	<330ug/kg dw	07/21/00		SA2470
2,4-Dimethylphenol	<330ug/kg dw	07/21/00		SA2470
bis(2-Chloroethoxy)methane	<330ug/kg dw	07/21/00		SA2470
2,4-Dichlorophenol	<330ug/kg dw	07/21/00		SA2470
1,2,4-Trichlorobenzene	<330ug/kg dw	07/21/00		SA2470
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DATE: 08/14/00

Upstate Laboratories, Inc. Analysis Results

port Number: 19400086 Labient I.D.: CIMINELLI SERVICES GROUP CORP. MCKENNA LF ALBION NY

Sampled by: Client BARRIER SJOW 1500H 07/10/00 G

ULI I.D.: 19400086 Matrix: Solid

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Naphthalene	<330ug/kg dw	07/21/00		SA2470
4-Chloroaniline	<330ug/kg dw	07/21/00		SA2470
Hexachlorobutadiene	<330ug/kg dw	07/21/00		SA2470
4-Chloro-3-methylphenol	<330ug/kg dw	07/21/00		SA2470
2-Methylnaphthalene	<330ug/kg dw	07/21/00		SA2470
Hexachlorocyclopentadiene	<330ug/kg dw	07/21/00		SA2470
2,4,6-Trichlorophenol	<330ug/kg dw	07/21/00		SA2470
2,4,5-Trichlorophenol	<330ug/kg dw	07/21/00		SA2470
2-Chloronaphthalene	<330ug/kg dw	07/21/00		SA2470
2-Nitroaniline	<3300ug/kg dw	07/21/00		SA2470
Dimethylphthalate	<330ug/kg dw	07/21/00		SA2470
Acenaphthylene	<330ug/kg dw	07/21/00		SA2470
2,6-Dinitrotoluene	<330ug/kg dw	07/21/00		SA2470
3-Nitroaniline	<3300ug/kg dw	07/21/00		SA2470
Acenaphthene	<330ug/kg dw	07/21/00		SA2470
2,4-Dinitrophenol	<3300ug/kg dw	07/21/00		SA2470
4-Nitrophenol	<3300ug/kg dw	07/21/00		SA2470
Dibenzofuran	<330ug/kg dw	07/21/00		SA2470
2,4-Dinitrotoluene	<330ug/kg dw	07/21/00		SA2470
Diethylphthalate	<330ug/kg dw	07/21/00		SA2470
4-Chlorophenylphenylether	<330ug/kg dw	07/21/00		SA2470
Fluorene	<330ug/kg dw	07/21/00		SA2470
4-Nitroaniline	<3300ug/kg dw	07/21/00		SA2470
2-Methyl-4,6-dinitrophenol	<3300ug/kg dw	07/21/00		SA2470
n-Nitrosodiphenylamine	<330ug/kg dw	07/21/00		SA2470
4-Bromophenylphenylether	<330ug/kg dw	07/21/00		SA2470
Hexachlorobenzene	<330ug/kg dw	07/21/00		SA2470
Pentachlorophenol	<660ug/kg dw	07/21/00		SA2470
Phenanthrene	<330ug/kg dw	07/21/00		SA2470
Anthracene	<330ug/kg dw	07/21/00		SA2470
Carbazole	<330ug/kg dw	07/21/00		SA2470
di-n-butylphthalate	<330ug/kg dw	07/21/00		SA2470
Fluoranthene	<330ug/kg dw	07/21/00		SA2470
Pyrene	<330ug/kg dw	07/21/00		SA2470
Butylbenzylphthalate	<330ug/kg dw	07/21/00		SA2470
3,3'-Dichlorobenzidine	<330ug/kg dw	07/21/00		SA2470
Benzo(a) anthracene	<330ug/kg dw	07/21/00		SA2470
Chrysene	<330ug/kg dw	07/21/00		SA2470
bis(2-Ethylhexyl)phthalate	<330ug/kg dw	07/21/00		SA2470
di-n-octylphthalate	<330ug/kg dw	07/21/00		SA2470

DATE: 08/14/00

Upstate Laboratories, Inc.

Analysis Results

Report Number: 19400086

Client I.D.: CIMINELLI SERVICES GROUP CORP. MCKENNA LF ALBION NY

Sampled by: Client BARRIER SJOW 1500H 07/10/00 G

ULI I.D.: 19400086 Matrix: Solid

ARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	//	07/01/00		
Benzo(b) fluoranthene	<330ug/kg dw	07/21/00		SA247
Benzo(k) fluoranthene	<330ug/kg dw	07/21/00		SA247
Benzo(a)pyrene	<330ug/kg dw	07/21/00		SA247
Indeno(1,2,3-cd)pyrene	<330ug/kg dw	07/21/00		SA247
Dibenzo(a,h) anthracene	<330ug/kg dw	07/21/00		SA247
Benzo(ghi)perylene	<330ug/kg dw	07/21/00		SA247
EPA Method 8150				
2,4-D	<33.3ug/kg dw	07/25/00		GA021
2,4,5-T	<33.3ug/kg dw	07/25/00		GA021
2,4,5-TP (Silvex)	<33.3ug/kg dw	07/25/00		GA021
Dinoseb	<33.3ug/kg dw	07/25/00		GA021
PCB (Aroclors) by EPA Method 8080				
Aroclor 1016	<0.08mg/kg dw	07/17/00		GA019
Aroclor 1221	<0.08mg/kg dw	07/17/00		GA019
Aroclor 1232	<0.08mg/kg dw	07/17/00		GA019
Aroclor 1242	<0.08mg/kg dw	07/17/00		GA019
Aroclor 1248	<0.08mg/kg dw	07/17/00		GA019
Aroclor 1254	< 0.08 mg/kg dw	07/17/00		GA(
Aroclor 1260	<0.08mg/kg dw	07/17/00		GAO'L
Total PCB	<0.08mg/kg dw	07/17/00		GA019
TCL Pesticides by EPA Method 80,80				
BHC (a-isomer)	<1.7ug/kg dw	08/11/00		GA025
BHC (b-isomer)	<1.7ug/kg dw	08/11/00		GA025
BHC (d-isomer)	<1.7ug/kg dw	08/11/00		GA025
BHC (g-isomer)	<1.7ug/kg dw	08/11/00		GA025
Heptachlor	<1.7ug/kg dw	08/11/00		GA025
Aldrin	<1.7ug/kg dw	08/11/00		GA025
Heptachlor Epoxide	<1.7ug/kg dw	08/11/00		GA025
Endosulfan I	<1.7ug/kg dw	08/11/00		GA025
Dieldrin	<3.3ug/kg dw	08/11/00		GA025
4,4'-DDE	<3.3ug/kg dw	08/11/00		GA025
Endrin	<3.3ug/kg dw	08/11/00		GA025
Endosulfan II	<3.3ug/kg dw	08/11/00		GA025
	- · · · · · · · · · · · · · · · · · · ·	08/11/00		GA025
	~ 3 3110r/lear dist	00/11/00		GAUZS
4,4'-DDD	<3.3ug/kg dw			CR COF
4,4'-DDD Endosulfan Sulfate	<3.3ug/kg dw	08/11/00		GA025
4,4'-DDD				GA025 GA025

DATE: 08/14/00

Upstate Laboratories, Inc.

Analysis Results

port Number: 19400086

Lab I D 10170

wient I.D.: CIMINELLI SERVICES GROUP CORP. MCKENNA LF ALBION NY

Sampled by: Client BARRIER SJOW 1500H 07/10/00 G

ULI I.D.: 19400086 Matrix: Solid

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Endrin Ketone	<3.3ug/kg dw	08/11/00		GA0256
Endrin Aldehyde	<3.3ug/kg dw	08/11/00		GA0256
alpha-Chlordane	<1.7ug/kg dw	08/11/00		GA0256
gamma-Chlordane	<1.7ug/kg dw	08/11/00		GA0256
Toxaphene	<170.0ug/kg dw	08/11/00		GA0256

Upstate Laboratories, Inc.

Analysis Results

Report Number: 22501066

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ \_ \_ -QC: W \_ Lab I.D.: 10170 Sampled by:

ID:22501066 1	Mat:Soil MCKENNA LANDFILL	BARRE 1 08709/01			
PAI	RAMETERS	RESULTS	DATE ANAL.	KEY	PILE#
	Percent Solids	98%	08/14/01		WD5867
	Total Cyanide	<1.9mg/kg dw	09/07/01		WD6161
Total	Aluminum	6300mg/kg dw	08/14/01	`	X33751
Total	Antimony	<29mg/kg dw	08/14/01		MB3751
Total	Arsenic by furnace methol	2.9mg/kg dw	08/16/01		<b>XB3740</b>
Total	Barium	42mg/kg dw	08/14/01		MB3751
Total	Beryllium	<0.49mg/kg dw	08/14/01		MB3751
Total	Cadmium	1.5mg/kg dw	08/14/01		MB3751
Tota <b>l</b>	Calcium	46000mg/kg dw	08/14/01		MB3751
Total	Chromium	12mg/kg dw	08/14/01		MB3751

Total	Barium	42 mg/kg dw	08/14/01	MB3751
Total	Beryllium	<0.49mg/kg dw	08/14/01	MB3751
Total	Cadmi un	1.5mg/kg dw	08/14/01	MB3751
Total	Calcium	46000 mg/kg dw	08/14/01	MB3751
Total	Chromium	12mg/kg đw	08/14/01	MB3751
Total	Cobalt	38mg/kg dw	08/14/01	MB3751
Total	Copper	15mg/kg dw	08/14/01	MB3751
Total	Iron	11000mg/kg dw	08/14/01	MB3751
Total	Lead .	<9.8mg/kg dw	08/14/01	NB3751
Total	Magnesium	14000mg/kg aw	08/14/01	MB3751
Total	Manganese	370mg/kg dw	08/14/01	MB3751
Total	Mercury	<0.16mg/kg dw	09/05/01	ME3799
Tota1	Nickel	17mg/kg dw	08/14/01	MB3751
Total	Potassium	1400mg/kg dw	08/25/01	MB3781
Total.	Selenium by furnace method	<0.10mg/kg dw	08/14/01	MB3479
Total	Silver	<4.9mg/kg dw	08/14/01	MB3751
Total	Sodium	500mg/kg dw	08/25/01	MB3781
Total	Thallium by furnace method	<0.3mg/kg.dw	08/28/01	ME4215
Total	Vanadium	<29mg/kg dw	08/14/01	MB3751
Total	Minc	35mg/kg dw	08/14/01	MB3751

#### TCL Volatiles by EPA Method 8260

Chloromothane	<3ug/kg dw	08/17/01		VM3579
Bromomethane	<3ug/kg dw	08/17/01		VM3579
Vinyl Chloride	<2ug/kg dw	08/17/01		VM3579
Chloroethane	<3ug/kg dw	08/17/01	*	VM3579
Methylene Chloride	9ug/kg dw	08/17/01	44	VM3579
Acetone	<10ug/kg dw	08/17/01		VM3579
Carbon Disulfide	<3ug/kg dw	08/17/01		VM3579
1,1-Dichloroethene	<3ug/kg dw	08/17/01		VM3579
1,1-Dichloroethane	<3ug/kg dw	08/17/01		VM3 57 9
trans-1,2-Dichloroethene	<3ug/kg dw	08/17/01		VM3579
cis-1,2-Dichloroethene	<3ug/kg dw	08/17/01		VM3579
Chloroform	<3ug/kg dw	08/17/01		VM3579
1,2-Dichloroethans	<3ug/kg dw	08/17/01		VM3579
2-Butanone	<10ug/kg dw	08/17/01		VM3579
1,1,1-Trichloroethane	<3 ug/kg dw	08/17/01		VM3579
Carbon Tetrachloride	<3ug/kg dw	08/17/01		VM3579
Bromodichloromethane	<3ug/kg dw	08/17/01		VM3579

state Laboratories, Inc. Malysis Results Report Number: 22501066

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_\_\_\_\_ QC: - Lab I.D.: 10170 Sampled by:

PARAMITERS	RESULTS	DATE ANAL.	KEY	FILE#
1,2-Dichloropropane	<3ug/kg dw	08/17/01		VM3579
cis-1,3-Dichloropropene	<3 ug/kg dw	08/17/01		VM3579
Trichloroethene	<jug dw<="" kg="" td=""><td>08/17/01</td><td></td><td>VM3579</td></jug>	08/17/01		VM3579
Dibromochloromethane	<3ug/kg dw	08/17/01		VM3579
1,1,2-Trichloroethane	<3 ug/kg dw	08/17/01		VM3579
Benzene	<3ug/kg dw	08/17/01		VM3579
trans-1,3-Dichloropropene	<3 ug/kg dw	08/17/01		VM3579
Bromoform	<3ug/kg dw	08/17/01		VM3579
4-Methyl-2-pentanone	<10ug/kg dw	08/17/01		VM3579
2-Hexanone	<10ug/kg dw	08/17/01		VM3579
Tetrachloroothene	<3ug/kg dw	08/17/01		VM3579
1,1,2,2-Tetrachloroethane	<3ug/kg dw	08/17/01		VM3579
 Toluene	<3ug/kg dw	08/17/01		VM3579
Chlorobenzene	<3ug/kg dw	08/17/01		VM3579
Ethylbonzena	<3ug/kg dw	08/17/01		VM3579
Styrenc	<3ug/kg dw	08/17/01		VM3579
m.p-xylene	<3ug/kg dw	08/17/01		VM3579
o-Xylene	<3ug/kg dw	08/17/01		VM3579
TCL Semivolatiles by EPA Method 827				
Phenol	<340ug/kg dw	08/16/01		<b>SA29</b> 51
bio(2-Chloroethyl)ether	<340ug/kg dw	08/16/01		SA2951
 2-Chlorophenol	<340ug/kg dw	08/16/01		SA2951
1,3-Dichlorobenzene	<340ug/kg dw	09/16/01		SA2951
1,4-Dichlorobenzene	<340ug/kg dw	09/16/01		SA2951
1,2-Dichlorobonzene	<340ug/kg dw	08/16/01		SA2951
2-Methylphanol	<340 ug/kg dw	08/16/01		SA2951
2,2'-Oxybis(1-Chloropropane)	<340ug/kg dw	08/16/01		SA2951
4-Methylphenol	<340ug/kg dw	08/16/01		5A2951
n-Nitrosodi-n-propylamine Hexachloroethane	<340ug/kg dw	08/16/01		SA2951
Nitrobenzeno	<340ug/kg dw <340ug/kg dw	08/16/01		SA2951
Isophorone		08/16/01		SA2951
2-Nitrophenol	<340ug/kg dw <340ug/kg dw	08/16/01		SA2951
2,4-Dimethylphenol	<340ug/kg dw	08/16/01 08/16/01		5A2951
bis (2-Chloroethoxy) methane	<340ug/kg dw	08/16/01		SA2951 SA2951
2,4-Dichlorophenol	<340ug/kg dw	08/16/01		SA2951
1,2,4-Trichlorobenzene	<340ug/kg dw	08/16/01		SA2951
Naphthalene	<340ug/kg dw	08/15/01		SA2951
4-Chloroaniline	<340ug/kg dw	08/16/01		SA2951
Hexachlorobutadiene	<340ug/kg dw	00/16/01		SA2951
4-Chloro-3-methylphenol	<340ug/kg dw	08/16/01		SA2951
2-Methylnaphthalene	<340 ug/kg dw	08/16/01		SA2951

Upstate Laboratories, Inc. Analysis Results Raport Number: 22501066 Client I.D.; CIMINELLI SERVICES GROUP CORP. APPROVAL:\_ - - -QC:\_W - Lab I.D.: 10170

Sampled by:

ID:22501066 Mat:5011 MCKENNA LANDFILL BARRE 1 08/09/01

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
2 4 5 mulable	-2400000			
2,4,6-Trichlorophenol	<340ug/kg dw	08/16/01		SA2951
2,4,5-Tricklorophenol	<340ug/kg dw	08/16/01		SA2951
2-Chloronaphthalene 2-Nitroaniline	<340ug/kg dw	08/16/01		5A2951
	<3400ug/kg dw	08/16/01		9A2951
Dimethylphthalato	<340ug/kg dw	08/16/01		SA2951
Acenaphthylene 2,6-Dinitrotoluene	<340ug/kg dw	08/16/01		SA2951
3-Nitroaniline	<340ug/kg dw	08/16/01		SA2951
Acenaphthene	<3400ug/kg dw	08/16/01		SA2951
•	<340ug/kg dw	08/16/01		SA2951
2,4-Dinitrophenol 4-Nitrophenol	<3400ug/kg dw	08/16/01		SA2951
Dibenzofuran	<3400ug/kg dw	08/16/01		SA2951
2,4-Dinitrotoluene	<340ug/kg dw	08/16/01		SA2951
	<340ug/kg dw	08/16/01		9A2951
Diethylphthalate	<340ug/kg dw	08/16/01		5A2951
4-Chlorophenylphenylether	<340ug/kg dw	08/16/01		SA2551
Fluorene	<340ug/kg dw	08/18/01		SA2951
4-Nitroaniline	<3400ug/kg dw	08/16/01		SA2951
2-Methyl-4,6-dinitrophenol	<3400ug/kg dw	08/16/01		SA2951
n-Nitrosodiphenylamine	<340ug/kg dw	08/16/01		SA2951
4-Bromophenylphenylether	<340ug/kg dw	08/16/01		SA2951
Hexachlorobenzene	<340ug/kg dw	08/16/01		SA2951
Pentachlorophenol	<680ug/kg dw	08/16/01		SA2951
Phenanthrene	<340ug/kg dw	08/16/01		\$A2951
Anthracene	<340ug/kg dw	08/16/01		SA2951
Carbazole	<340ug/kg dw	08/16/01		SA2951
di-n-butylphthalate	<340ug/kg dw	08/16/01		SA2951
Fluoranthone	<340ug/kg dw	08/16/01		SA2951
Pyrene	<340ug/kg dw	08/16/01		6A2951
Butylbenzylphthalate	<340ug/kg dw	08/16/01		SA2951
3,3'-Dichlorobenzidine	<340ug/kg dw	08/16/01		SA2951
Benzo(a)anthracone	<340ug/kg dw	08/15/01		SA2951
Chrysene	<340ug/kg dw	08/16/01		SA2951
bis(2-Ethylhexyl)phthalate	<340ug/kg dw	08/16/01		\$A2951
di-n-octylphthalate	<340ug/kg dw	08/15/01		SA2951
Benzo(b) fluoranthene	<340ug/kg dw	08/16/01		SA2951
Benzo(k)fluorantheme	<340ug/kg dw	08/16/01		SA2951
Benzo(a)pyrene	<340ug/kg dw	08/16/01		SA2951
Indeno(1,2,3-cd)pyrene	<340ug/kg dw	08/16/01		SA2951
Dibenzo (a, h) anthracene	<340ug/kg dw	08/16/01		SA2951
Benzo(ghi)parylene	<340ug/kg dw	08/16/01		SA2951
EPA Method 8150				
2,4-D	<34ug/kg dw	08/25/01		GA0923
2,4,5-T	<34ug/kg dw	08/25/01		GA0923

tato Laboratories, Inc. Analysis Results Analysis Results
Report Number: 22501066
Client I.D.: CIMINELLI SERVICES GROUP CORP. APPROVAL: \_\_\_\_\_ QC: \_\_\_\_\_Lab I.D.: 10170 Sampled by:

ID:22501066 Mat:Soil MCKENNA LANDFILL BAI  PARAMETERS  2,4,5-TP (Silvex)  Dinoseb	RESULTS <34ug/kg dw	DATE ANAL.		
2,4,5-TP (Silvex)				
2,4,5-TP (Silvex)			KEY	FILE#
		08/25/01		GA0923
•	<34ug/kg dw	08/25/01		GA0923
TCL Pesticides/Aroclors by EPA 8082				
BHC (a-isomer)	<1.7ug/kg dw	08/22/01		GA0911
BHC (b-isomer)	<1.7ug/kg dw	08/22/01		GA0911
BHC (d-isomer)	<1.7ug/kg dw	08/22/01		GA0911
BHC (g-isomer)	<1.7ug/kg dw	08/22/01		GA0911
Heptachlor	<1.7ug/kg dw	08/22/01		GA0911
Aldrin	<1.7ug/kg dw	08/22/01		GA0911
Heptachlor Epoxide	<1.7ug/kg dw	08/22/01		GA0911
Endosulfan I	<1.7ug/kg dw	08/22/01		GA0911
Dieldrin	<3.3ug/kg dw	08/22/01		GA3911
4,4'-DDE	<3,3ug/kg dw	08/22/01		GA0911
Endrin	<3.3ug/kg dw	08/22/01		GA0911
Endosulfan II	<3.3ug/kg dw	08/22/01		GA0911
4,4'-DDD	<3.3ug/kg dw	08/22/01		GA0911
Endosulfan Sulfate	<3.3ug/kg dw	08/22/01		GA0911
4,4'-DDT	<3.3ug/kg dw	08/22/01		GA0911
Methoxychlor	<17ug/kg dw	08/22/01		GA0911
Endrin Ketono	<3.3ug/kg dw	08/22/01		GA0911
Endrin Aldehyde	<3.3ug/kg dw	08/22/01		GA0911
alpha-Chlordane	<1.7ug/kg dw	08/22/01		GA0911
gamma-Chlordane	<1.7ug/kg dw	08/22/01		GA0911
Toxaphene	<170ug/kg dw	08/22/01		GA0911
Arcclor 1016	<1.7ug/kg dw	08/22/01		
Aroclor 1221	<1.7ug/kg dw	08/22/01		GA0911
Aroclor 1232	<1.7ug/kg dw	08/22/01		GA0911
Aroclor 1242	<1.7ug/kg dw	08/22/01		GA0911 GA0911
Aroclor 1248	<1.7ug/kg dw	08/22/01		GA0911
Aroclor 1254	<1.7ug/kg dw	08/22/01		
Aroclor 1260	<1.7ug/kg dw	08/22/01		GA0911 GA0911
ID:22501067 Mat:Soil MCKENNA LANDFILL BA	RRE 2 08/09/01			· <del></del> -
PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
***				
Perdent Solids	96%	08/14/01		WD5867
Total Cyanide	<0.9mg/kg dw	08/23/01		WD5891
Total Aluminum	5800mg/kg dw	08/14/01		MCB3751
Total Antimony	<29mg/kg dw	08/14/01		MB3751
Total Arsenic by furnace method	2.4mg/kg dw	08/16/01		MB3740
Total Barium	38mg/kg dw	08/14/01		MB3751
Total Beryllium	<0.49mg/kg dw	08/14/01		MB3751

Upstate Laboratories, Inc. Analysia Results

Report Number: 22501066 Client I.D.: CIMINELLI SERVICES GROUP CORP.

Client I.D.:	CIMINELLI SERVICES GROUP CORP.	Sampled by:			
ĨD:22501067	Mat: Soil MCKENNA LANDFILL	BARRE 2 08709/01		,	·
	RAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
		1 Face/bar dec	00/14/01		
Total Total	Cadmium Calcium	1.5mg/kg dw	08/14/01		MCB3751
•		42000mg/kg dw	08/14/01		MB3751
Total Totæl	Chromium Cobalt	10mg/kg dw	08/14/01		MB3751
Total	Copper	34mg/kg dw 11mg/kg dw	08/14/01 08/14/01		МВ3751
Total	Iron	10000mg/kg dw	0B/14/01 0B/14/01		MB3751
Total	Load	<9.7mg/kg dw	08/14/01		MB3751
Total	Magnesium	11000mg/kg dw	08/14/01		MB3751
Total	Manganese	320mg/kg dw	08/14/01		MB3751 MB3751
Total	Mercury	<0.16mg/kg dw	09/05/01		
Total	Nickel	14mg/kg dw	08/14/01		МВ3799 МВ3751
Total	Potassium	1400mg/kg dw	08/25/01		MB3781
Total	Selenium by furnace method	<0.10mg/kg dw	08/14/01		
Total	Silver	<4.9mg/kg dw	08/14/01		MB3479 MB3751
Total	Sodium	400mg/kg dw	08/26/01		MB3781
Total	Thallium by furnace method	<0.4mg/kg dw	08/28/01		ME4215
Total.	Vanadium	<29mg/kg dw	08/14/01		M93751
Total	Zinc	32mg/kg dw	08/14/01		MB3751
	TCL Volatiles by EPA Method 8260		4		
	Chloromethane	<3ug/kg dw	06/17/01		VM3579
	Bromomethane	<3ug/kg dw	08/17/01		VM3579
	Vinyl Chloride	<2ug/kg dw	08/17/01		VM3579
	Chloroethane	<3ug/kg dw	08/17/01		VM3 579
	Mothylene Chloride	12ug/kg dw	08/17/01	44	VM3579
	Acetone	<10ug/kg dw	08/17/01		VM3579
	Carbon Disulfide	<3ug/kg dw	08/17/01		VN3579
	1,1-Dichloroethene	<3ug/kg dw	08/17/01		VM3579
	1,1-Dichloroethane	<3ug/kg dw	08/17/31		VM3579
	trans-1,2-Dichloroethene	<3ug/kg dw	08/17/01		VM3579
	cis-1,2-Dichlorosthene Chloroform	<3ug/kg dw	08/17/01		VN3579
	1,2-Dichloroethane	<3ug/kg dw	08/17/01		VM3579
	2-Butanone	<3ug/kg dw <10ug/kg dw	08/17/01		VM3579
	1,1,1-Trichloroethane	<3ug/kg dw .	08/17/01 08/17/01		VM3579
	Carbon Tetrachloride	<3ug/kg dw	**		VM3579
	Bromodichlorcmethane	<3ug/kg dw	08/17/01		VM3579
	1,2-Dichloropropane	<3ug/kg dw	08/17/01 08/17/01		VM3579
	cis-1,3-Dichloropropane	<3ug/kg dw	· · · · · · · · · · · · · · · · · · ·		VM3579
	Trichlorcethene	<3ug/kg dw	08/17/01 08/17/01		VM3579
	Dibromochloromethane	<3ug/kg dw	08/17/01		VM3579 VM3579
	1,1,2-Trichloroethane	<3ug/kg dw	08/17/01		VM3579
	Benzens	<3ug/kg dw	08/17/01		VM3579
,	trans-1,3-Dichloropropen:	<3ug/kg dw	08/17/01		VM3579
	an wave and a shrown or obsorbett a	CAUSING CM	00/1//07		VM35/3

state Laboratories, Inc. Report Number: 22501066 Client I.D.; CIMINELLI SERVICES GROUP CORP. 

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Bromoform	<3ug/kg dw	08/17/01		VM3579
4-Mothyl-2-pentanone	<10ug/kg dw	08/17/01		VM3579
2-Hexanone	<10ug/kg dw	08/17/01		VM3579
Tetrachloroetheno	3ug/kg dw	08/17/01		VM3579
1,1,2,2-Tetrachloroethane	<3ug/kg dw	08/17/01		VN3579
Toluene	<3ug/kg dw	08/17/01		VM3579
Chlorobenzone	<3ug/kg dw	08/17/01		VN3579
Ethylbenzone	<3ug/kg dw	08/17/01		VM3579
Styrene	<3ug/kg dw	08/17/01		VM3579
m,p-xylene	<3ug/kg dw	08/17/01		VM3579
o-Xylena	<3ug/kg dw	08/17/01		VN3579
TCL Semivolatiles by EFA Method 8	270			
Phenol	<350ug/kg dw	08/16/01		SA2951
bis(2-Chloroethyl)ether	<350ug/kg dw	08/16/01		SA2951
2-Chloropheno1	<350ug/kg dw	08/16/01		SA2951
1,3-Dichlorobenzene	<350ug/kg dw	08/16/01		SA2951
1,4-Dichlorobenzene	<350ug/kg dw	08/16/01		SA2951
1,2-Dichlorobonzene	<350ug/kg aw	08/16/01		SA2951
2-Methylphonol	<350ug/kg dw	08/16/01		5A2951
2,2'-Oxybis(1-Chloropropane)	<350ug/kg dw	08/16/01		5A2951
4-Methylphenol	<350ug/kg 'dw	08/16/01		SA2951
n-Nitrosodi-n-propylamine	<350ug/kg dw	08/16/01		8A2951
Hexachloroethane	<350ug/kg dw	08/16/01		SA2951
Nitrobenzene	<350ug/kg dw	08/16/01		SA2951
Isophorone	<350ug/kg dw	08/16/01		SA2951
2-Nitrophenol	<350ug/kg dw	08/15/01		SA2951
2,4-Dimethylphenol	<350ug/kg dw	08/16/01		SA2951
bis (2-Chloroethoxy) methane	<350ug/kg dw	08/16/01		SA2951
2,4-Dichlorophenol	<350ug/kg dw	08/16/01		SA2951
1,2,4-Trichlorobenzene	<350ug/kg dw	08/16/01		SA2951
Naphthaleno	<350ug/kg dw	08/16/01		SA2951
4-Chloroaniline	<350ug/kg dw	08/16/01		SA2951
Hexachlorobutadiene	<350ug/kg dw	08/16/01		SA2951
4-Chloro-3-mathylphenol	<350ug/kg dw	08/16/01		SA2951
2-Methylnaphthalene	<350ug/kg dw	08/16/01		SA2951
Hexachlorocyclopentadiene	<350ug/kg dw	08/16/01		SA2951
2,4,6-Trichlorophenol	<350ug/kg dw	08/16/01		SA2951
2,4,5-Trichlorophenol	<350ug/kg dw	08/16/01		SA2951
2-Chloronaphthalene	<350ug/kg dw	08/16/01		SA2951
. 3-Nitroaniline	<3500ug/kg dw	08/16/01		SA2951
Dimethylphthalate	<350ug/kg dw	08/16/01		SA2951
n rule cost where regree	- · ·			
Acenaphthyleno	<350ug/kg dw	08/16/01		SA2951

Upstate Laboratories, Inc. Analysis Results

Report Number: 22501066

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ \_ \_ \_ QC: Lab I.D.: 10170 Sampled by:

Client I.D.: CIMINELLI SERVICES GROUP CORP.	Sampled by:			
ID: 22501067 Mat: Soil MCKENNA LANDFILL BA	RRE 2 08709/01			·
PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
3-Nitroaniline	<3500ug/kg dw	08/16/01		SA2951
Acenaphthene	<350ug/kg dw	08/16/01		SA2951
2,4-Dinitrophenol	<3500ug/kg dw	08/16/01		SA2951
4-Nitrophenol	<3500ug/kg dw	08/16/01		SA2951
Dibenzofuran	<350ug/kg dw	08/16/01		SA2951
2,4-Dinitrotoluene	<350ug/kg dw	08/16/01		SA2951
Dicthylphthalate	<350ug/kg dw	08/16/01		SA2951
4-Chlorophenylphenylethor	<350ug/kg dw	08/16/01		SA2951
Fluorene	<350ug/kg dw	08/16/01		SA2951
4-Nitroaniline	<3500ug/kg dw	08/16/01		SA2951
2-Mothyl-4,6-dinitrophenol	<3500ug/kg dw	08/16/01		SA2951
n-Nitrosodiphenylamine	<350ug/kg dw	08/16/01		SA2951
4-Bromophenylphenylether	<350ug/kg dw	08/16/01		SA2951
Hexachlorobenzene	<350ug/kg dw	08/16/01		SA2951
Pentachlorophenol	<690ug/kg dw	08/16/01		SA2951
Phenanthrene	<350ug/kg dw	08/16/01		SA2951
Anthracene	<350ug/kg dw	08/16/01		5A2951
Carbazolo	<350ug/kg dw	08/16/01		SA2951
di-n-butylphthalate	<350ug/kg dw	08/16/01		SA2951
Fluoranthene	<350ug/kg dw	08/16/01		SA2951
Pyrene	<350ug/kg dw	08/16/01		SA2951
Butylbenzylphthalate	<350ug/kg dw	08/16/01		SA2951
3,3'-Dichlorobenzidine	<350ug/kg dw	08/16/01		SA2951
Benzo(a) anthraceno	<350ug/kg dw	08/16/01		SA2951
Chrysene	<350ug/kg dw	08/16/01		SA2951
bis(2-Ethylhexyl)phthalate	<350ug/kg dw	08/16/01		SA2951
di-n-octylphthalate	<350ug/kg dw	08/16/01		SA2951
Benzo(b) fluoranthene	<350ug/kg dw	08/16/01		SA2951
Benzo(k) fluoranthene	<350ug/kg dw	08/16/01		SA2951
Benzo(a)pyrane	<350ug/kg dw	08/16/01		SA2951
Indono(1,2,3-cd)pyrene	<350ug/kg dw	08/16/01		SA2951
Dibenzo(a,h)anthracene	<350ug/kg dw	08/16/01		SA2951
Benzo(ghi)perylene	<350ug/kg dw	08/16/01		SA2951
EPA Method 8150				
2,4~D	<34ug/kg dw	08/25/01		GA0923
2,4,5-T	<34ug/kg dw	08/25/01		GA0923
2,4,5-TP (Silvex)	<34ug/kg dw	08/25/01		GA0923
Dinoseb	<34ug/kg dw	05/25/01		GA0923
TCL Pesticidos/Arcelors by EPA 80%2				
BHC (a-isomer)	<1.8ug/kg dw	08/22/01		GA0911
BHC (b-isomer)	<1.8ug/kg dw	08/22/01		GA0911
BHC (d-isomer)	<1.8ug/kg dw	08/22/01		GA0911
mana in washing	1-121 mg			3,11

state Laboratories, Inc. Malysis Results

Report Number: 22501066 Client I.D.: CIMINELLI SERVICES GROUP CORP. Sampled by:

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ID	: 2	229	03	LCE	57	M:	it:	: S	3 <b>.</b> .:	L		1	MC	KE	NN.	A 1	LA!	IDI	(II	ĽĽ			B	LR I	RΕ	2	0.8	3/(	39,	/01	L			

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
*********	*			
BHC (g-isomer)	<1.8ug/kg dw	08/22/01		GA0911
Heptachlor	<1.8ug/kg dw	08/22/01		GA0911
Aldrin	<1.8ug/kg <b>dw</b>	08/22/01		GA0911
Heptachlor Epoxide	<1.8ug/kg dw	08/22/01		GA0911
Endosulfan I	<1.8ug/kg dw	08/22/01		GA0911
Dieldrin	<3.4ug/kg <b>dw</b>	08/22/01		GA0911
4,4'-DDE	<3.4ug/kg dw	08/22/01		GA0911
Endrin	<3.4ug/kg dw	09/22/01		GA0911
Endosulfan II	<3.4ug/kg dw	08/22/01		GA0911
4,4'-DDD	<3.4ug/kg dw	08/22/01		GAC911
Endosulfan Sulfato	<3.4ug/kg dw	08/22/01		GA0911
4,4'-DDT	<3,4ug/kg dw	08/22/01		GA0911
Methoxychlor	<18ug/kg dw	08/22/01		GAC 911
Endrin Ketone	<3.4ug/kg dw	08/22/01	:	GA0911
Endrin Aldehyde	<3.4ug/kg dw	08/22/01		GA0911
alpha-Chlordane	<1.8ug/kg dw	08/22/01		GA0911
gamma-Chlordane	<1.8ug/kg dw	08/22/01		GA0911
Toxaphene	<180ug/kg dw	08/22/01		GA0911
Aroclor 1016	<1.8ug/kg dw	08/22/01		GA0911
Aroclor 1221	<1.8ug/kg dw	08/22/01		GA0911
Aroclor 1232	<1.8ug/kg dw	08/22/01		GA0911
Aroclor 1242	<1.8ug/kg dw	08/22/01		GA0911
Aroclor 1248	<1.8ug/kg dw	08/22/01		GA0911
Aroclor 1254	<1.8ug/kg dw	08/22/01		GA0911
Aroclor 1260	<1.8ug/kg dw	08/22/01		GA0911

PA	RAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
		******			
	Percent Solids	98%	08/14/01		WD5867
	Total Cyanide	<1.0mg/kg dw	08/23/01		WD5891
Total	Aluminum	7200mg/kg dw	08/14/01		MB3751
Total	Antimony	48mg/kg dw	08/14/01		MB3751
Total	Arsenic by furnace method	2.5mg/kg dw	08/16/01		MB3740
Total	Barium	48mg/kg dw	08/14/01		MS3751
Total	Beryllium	<0.49mg/kg dw	08/14/01		MB3751
Total	Cadmium	1.0mg/kg dw	08/14/01		XB3751
Total.	Calcium	41000mg/kg dw	08/14/01		ME3751
Total	Chromium	13mg/kg dw	08/14/01		ME3751
Total	Cobalt	35mg/kg dw	08/14/01		MB3751
Total	Copper	13mg/kg dw	08/14/01		M083751
Total	Iron	12000mg/kg dw	08/14/01		MB3751
Total	Lead	<9.8mg/kg dw	08/14/01		MB3751

Upstate Laboratories, Inc.

Analysis Repults

Raport Number: 22501066

Client I.D.: CIMINELLI SERVICES GROUP CORP.

10:22501068	Mat:Soil MCKENNA LANDFILL	BARRE 3 08/09/01			
	RAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Total	Magnesium A. Sale	10000mg/kg dw	08/14/01		MB3751
Total	Manganese	340mg/kg dw	08/14/01		MB3751
Total	Mercury	<0.16mg/kg dw	09/05/01		MB3799
Total	Nickel	17mg/kg dw	08/14/01		MB3751
Total	Potaggium	1700mg/kg dw	08/25/01		MB3781
Total	Selenium by furnace method	<0.10mg/kg dw	08/14/01		MB3479
Total	Silver	<4.9mg/kg dw	08/14/01		ив3751
Total	Sodium	420mg/kg dw	08/26/01		ив3761
Total	Thallium by furnace method	<0.3mg/kg dw	08/28/01		ME4215
Total	Vanadium	<30mg/kg dw	08/14/01		MB3751
Total	Zinc	42mg/kg dw	08/14/01		MB3751
	TCL Volatiles by EFA Method 8260				
	Chloromethane	<3ug/kg dw	08/17/01		VM3579
	Bromomethane	<3 ug/kg dw	08/17/01		VM3579
	Vinyl Chloride	<2ug/kg dw	08/17/01		VM3579
	Chloroethane	<3ug/kg dw	08/17/01		VM3579
•	Mothylene Chloride	llug/kg dw	08/17/01	44	VM3579
	Acetone	<10ug/kg dw	08/17/01		VM3579
	Carbon Disulfide	<3ug/kg dw	08/17/01		VM3579
	1,1-Dichloroethene	<3 ug/kg dw	08/17/01		VM3579
	1,1-Dichloroethane	< 3 ug/kg dw'	08/17/01		VM3579
	trans-1,2-Dichloroethene	<3ug/kg dw	08/17/01		VM3579
	cis-1,2-Dichloroethene	<3ug/kg dw	08/17/01		VM3579
	Chloroform	<3ug/kg dw	08/17/01		VM3579
	1,2-Dichloroethane	<3ug/kg dw	08/17/01		VM3575
	2-Butanone	<10ug/kg dw	08/17/01		VM3579
	1,1,1-Trichloroethane	<3ug/kg dw	08/17/01		VM3579
	Carbon Tetrachloride	<3ug/kg dw	08/17/01		VM3579
	Bromodichloromethane	<3ug/kg dw	08/17/01		VM3579
	1,2-Dichloropropane	<3ug/kg dw	08/17/01		VM3579
	cis-1,3-Dichloropropene	<3ug/kg dw	08/17/01		VM3579
	Trichloroetheno	<3ug/kg dw	08/17/01		VM3579
	Dibromochloromethane	<3ug/kg dw	08/17/01		VM3579
	1,1,2-Trichloroethane	<3ug/kg dw	08/17/01		VM3579
	Benzone	<3 ug/kg dw	08/17/01		VM3579
	trans-1,3-Dichloropropene	<3ug/kg dw	08/17/01		VX3579
	Bromoform	<3ug/kg dw	08/17/01		VM3579
	4-Methyl-2-pentanone	<10ug/kg dw	08/17/01		VM3579
	2-Hexanone	<10ug/kg dw	08/17/01		VM3579
	Tatrachloroethene	<3ug/kg dw	08/17/01		VM3579
	1,1,2,2-Tetrachloroethane	<3ug/kg dw	08/17/01		VM3579
	Tolugne	<3ug/kg dw	08/17/01		VM3579
	Chlorobenzene	<3 mg/kg dw	08/17/01		VM3579

tate Laboratories, Inc. Malysis Results

Report Number: 22501066

Client I.D.: CIMINELLI SERVICES GROUP CORP.

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Ethylbenzene	<3ug/kg dw	08/17/01		VM3579
Styrene	<3ug/kg dw	08/17/01		VM3579
m, p-xylene	<3ug/kg dw	08/17/01		VM3579
o-Xylene	<3ug/kg dw	08/17/01		VM3579
TCL Semivolatiles by EPA Method 827	0			
Phenol	<340ug/kg dw	08/16/01		SA2951
bis (2-Chloroethyl) ether	<340ug/kg dw	08/16/01		\$A2951
2-Chlorophenol	<340ug/kg dw	08/16/01		SA2951
1,3-Dichlorobenzene	<340ug/kg dw	08/16/01		SA2951
1,4-Dichlorobenzene	<340ug/kg dw	08/16/01		5A2951
1,2-Dichlorobenzene	<340ug/kg d₩	08/16/01		SA2951
2-Methylphenol	<340ug/kg dw	08/15/01		SA2951
2,2'-Oxybis(1-Chloropropane)	<340ug/kg dw	08/15/01		\$A2951
4-Methylphenol	<340ug/kg dw	08/15/01		SA2951
n-Nitrosodi-n-propylamine	<340ug/kg dw	08/16/01		SA2951
Hexachloroethane	<340ug/kg dw	08/15/01		SA2951
Nitrobenzene	<340ug/kg dw	08/16/01		SA2951
Isophorone	<240ug/kg dw	03/16/01		SA2951
2-Nitrophenol	<340ug/kg dw	08/16/01		SA2951
2,4-Dimethylphenol	<340ug/kg dw	08/16/01		SA2951
bis(2-Chloroethoxy)methane	<340ug/kg dw	08/16/01		SA2951
2,4-Dichlorophenol	<340ug/kg dw	08/16/01		\$A2\$51
1,2,4-Trichlorobenzene	<340ug/kg dw	08/16/01		SA2951
Naphthalene	<340ug/kg dw	08/16/01		SA2951
4-Chloroaniline	<340ug/kg dw	08/16/01		SA2951
Hexachlorobutadiene	<340ug/kg dw	08/16/01		SA2951
4-Chloro-3-methylphenol	<340ug/kg dw	08/16/01		SA2951
2-Methylnaphthaleno	<340ug/kg dw	08/16/01		SA2951
Hexachlorocyclopentadiene	<340ug/kg dw	08/16/01		SA2951
2,4,6-Trichlorophenol	<340ug/kg dw	08/16/01		SA2951
2,4,5-Trichlorophenol	<340ug/kg dw	08/16/01		SA2951
2-Chloronaphthalene	<340ug/kg dw	08/16/01		SA2951
2~Nitroaniling	<3400ug/kg dw	08/16/01		SA2951
Dimethylphthalate	<340ug/kg dw	08/16/01		8A2951
Acenaphthylene	<340ug/kg dw	08/13/01		SA2951
2.6-Dinitrotoluene	<340ug/kg dw	08/16/01		9A2951
3-Nitroaniline	<3400ug/kg dw	08/16/01		SA2951
Acenaphthene	<340ug/kg dw	08/16/01		SA2951
2,4-Dinitrophenol	<3400ug/kg dw	08/15/01		SA2951
4-Nitrophanol	<3400ug/kg dw	08/15/01		SA2951
Dihenzofuran	<340ug/kg dw	08/16/01		SA2951
2,4-Dinitrotoluene	<340ug/kg dw	08/16/01		SA2951
Diethylphthalato	<340ug/kg dw	08/16/01		\$A295

Upstate Laboratories, Inc.

Analysis Results

Report Number: 22501066

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ \_ \_ - Lab I.D.: 10170 Sampled by:

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
4-Chlorophenylphenylether	<340ug/kg dw	08/16/01		SA2951
Fluorene	<340ug/kg dw	08/16/01		SA2951
4-Nitroaniline	<3400ug/kg dw	08/16/01		5A2951
2-Methyl-4,6-dimitrophenol	<3400ug/kg dw	08/16/01		SA2951
n-Nitrosodiphenylaming	<340ug/kg dw	08/16/01		SA2951
4-Bromophenylphonylether	<340ug/kg dw	08/16/01		SA2951
Hexachlorobenzene	<340ug/kg dw	08/16/01		SA2951
Pentachlorophenol	<680ug/kg dw	08/16/01		SA2951
Phenanthrene	<340ug/kg dw	08/16/01		SA2951
Anthracene	<340ug/kg ďw	08/16/01		SA2951
Carbazole	<340ug/kg dw	08/16/01		SA2951
di-n-butylphthalate	<340ug/kg dw	08/16/01		SA2951
Fluoranthene	<340ug/kg dw	08/16/01		SA2951
Pyrene	<340ug/kg dw	08/16/01		SA2951
Butylbenzylphthalate	<340ug/kg dw	08/16/01		SA2951
3,3'-Dichlorobenzidine	<340ug/kg dw	08/16/01		SA2951
Benzo (a) anthraceno	<340ug/kg dw	08/16/01		SA2951
Chrysene	<340ug/kg dw	08/16/01		SA2951
bis(2-Ethylhexyl)phthalate	<340ug/kg dw	08/16/01		SA2951
di-n-octylphthalate	<340ug/kg dw	08/16/01		\$A2951
Banzo (b) fluoranthene	<340ug/kg dw	08/16/01		SA2951
Benzo(k)fluorantheno	<340ug/kg dw	08/16/01		SA2951
Benzo(a)pyrene	<340ug/kg dw	08/16/01		SA2951
Indono (1, 2, 3-cd) pyrene	<340ug/kg dw	08/16/01		SA2951
Dibenzo (a, h) anthracene	<340ug/kg dw	08/16/01		SA2951
Benzo(ghi)perylene	<340ug/kg dw	08/16/01		SA2951
BPA Method 8150				
2,4-D	<34ug/kg dw	00/25/01		G>0053
2,4-5-T	<34ug/kg dw	08/25/01 08/25/01		GA0923
2,4,5-TP (Silvex)	<34ug/kg dw	08/25/01		GA0923
Dinoseb	<34ug/kg dw	08/25/01		GA0923 GA0923
TCL Pesticides/Aroclors by EPA 80	ξ <sub>i</sub> 2			
***				
BHC (a-isomer)	<1.7ug/kg dw	09/13/01		GA0966
BHC (b-isomer)	<1.7ug/kg dw	09/13/01		GA0966
BHC (d-isomor)	<1.7ug/kg dw	09/13/01		GA0966
BHC (g-isomer)	<1.7ug/kg dw	09/13/01		GA0966
Heptachlor	<1.7ug/kg dw	09/13/01		GA0966
Aldrin	<1.7ug/kg dw	09/13/01		GA0966
Heptachlor Epoxide	<1.7ug/kg dw	09/13/01		GA0966
Endosulfan I	<1.7ug/kg dw	09/13/01		GA0966
Dieldrin	<3.4ug/kg dw	09/13/01		GA0966
4,4'-DDE	<3.4ug/kg dw	09/13/01		GA0966

Testate Laboratories, Inc.

malysis Results

Report Number: 22501066 Client I.D.: CIMINELLI SERVICES GROUP CORP.

AFPROKAL:\_ - - -- Eab I.D.: 10170

Sampled by:

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	******			
Endrin	<3.4ug/kg dw	09/13/01		GA0966
Endosulfan II	<3.4ug/kg dw	09/13/01		QA0966
4,4'-000	<3.4ug/kg dw	09/13/01		GA0966
Endosulfan Sulfate	<3.4ug/kg dw	09/13/01		GA0966
4,4'-DDT	<3.4ug/kg dw	09/13/01		GA0966
Methoxychlor	<17ug/kg dw	09/13/01		GA0966
Endrin Ketong	<3.4ug/kg dw	09/13/01		GA0966
Endrin Aldehyda	<3.4 ug/kg dw	09/13/01		GA0966
alpha-Chlordane	<1.7ug/kg dw	09/13/01		GA0966
gamma-Chlordane	<1.7ug/kg dw	09/13/01		GA0966
Toxaphene	<170ug/kg dw	09/13/01		GA0966
Arcclor 1016	<1.7ug/kg dw	09/13/01		GA0966
Aroclor 1221	<1.7ug/kg dw	09/13/01		GA0966
Aroclor 1232	<1.7ug/kg dw	09/13/01		GA0966
Aroclor 1242	<1.7ug/kg dw	09/13/01		GA0966
Aroclor 1248	<1.7ug/kg dw	09/13/01		GA0966
Aroclor 1254	<1.7ug/kg dw	09/13/01		GA0966
Aroclor 1260	<1.7ug/kg dw	09/13/01		GA0966

#### 3. BROCKPORT STOCKPILE BPS

#### Geotechnical Testing Suramary

Approximately 32,000 cubic yards of the Brockport soil was used for BPS construction. Test frequencies are summarized on the following page. Table D11 summarizes the geotechnical laboratory test results.

Also included herein is pre-construction lab testing provided by CSC, including results of triaxial compressive strength testing for the existing cover soils. The strength test shows that the soil has an effective internal angle of friction exceeding 27 degrees. The results of the geotechnical testing for the Brockport soil, therefore, indicate the soil was acceptable for use as barrier protection material.

#### **BROCKPORT BPS GEOTECHNICAL LAB TESTING SUMMARY**

Test Designation	Required	Number of	Estimated	Estimated Test
	Frequency	Tests Done	Quantity of	Frequency
			Fill Placed	
Atterberg Limits	Ea. 2,500 Cubic	13	32,000 Cubic	Ea. 2,500 Cubic
(ASTM D4318)	Yards		Yards	Yards Placed
Moisture Content	Ea. 2,500 Cubic	13	32,000 Cubic	Ea. 2,500 Cubic
(ASTM D3017)	Yards		Yards	Yards Placed
Grain Size	Ea. 2,500 Cubic	13	32,000 Cubic	Ea. 2,500 Cubic
Analysis (ASTM	Yards		Yards	Yards Placed
D422)				
Moisture Density	Ea. 5,000 Cubic	7	32,000 Cubic	Ea. 4,600 Cubic
Relationship,	Yards		Yards	Yards Placed
Modified Proctor				
(ASTM D1557)				
Remolded	Ea. 5,000 Cubic	7	32,000 Cubic	Ea. 4,600 Cubic
Permeability	Yards		Yards	Yards Placed
(ASTM D5084)				
Angle of Internal	1 per Borrow	1	32,000 Cubic	1 per Borrow
Friction	Source		Yards	Source

#### Chemical Testing Summary

Pre-construction chemical characterization testing was done for the Brockport soil. Chemical characterization testing was required for every 5,000 cubic yards of soil used. Seven samples were tested for a test frequency of about 1 test per 4,600 cubic yards. The samples were tested for the following parameters.

Parameter	Extraction/Preparation (1)	Analysis (1)
TCL <sup>(2)</sup> Volatile Organic	5050	8260 (95-1)
Compounds		
TCL Semi-Volatile Organic	3540/3550	8270 (95-2)
Compounds		
Pesticides/PCB's	3540/3550	8080
Herbicides	3580	8150
TAL <sup>(3)</sup> Metals	3050	95-M
Cyanide		9012

<sup>&</sup>lt;sup>1</sup> EPA SW-846.

<sup>&</sup>lt;sup>2</sup> TCL – Target Compound List.

<sup>&</sup>lt;sup>3</sup> TAL – Target Analyte List.

GZA reviewed the laboratory test results submitted by CSC's analytical laboratory, Upstate, and tabulated the compounds detected for each sample. A table of the compounds detected for each material type is included herein as Table D12, along with the laboratory data. GZA compared the reported chemical concentrations versus recommended soil cleanup objective values and eastern United States background values shown in the tables.

Based on GZA's review, the chemical characterization test results for this material was acceptable. Therefore, the Brockport soil was considered acceptable for barrier protection soil.

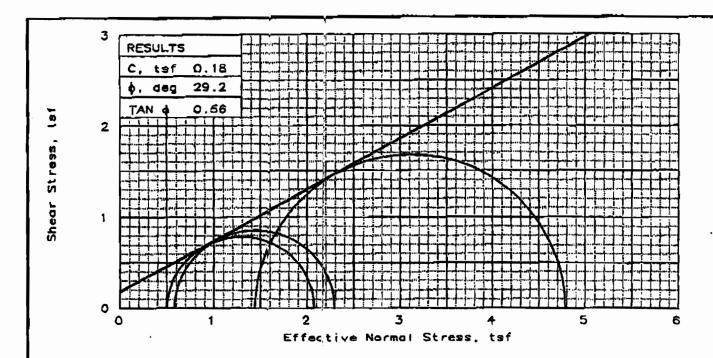
Table D11

# SUMMARY OF BULK SAMPLE LABORATORY TESTING BROCKPORT BARRIER PROTECTION MATERIAL

WASTE MANAGEMENT OF NEW YORK

MCKENNA LANDFILL, REMEDIAL CLOSURE PROJECT

_								_		_			_		_
	TEST MOISTURE CONTENT (%)	9.8	-		6.7		9.7		7.9	8.1		7.0		7.6	
MEABILITY	TEST DRY DENSITY (PCF)	112.5			116.2		115.9		116.2	116.0		117.4		116.0	
RECONSTITUTED PERMEABILITY	CONFINING PRESSURE (PSF)	720			720		720		720	720		720		720	
RECON	PERMEABILITY (CM/SEC)	1.2E-07			8.5E-07		2.0E-06		2.2E-06	5.9E-07		2.8E-06		3.5E-06	
MODIFIED PROCTOR	OPTIMUM MOISTURE CONTENT (%)	11.0			8.0		8.0		8	8.0		7.0		7.5	
MODIFIED	MAXIMUM DRY DENSITY (PCF)	124			133.0		132.0		132.5	132.0		133.5		133.0	
ATION	% FINER THAN 2 MICRONS				10	11	12	14							
GRADATION	% FINER THAN #200 SEIVE	51	40	45	56	59	62	09	55	28	26	52	55	51	
IMITS	PLASTICITY INDEX	13	14	6	80	9	7	10	4	7	8	4	2	5	
ATTERBERG LIMITS	PLASTIC LIMIT (%)	13	15	15	14	11	10	11	13	13	11	13	13	13	
.Y	LIQUID LIMIT (%)	56	59	24	22	17	17	21	17	20	19	17	18	18	
	NATURAL MOISTURE CONTENT (%)	13.9	6	8.8	9.7	10.7	9.4	6.6	9.1	9.3	9.6	11.2	10.1	9.7	
	SAMPLE NUMBER	07171-1	07241-1	07241-2	07301-1	08021-1	08061-1	08081-1	08091-1	08161-1	08211-1	08231-1	08301-1	09071-1	



Deviator Stress, 10 15 20 Axial Strain, %

TYPE OF TEST:

CU with Pore Pressures SAMPLE TYPE: Recompacted DESCRIPTION: 01-03 Sandy Silt

SPECIFIC GRAVITY 2.65

REMARKS:	90%	Proctor	ø	2%	0~96	

SAMPLE NO.:	1	2	3	
WOID RATIO	11.7 118.3 77.8 0.398 2.80 5.60	118.6 78.4 0.395 2.80	118.3 77,9 0.398 2.80	
DRY DENSITY. pcf	14.5 122.7 110.4 0.348 2.80 5.40	124.8 132.1 0.326 2.80	125.5 121.8 0.318 2.80	
	0.10 0.72 3.35 4.32 15.6	0,10 1.08 1.71 5.54 15.8	0.10 1.44 1.57 5.98 15.9	

CLIENT: Ciminelli

PROJECT: McKenna landfill

SAMPLE LOCATION: Barrier Protection Layer

PROJ. NO.: 00-1027 DATE: 7/24/01

TRIAXIAL SHEAR TEST REPORT

GLYMN GEOTECHNICAL ENGINEERING

Tested By: MA



#### GRAIN SIZE ANALYSIS ASTM D-422

a member of the GLYNN GROUP

Project: Materials Testing

Project No.: 00-1027

Client: Ciminelli Services Corp.

Sample No: 01-03 Location: Barrier Protection Layer

Consulting

Materials Testing

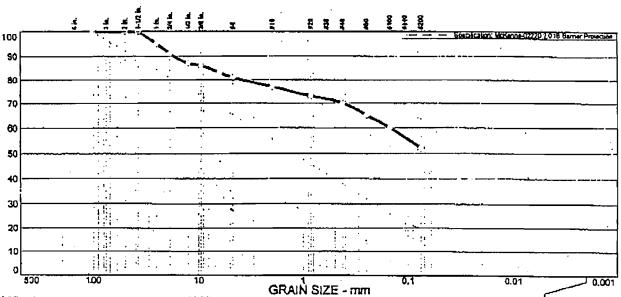
Geotechnical

PERCENT FINER

Source of Sample:

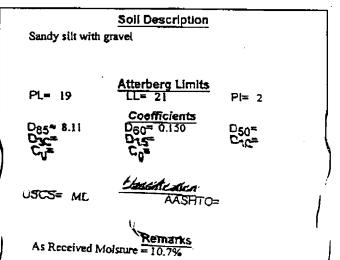
Date: 7/13/01

Elev./Depth:



330 1	100		10	(	GRAIN SIZE	- mm	0.01	0.001			
% COBBLES			AVEL		% SAN		% FINES				
/		CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY			
0		9	10	4	7	. 18	52	52			

_				
ſ	SIEVE	PERCENT	SPEC.*	PASS7
L	SIZE	FINER	PERCENT	(X=NO)
	4733/4 ###################################	10000000000000000000000000000000000000	25 - 34	
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GLYNN GROVECHAICH ENGINEENK New /10.025.0933 / fax 716.625.6983

McKenne myon o 11111



# GRAIN SIZE ANALYSIS ASTM D-422

**Project:** Materials Testing

Project No.: 00-1027

Client: Ciminelli Services Corp.

Sample No: 01-03 Sour
Location: Barrier Protection Layer

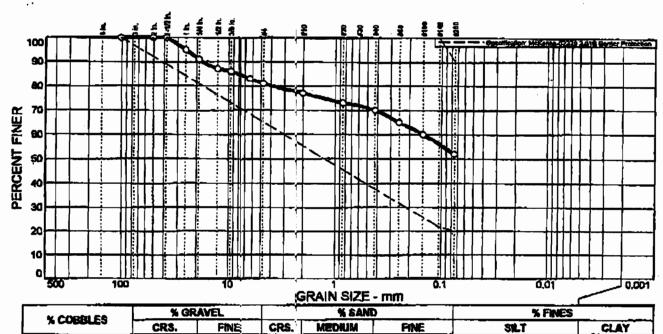
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Source of Saynple:

Date: 7/13/01

Elev./Depth:

52



SIEVE	PERCENT	8PEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
4 in. 1.2 in. 1.5 in. in. 1.4 in. 1.3 in. in. 1.4 in. 1.3 in. 1.4 in.	100 100 95 91 87 86 83 81 77 73 70 65	20 - 90	

10

Sandy silt with	Solf Description gravel	
PL=	Atterberg Limits	PI=
	<b>9-1</b>	
D <sub>85</sub> = 8.11 D <sub>30</sub> = C <sub>U</sub> =	<b>Coefficients</b> D <b>60</b> <sup>©</sup> 0.150 D <sub>15</sub> <sup>©</sup> C <sub>c</sub> <sup>®</sup>	D <sub>50</sub> = D <sub>10</sub> =
uscs= Mil	Classification AASHT	0=
Δε Received <b>M</b> e	Remarks pisture = 10.7%	

GLYNN GEOTECHNICAL ENGINEERING 415 South Transit Street, Lockport, New York 14094

voice 716.625.6933 / fax 716.625.6983 www.glynngroup.com

Manufactory Reparted/Replinated by

McKenne-02220 2.01B Bartier Protection



# COMPACTION TEST DATA ASTRO-661-78/ASTRO-1627-78

a member	of the GLY	NN GROUP

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## GLYNN GEOTECHNICAL ENGINEERING

415 South Transit Street, Lockport, New York 14094 voice 716.625.6933 / fax 716.625.6983 www.glynngroup.com



#### TRIAXIAL PERMEABILITY ASTM D-5084

PROJECT: McKENNA LANDFILL	DATE REPORTED:	JULY 24, 2001
LOCATION: ALBION, NEW YORK	Project no.	00 - 1027
CLIENT: CIMINELLI	SAMPLE NO.	01-03
DATE RECEIVED: JULY 12, 2001	DEPTH:	NOT PROVIDED
SAMPLE DESCRIPTION: BARRIER PROTECTION LAYER		
SAMPLE OF ASSISTED ATION. SANDY SHIT WITH GILAVEL. MI		

INITIAL I	DATA	γ
Initial Height	5.6	con
Initial Diameter	7.1	,CIE
Moisture Content	11.7	%
Wet Density	132.2	pcf
% Proctot	90.0	%

FINAL DA	TA	
Final Height	5.6	CITE
Final Diameter	7.1	αn
Moisture Content	16.6	%
Wer Densky	134.1	pcf
Minimum Saturation	96	%

TEST DATA		
Confining Pressure	67 p	si.
Head Water Pressure	62 p	ઝાં.
Tail Water Preseur	g 06	si
Average Gradient, 1	25	

	NOTES
MATERIAL COMPACTED TO DESIRED	DENSITY VIA MANUAL COMPACTION METHODS.
DEAIRED WATER WAS UTILIZED AS	THE PERMEANT LIQUID.
,	

RESULTS 5.9 x 104 AVERAGE PERMEABILITY, K= (cm/sec) at 20° c

REPORTED BY:

DOCTRATILIMENT

ALAN R. HOPKINE

REVIEWED BY:

GLYNN GEOTECHNICAL ENGINEERING

415 South Transit Street, Lockport, New York 14094 voice 716.625.6933 / fax 716.625.6983 www.glynngroup.com

Chemical Charaterization Results for Brockport Source - Barrier Protection Material Brockport-PC, Brockport-1, Brockport-2, Brockport-3, Brockport-4, Brockport-5, Brockport-7

#### McKenna Landfill Remedial Closure Project Albion, New York

Parameter	Recommended Soil Cleanup Objective ppm	Eastern USA Background ppm	Brockport-PC	Brockport-1	Brockport-2	Brockport-3	Brockport-4	Brockport-5	Brockport-7
VOC - EPA Metho	d 8260 (ppm)	962 (12.56 Oct.)	1. 100 C. 100 C.	57. S. W. 66. 2.0	15.57	S Number	1000	Company of the	A
Methylene Chloride	0.1	N/A	ND	0.01	0.01	0.01	0.007	0.006	0.007
Acetone	0.2	N/A	ND	ND	ND	ND	ND	ND	ND
2-Butanone	0.3	N/A	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethane	1.4	N/A	ND	ND	ND	ND	ND	ND	ND
SVOC - EPA Metho	d 8270 (ppm)	Late American	4	A Comme		CA CONTRACTOR		Committee (New York)	
No Compounds Detecte	d	N/A	ND	ND	ND	ND	ND	ND	ND
HERBICIDES - EP.	A Method 8150 (ppm)	100000000000000000000000000000000000000	X III.	Supplied Avenue	78.7			\$200 miles	1000
2,4 -D	0.5	N/A	ND	ND	ND	ND	ND	ND	ND
TCL Pesticides/Aro	clors EPA Method 808	(mag)	**************************************		N. 122	(Phispage)		N. 10 (80) (10)	
4.4' - DDE	2.1	N/A	0.014	0.003	ND	ND	0.028	0.022	0.037
Priority Pollutant M	letak (man)	Survey Services	1429	SERVICE CONTRACTOR		1460 LODAWA			.7. 4.
Aluminum	SB	33,000	6,800	3,400	4,400	4,400	4,600	4,300	5,500
Antimony	SB	N/A	120	ND	ND ·	45	ND	ND	ND
Arsenic	7.5 or SB	3-12	7	2.5	2.4	2.6	3.2	2.9	2.9
Barium	300 or SB	15-600	56	44	47	66	47	290	55
Beryllium	0.16 or SB	0-1.75	ND	ND	ND	ND	ND	ND	ND
Cadmium	1 or SB	0.1-1	0.85	2.1	0.9	0.75	ND	ND	ND
Calcium	SB	130-35,000	38,000	37,000	46,000	51,000	57,000	54,000	38,000
Chromium	10 or SB	1.5-40	10	6.9	8.5	7.6	7.8	7.2	8.5
Cobalt	30 or SB	2.5-60	31	16	15	16	7	7.3	9.5
Copper	25 or SB	1-50	10	9.9	10	12	10	11	9.9
iron	2,000 or SB	2,000-550,000	9,800	7,900	8,200	8,400	8,000	7,900	8,700
Lead	SB	See Note 5	ND	ND	ND	ND	ND	ND	ND
Magnesium	SB	100-5,000	4,500	3,600	4,300	6,200	3,900	4,800	4,700
Manganese	SB	50-5,000	340	230	260	420	280	270	300
Mercury	0.1	0.001-0.2	ND	0.59	ND	ND	ND	ND	ND
Vickel	13 or SB	0.5-25	14	16	14	12	15	14	16
otassium	SB	8,500-43,000	1,800	1,100	1,200	1,200	1,400	1,300	1,400
Selenium	2 or SB	0.1-3.9	ND	ND	ND	ND	ND	ND	ND
Silver	SB \	N/A	6.1	ND	ND	ND	ND	ND	ND
Sodium	SB	6,000-8,000	ND	420	400	570	400	460 ·	370
Maliium	SB	N/A	ND	ND	ND	ND	ND	ND	ND_
Vanadium	150 or SB	1-300	ND	ND	ND	ND	ND	ND	ND
Zinc	20 or SB	9-50	23	27	22	19	22	20	23

Notes:

1. Only compounds detected in one or more samples are presented on this table. Refer to original data sheets for list of all compounds included in analysis.

2. Analytical testing completed by Upstate Laboratories, Inc.

3. Recommended soil cleanup objectives are based on the Division Technical and Administrative Guidance Memorandum (TAGM) 4046 on Determination of Soil Cleanup Objectives and Cleanup Levels in its final form.

4. ND = not detected, NA = not available

5. Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4-61 ppm. Average background levels in metropolitian or suburban areas or near highways are much higher and typically range from 200-500 ppm.

6. mg/kg = ppm

Upstato Laboratories, Inc. Analysis Results Report Number: 20101066

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL: QC: N Lab I.D.: 10170

Sampled by: Client

ID:20101066 Mat: Soll MCKENNA LANDFILL SO	RESULTS		75774	
	V720112	DATE ANAL.	KEY	FILE#
cis-1,3-Dichloropropena	<3ug/kg dw	07/24/01		VM3 54 2
Trichloroethene	<3ug/kg dw	07/24/01		
Dibromochloromethane	<3ug/kg dw	07/24/01		VM3542
1,1,2-Trichloroethane	<3ug/kg dw	07/24/01		VM3542 VM3542
Benzone	<3ug/kg dw	07/24/01		VM3542
trans-1,3-Dichloropropene	<3ug/kg dw	07/24/01		
Bromoform	<3ug/kg dw	07/24/01		VM3542 VM3542
4-Methyl-1-pentanone	<li><li><li><li><li></li></li></li></li></li>	07/24/01		VM3542 VM3542
2-Hexanone	<11ug/kg dw	07/24/01		VM3542 VM3542
Tetrachloroethene	<3ug/kg dw	07/24/01		VM3542
1,1,2,2-Tetrachloroethane	<3ug/kg dw	07/24/01		VM3542
Toluene	<3ug/kg dw	07/24/01		VM3542
Chlorobenzene	<3ug/kg dw	07/24/01		VM3542
Uthylbenzene	<3ug/kg dw	07/24/01		VM3542
Styrene	<3ug/kg dw	07/24/01		VM3542
m-Xylene and p-Xylene	<3ug/kg dw	07/24/01		VM3542
o-Xylene	<3ug/kg dw	07/24/01		VM3542
TCL Semivolatiles by EPA Method 827	•			
*******				
Phenol	<350ug/kg dw	07/26/01		SA2922
bis (2-Chloroethyl) ether	<350ug/kg dw	07/26/01		BA2922
2-Chlorophenol	<350ug/kg dw	07/26/01		SA2922
1,3-Dichlorobenzene	<350ug/kg dw	07/26/01		SA2922
1.4-Dichlorobenzene	<350ug/kg dw	07/26/01		SAZ922
1,2-Dichlorobenzene	<350ug/kg dw	07/26/01		SA2922 SA2922
2-Mathylphenol	<350ug/kg dw	07/26/01		BA2922
2,2'-Oxybis(1-Chloropropana)	<350ug/kg dw	07/26/01		SA2922
4-Methylphenol	<350ug/kg dw	07/26/01		8A2922
n-Nitrosodi-n-propylamine	<350ug/kg dw	07/26/01		5A2922
Hexachloroothane	<350ug/kg dw	07/26/01		SA2922
Nitrobenzene	<350ug/kg dw	07/26/01		EA2922
Isophorone	<350ug/kg dw	07/26/01		SA2922
2-Nitrophenol	<350ug/kg dw	07/26/01		SA2922
2,4-Dimethylphenol	<350ug/kg dw	07/26/01		5A2922
bis (2-Chloroethoxy) methane	<350ug/kg dw	07/25/01		5A2922
2,4-Dichlorophenol	<350ug/kg dw	07/26/01		SA2922
1,2,4-Trichlorobenzene	<350ug/kg dw	07/25/01		SA2922
Naphthalene	<350ug/kg dw	07/25/01		SA2922
4-Chloroaniline	<350ug/kg dw	07/26/01		SA2922
Rexachlorobutadiene	<350ug/kg dw	07/26/01		5A2922
4-Chloro-3-methylphenol	<350ug/kg dw	07/25/01		SA2922
2-Methylnaphthalena	<350ug/kg dw	07/26/01		8A2922
Hexachlorocyclopentadiene	<350ug/kg dw	07/26/01		SA2922
2,4,6-Trichlorophenol	<350ug/kg dw	07/26/01		SA2922

Upstate Laboratories, Inc. Analysis Results Roport Number: 20101066 Client I.D.: CIMINELLY SERVICES GROUP CORP.

APPROVAL: \_ - - -Sampled by: Client

ID:20101066 Nat:5011 MCKENNA LANDFILL SOIL SAMPLE 07/18/01 C

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Parameters			RESULTS	DATE ANAL.	KEY	FILE#
2 4 5 6	richlorophenol			*******		
	naphthalene		<350ug/kg dw	07/26/01		SA2922
2-Nitro	_		<350ug/kg dw	07/26/01		SA2922
	iphthalate		<3500ug/kg dw	07/25/01		SA2922
Acenaphi			<350ug/kg dw <350ug/kg dw	07/26/01		SA2922
	trotoluene		* *	07/26/01		SA2922
3-Nitro			<350ug/kg dw <3500ug/kg dw	07/26/01		SA2922
Acenaph(			<350ug/kg dw	07/26/01		SA2922
	itrophenol		<3500g/kg dw	07/26/01		EA2922
4-Nitro			<3500ug/kg dw	07/26/01		SA2922
Dibenzo			<350ug/kg dw	07/26/01		SA2922
	itrotoluene		<350ug/kg dw	07/26/01		SA2922
•	ohthalate		<350ug/kg dw	07/26/01		SA2922
	phenylphonylether		<350ug/kg dw	07/26/01		SA2923
Fluoren				07/26/01		SA2922
4-Nitro			<350ug/kg dw	07/26/01		SA2922
	L-4,6-dinitrophenol		<3500ug/kg dw	07/25/01		SA2922
n-Nitro	sodiphenylamine .		<3500ug/kg dw	07/26/01		SA2922
	phenylphenylather	`	<350ug/kg dw	07/26/01		SA2922
	oropeuseus outopeuseus		<350ug/kg dw	07/26/01		5A2922
	lorophenol		<350ug/kg dw	07/26/01		SA2922
Phenantl			<700ug/kg dw	07/26/01		SA2922
Anthrac			<350ug/kg dw	07/26/01		SA2922
Carbazo	• •		<350ug/kg dw	07/26/01		SA2922
	tylphthalate		<350ug/kg dw	07/26/01		<b>5</b> A2922
Fluoran			<350ug/kg dw	07/26/01		SA2922
Fyrene	CHOHA		<350ug/kg dw	07/26/01		SA2922
•			<350ug/kg dw	07/26/01		5A2922
	nzylohthalate chlorobenzidine		<350ug/kg dw	07/26/01		SA2922
	anthracene		<350ug/kg dw	07/26/01		<b>6A2922</b>
Chrysen			<350ug/kg dw	07/26/01		<b>EAZ922</b>
	thylhexyl)phthalate	50 ppm	<350ug/kg dw	07/26/01		SA2922
	tylphthalate	2 - 1 1	800ug/kg dw	07/26/01		8 <b>A2</b> 922
	) fluoranthene		c350ug/kg dw	07/26/01		SA2922
	) fluoranthene		<350ug/kg dw	07/26/01		5 <b>A2922</b>
Benzo (a			<350ug/kg dw	07/26/01		<b>EA2922</b>
	1,2,3-cd)pyrone		<350ug/kg dw <350ug/kg dw	07/26/01		SA2922
	(a,h)anthracene		<350ug/kg dw	07/26/01		JA2922
	hi)perylene		<350ug/kg dw	07/26/01		SA2922
501,20 (9.	TI / POLY LANG		4330ug/kg dw	07/26/01		SA2922
EPA Metho	1 8150					
2,4-D			<35ug/kg dw	07/25/01		GA0827
2,4,5-T			<35ug/kg dw	07/26/01		GA0827
2,4,5-T	P (Silvex)		<35ug/kg dw	07/26/01		GA0827

Upstate Laboratories, Inc. Analysis Results Report Number: 20101066 client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_\_\_\_ Sampled by: Client

ID:20101066 Mat:Soil MCKENNA LANDFILL FOI	SAMPLE 07/18/01	-c		· <del></del> -
PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Dinoseb	<35ug/kg dw	07/26/01		GA0827
TCL Pesticides/Aroclors by EPA 8082				
BHC (a-isomer)	<1.8ug/kg dw	07/24/01		GA0822
BHC (b-isomer)	<1.8ug/kg dw	07/24/01		GA0822
BMC (d-isomer)	<1.8ug/kg dw	07/24/01		GA0822
BHC (g-isomer)	<1.8ug/kg ďw	07/24/01		GA0822
Heptachlor	<1.8ug/kg đw	07/24/01		GA0822
Aldrin	<1.8ug/kg dw	07/24/01		GA0622
Heptachlor Epoxide	<1.8ug/kg dw	07/24/01		GA0822
Endosulfan I	<1.8ug/kg đw	07/24/01		GA0822
ALL AND PORTAL	<3.5ug/kg đw	07/24/01		GA0822
4,4'-DDE	- 14ug/kg dw	07/24/01		GA0822
Endrin 2. PPm 500 f	$_{\rm pm}$ <3.5 $u$ g/kg dw	07/24/01		GA0822
	12 12 12 14 14	07/24/01		GA0822
4,4'-DDD OK	<3.5ug/kg dw	07/24/01		GA0822
Endosulfan Sulfate	<3.5ug/kg dw	07/24/01		GA0822
4,4'-DDT	<3.5ug/kg dw	07/24/01		GA0822
Methoxychlor	<18ug/kg dw	07/24/01		GA0822
Endrin Ketone	<3.5ug/kg dw	07/24/01		GA0822
Endrin Aldehyde	<3.5ug/kg dw	07/24/01		GA0822
alpha-Chlordane	<1.8ug/kg dw	07/24/01		GA0822
gamma-Chlordane	<1.8ug/kg đw	07/24/01		GA0822
Toxaphene	<180ug/kg dw	07/24/01		GA0822
Aroclor 1016	<1.8ug/kg dw	07/24/01		GA0822
Aroclor 1221	<1.8ug/kg dw	07/24/01		GA0822
Aroclor 1232	<1.8ug/kg dw	07/24/01		GA0822
Aroclor 1242	<1.8ug/kg dw	07/24/01		GA0822
Aroclor 1248	<1.8ug/kg dw	07/24/01		GA0822
Aroclor 1254	<1.8ug/kg dw	07/24/01		GA0822
Arodlor 1260	<1.8ug/kg dw	07/24/01		GA0822

halysis Results Report Number: 23301033

Client I.D.: CIMINELLI SERVICES GROUP CORP.

Sampled by: Client

ID:23301033 Mat:Soil MCKENNA LANDFILL BROCKPORT 1 08/17/01

3201033 1	attipott meraning bande ban	PROCEEDED TO GOVERNOON			
	RAMETERS	RESULTS	DATE ANAL.	KEY	FILZ#
	Percent Solids	96%	08/23/01		WD6033
	Total Cyanide	<1.0mg/kg dw	08/28/01		WD5985
Total	Aluminum	3400mg/kg dw	08/24/01		
Total		• • •	· . · .		MB3777
	Antimony	<31mg/kg dw 2.5mg/kg dw	08/24/01		MB3777
Total	Arsenic by furnace method		08/29/01		MB3790
Total	Barium	44mg/kg dw	08/24/01		MB3777
Total	Beryllium	<0.52mg/kg dw	08/24/01		MB3777
Total	Caldium Above Edian Endgrand	2.lung/kg đw 37000mg/kg dw	08/24/01		MB3777
Total	Chromium		08/24/01		ME3777
Total		6.9mg/kg dw	08/24/01		MB3777
Total	Cobalt	16mg/kg dw	08/24/01		MB3777
Total Total	Copper Iron	9.9mg/kg dw	08/24/01		ив3777
Total	Lead	7900mg/kg dw <10mg/kg dw	08/24/01 08/24/01		MB3777
Total	Magnesium	3600mg/kg dw	08/24/01		<b>МВ3777</b>
Total	Manganese	230mg/kg dw	08/24/01		MB3777
Total	Marcury Above Eastern Backpoons	0.59mg/kg dw	08/29/01		MB3777
_	Nickel	16mg/kg dw	08/24/01		MB3788
Total		_ ·			MA3777
Total	Potassium	1100mg/kg dw	08/27/01		MB3783
Total Total	Selenium by furnace method Silver	<0.11mg/kg dw <5.2mg/kg dw	08/24/01		MB3778
	Sodium		08/24/01		MB3777
Total	Thallium	420mg/kg dw	08/27/01		MB3783
Total		<0.32mg/kg dw	09/11/01		MB3821
Total Total	Vanadium Zinc	<31mg/kg dw	08/24/01		MB3777
10047	Line	27mg/kg dw	08/24/01		MB3777
	TCL Volatiles by EPA Method 8260				
	Chloromethane	<3ug/kg dw	08/22/01		VM3585
	Bromomethane	<3ug/kg dw	08/22/01		VM3585
	Vinyl Chlorida	<2ug/kg dw	08/22/01		YM3585
	Chloroethane	<3ug/kg dw	09/22/01		VM3585
	Methylene Chloride	10ug/kg dw	08/22/01	44	VM3585
	Acetone	<10ug/kg dw	08/22/01		VM3585
	Carbon Disulfide	<3ug/kg dw	08/22/01		VM3585
	1,1-Dichloroetheno	<3ug/kg dw	08/22/01	-	VN3585
	1,1-Dichloroethane	<3ug/kg dw	08/22/01		VM3585
	trans-1,2-Dichloroethene	<3ug/kg ďw	08/22/01		VM3585
	cis-1,2-Dichloroethene	<3ug/kg dw	08/22/01		VM3585
	Chloroform	<3ug/kg dw	08/22/01		VM3585
	1,2-Dichloroethane	<3ug/kg dw	08/22/01		VM3585
	2-Butanone	<10ug/kg dw	08/22/01		VH3585
	1,1,1-Trichloroethane	<3ug/kg dw	08/22/01		VM3585
	Carbon Tetrachloride	<3ug/kg dw	08/22/01		VM3585
	Bromodichloromethane	<3ug/kg dw	08/22/01		VM3585

Upstate Laboratories, Inc. Analysic Results Report Number: 23301033 Client I.D.; CIMINELLI SERVICES GROUP CORP. APPROVAL:\_ \_ \_ ~ QC: \\ \( \bar{\mathbb{L}} = \bar{\mathbb{L}} ab \bar{\mathbb{L}} \dots

Sampled by: Client

		<i> </i>		
ID:23301033	Mat:Soil	MCKENNA LANDFILL	BROCKPORT 1 08/1	.7/01

Parameters	RESULTS	DATE ANAL.	KEY	FILE#
1,2-Dichloropropane	<3ug/kg dw	08/22/01		VM358
cis-1,3-Dichloropropene	<3ug/kg dw	08/22/01		VM358
Trichloroethene	<3ug/kg dw	06/22/01		VM358
Dibromochloromethane	<3ug/kg dw	08/22/01		VM358
1,1,2-Trichloroethane	<3ug/kg dw	08/22/01		VM358
Benzene	<3ug/kg dw	08/22/01		VM358
trans-1,3-Dichleropropens	<3ug/kg dw	08/22/01		VM358
Bromoform	<3ug/kg dw	08/22/01		VM358
4-Methyl-2-pentanone	<10ug/kg dw	08/22/01		VM356
2 - Hexanone	<10ug/kg dw	08/22/01		VM358
Tetrachloroethene	<3ug/kg dw	08/22/01		VM358
1,1,2,2-Tetrachloroethane	<3ug/kg dw	08/22/01		VM358
Toluene	<3ug/kg dw	08/22/01		VM358
Chlorobenzene	<3ug/kg dw	08/22/01		VN358
Ethylbenzane	<3ug/kg dw	08/22/01		VM358
Styrene	<3ug/kg dw	08/22/01		VM358
m,p-xylene	<3ug/kg dw	08/22/01		7M35
o-Xylene	<3ug/kg dw	08/22/01		VM35
Liferiot	<350ug/kg dw	09/06/01		SA29
Pheno1				
<del>-</del>				SA29
bis(2-Chlorosthyl)ether	<350ug/kg,dw	09/05/01		SA29
bis(2-Chloroethyl)ether 2-Chlorophenol	<350ug/kg,dw <350ug/kg dw	09/05/01		SA29
bis (2-Chloroethyl) ether 2-Chlorophenol 1,3-Dichlorobenzene	<350ug/kg,dw <350ug/kg dw <350ug/kg dw	09/05/01 09/06/01 09/05/01		SA29 SA29 SA29
bis (2-Chloroethyl) ether 2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene	<350ug/kg,dw <350ug/kg dw <350ug/kg dw <350ug/kg dw	09/05/01 09/06/01 09/05/01 09/06/01		SA29 SA29 SA29 SA29
bis (2-Chloroethyl) ether 2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene	<350ug/kg,dw <350ug/kg dw <350ug/kg dw <350ug/kg dw <350ug/kg dw	09/05/01 09/06/01 09/05/01 09/06/01 09/05/01		SA29 SA29 SA29 SA29 SA29
bis (2-Chlorosthyl) ether 2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol	<350ug/kg, dw <350ug/kg dw <350ug/kg dw <350ug/kg dw <350ug/kg dw <350ug/kg dw	09/05/01 09/06/01 09/05/01 09/06/01 09/05/01 09/06/01		SA29 SA29 SA29 SA29 SA29
bis (2-Chlorosthyl) ether 2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol 2,2'-Oxybis (1-Chloropropane)	<350ug/kg,dw <350ug/kg dw <350ug/kg dw <350ug/kg dw <350ug/kg dw <350ug/kg dw <350ug/kg dw	09/05/01 09/06/01 09/05/01 09/06/01 09/06/01 09/06/01		SA29 SA29 SA29 SA29 SA29 SA29
bis (2-Chlorosthyl) ether 2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol 2,2'-Oxybis (1-Chloropropane) 4-Methylphenol	<350ug/kg,dw <350ug/kg dw <350ug/kg dw <350ug/kg dw <350ug/kg dw <350ug/kg dw <350ug/kg dw <350ug/kg dw <350ug/kg dw	09/05/01 09/06/01 09/05/01 09/06/01 09/06/01 09/06/01 09/06/01		SA29 SA29 SA29 SA29 SA29 SA29 SA29 SA29
bis (2-Chlorosthyl) ether 2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol 2,2'-Oxybis (1-Chloropropane) 4-Methylphenol n-Nitrosodi-n-propylamine	<350ug/kg,dw <350ug/kg dw	09/05/01 09/06/01 09/05/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01		SA29 SA29( SA29( SA29( SA29( SA29( SA29( SA29( SA29(
bis (2-Chlorosthyl) ether 2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol 2,2'-Oxybis (1-Chloropropane) 4-Methylphenol n-Nitrosodi-n-propylamine Hexachloroethane	<pre>&lt;350ug/kg.dw &lt;350ug/kg dw /pre>	09/05/01 09/06/01 09/05/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01		SA29 SA29 SA29 SA29 SA29 SA29 SA29 SA29
bis (2-Chlorosthyl) ether 2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol 2,2'-Oxybis (1-Chloropropane) 4-Methylphenol n-Nitrosodi-n-propylamine Hexachloroethane Nitrobenzene	<pre>&lt;350ug/kg,dw &lt;350ug/kg dw /pre>	09/05/01 09/06/01 09/05/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01		SA29 SA29 SA29 SA29 SA29 SA29 SA29 SA29
bis (2-Chlorosthyl) ether 2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol 2,2'-Oxybis (1-Chloropropane) 4-Methylphenol n-Nitrosodi-n-propylamine Hexachloroethane Nitrobenzene Isophorone	<pre>&lt;350ug/kg,dw &lt;350ug/kg dw /pre>	09/05/01 09/06/01 09/05/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01		SA29 SA29 SA29 SA29 SA29 SA29 SA29 SA29
bis (2-Chlorosthyl) ether 2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol 2,2'-Oxybis (1-Chloropropane) 4-Methylphenol n-Nitrosodi-n-propylamine Hexachloroethane Nitrobenzene Isophorone 2-Nitrophenol	<pre>&lt;350ug/kg,dw &lt;350ug/kg dw /pre>	09/05/01 09/06/01 09/05/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01		SA29 SA29 SA29 SA29 SA29 SA29 SA29 SA29
bis (2-Chlorothyl) ether 2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol 2,2'-Oxybis (1-Chloropropane) 4-Methylphenol n-Nitrosodi-n-propylamine Hexachlorothane Nitrobenzene Isophorone 2-Nitrophenol 2,4-Dimethylphenol	<pre>&lt;350ug/kg dw &lt;350ug/kg dw</pre>	09/05/01 09/06/01 09/05/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01		SA29 SA29 SA29 SA29 SA29 SA29 SA29 SA29
bis (2-Chlorosthyl) ether 2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol 2,2'-Oxybis (1-Chloropropane) 4-Methylphenol n-Nitrosodi-n-propylamine Hexachloroethane Nitrobenzene Isophorone 2-Nitrophenol 2,4-Dimethylphenol bis (2-Chloroethoxy) methane	<pre>&lt;350ug/kg dw &lt;350ug/kg dw</pre>	09/05/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01		SA29 SA29 SA29 SA29 SA29 SA29 SA29 SA29
bis (2-Chlorosthyl) ether 2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol 2,2'-Oxybis (1-Chloropropane) 4-Methylphenol n-Nitrosodi-n-propylamine Hexachloroethane Nitrobenzene Isophorone 2-Nitrophenol 2,4-Dimethylphenol bis (2-Chloroethoxy) methane 2,4-Dichlorophenol	<pre>&lt;350ug/kg dw &lt;350ug/kg dw<!--350ug/kg dw</350ug/kg dw</pre--></pre>	09/05/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01		SA29 SA29 SA29 SA29 SA29 SA29 SA29 SA29
bis (2-Chlorothyl) ether 2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol 2,2'-Oxybis (1-Chloropropane) 4-Methylphenol n-Nitrosodi-n-propylamine Hexachlorothane Nitrobenzene Isophorone 2-Nitrophenol 2,4-Dimethylphenol bis (2-Chlorothoxy) methane 2,4-Dichlorophenol 1,2,4-Trichlorobenzene	<pre>&lt;350ug/kg dw &lt;350ug/kg dw</pre>	09/05/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01		SA29 SA29 SA29 SA29 SA29 SA29 SA29 SA29
bis (2-Chlorothyl) ether 2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol 2,2'-Oxybis (1-Chloropropane) 4-Methylphenol n-Nitrosodi-n-propylamine Hexachlorothane Nitrobenzene Isophorone 2-Nitrophenol 2,4-Dimethylphenol bis (2-Chlorothoxy) methane 2,4-Dichlorophenol 1,2,4-Trichlorobenzene Naphthalene	<pre>&lt;350ug/kg dw &lt;350ug/kg dw<!--350ug/kg dw</350ug/kg dw</350ug/kg dw</a--></pre>	09/05/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01		SA29 SA29 SA29 SA29 SA29 SA29 SA29 SA29
bis (2-Chlorothyl) ether 2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol 2,2'-Oxybis (1-Chloropropane) 4-Methylphenol n-Nitrosodi-n-propylamine Hexachlorothane Nitrobenzene Isophorone 2-Nitrophenol 2,4-Dimethylphenol his (2-Chlorothoxy) methane 2,4-Dichlorophenol 1,2,4-Trichlorobenzene Naphthalene 4-Chloroaniline	<pre>&lt;350ug/kg dw &lt;350ug/kg dw<!--350ug/kg dw</350ug/kg dw</pre--></pre>	09/05/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01		SA29 SA29 SA29 SA29 SA29 SA29 SA29 SA29
bis (2-Chlorothyl) ether 2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol 2,2'-Oxybis (1-Chloropropane) 4-Methylphenol n-Nitrosodi-n-propylamine Hexachlorothane Nitrobenzene Isophorone 2-Nitrophenol 2,4-Dimethylphenol bis (2-Chlorothoxy) methane 2,4-Dichlorophenol 1,2,4-Trichlorobenzene Naphthalene 4-Chloroaniline Hexachlorobutadiene	<pre>&lt;350ug/kg dw &lt;350ug/kg dw<!--350ug/kg dw</p--></pre>	09/05/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01		SA29 SA29 SA29 SA29 SA29 SA29 SA29 SA29
bis (2-Chlorothyl) ether 2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol 2,2'-Oxybis (1-Chloropropane) 4-Methylphenol n-Nitrosodi-n-propylamine Hexachlorothane Nitrobenzene Isophorone 2-Nitrophenol 2,4-Dimethylphenol his (2-Chlorothoxy) methane 2,4-Dichlorophenol 1,2,4-Trichlorobenzene Naphthalene 4-Chloroaniline	<pre>&lt;350ug/kg dw &lt;350ug/kg dw<!--350ug/kg dw</350ug/kg dw</pre--></pre>	09/05/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01 09/06/01		SA29 SA29 SA29 SA29 SA29 SA29 SA29 SA29

)state Laboratorios, Inc.

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Report Number: 23301033

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:
QC:
Lab I.D.: 10170
Sampled by: Client

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
2,4,6-Trichlorophenol	<350ug/kg dw	09/06/01		SA296
2,4,5-Trichlorophenol	<350ug/kg dw	09/06/01		SA296
2-Chloronaphthalene	<350ug/kg dw	09/06/01		SA296
2-Nitroaniline	<3500ug/kg dw	09/06/01		SA296
Dimethylphthalate	<350ug/kg dw	09/06/01		SA296
Acenaphthyleno	<350ug/kg dw	09/06/01		SA296
2,6-Dinitrotoluene	<350ug/kg dw	09/06/01		SA296
3-Nitroaniline	<3500ug/kg dw	09/06/01		SA296
Acenaphthone	<350ug/kg dw	09/05/01		SA296
2,4-Dinitrophenol	<3500ug/kg dw	09/05/01		8A296
4-Nitrophenol	<3500ug/kg dw	09/06/01		SA296
Dibenzofuran	<350ug/kg dw	09/06/01		9A296
2,4-Dinitrotoluene	<350ug/kg dw	09/06/01		5A296
Diethylphthalate	<350ug/kg dw	09/06/01		SA296
4-Chlorophenylphonylether	<350ug/kg dw	09/06/01		9A296
Fluorenc	<350ug/kg dw	09/06/01		SA296
4-Nitroaniline	<3500ug/kg dw	09/05/01		SA296
3-Mothyl-4,6-dinitrophenol	<3500ug/kg dw	09/06/01		SA296
n-Nitrosodiphenylamine	<350ug/kg dw	09/06/01		SA296
4-Bromophenylphenylether	<350ug/kg dw	09/06/01		SA295
Hexachlorobenzene	<350ug/kg dw	09/06/01		SA296
Pentachlorophenol	<690ug/kg dw	09/06/01		SA296
Phenanthrene	<350ug/kg dw	09/06/01		\$A296
Anthracene	<350ug/kg dw	09/06/01		SA296
Carbazole	<350ug/kg dw	09/06/01		SA296
di-n-butylphthalate	<350ug/kg dw	09/06/01		SA296
Fluoranthene	<350ug/kg dw	09/00/01		SA296
Pyrane	<350ug/kg ďw	09/06/01		SA296
Eutylbenzylphthalate	<350ug/kg dw	09/06/01		SA296
3,3'-Dichlorobenzidine	<350ug/kg dw	09/05/01		SA296
Benzo (a) anthracene	<350ug/kg dw	09/06/01		SA296
Chrysone	<350ug/kg dw	09/06/01		5A296
bis(2-Ethylhexyl)phthalate	<350ug/kg dw	09/05/01		SA296
di-n-octylphthalate	<350ug/kg dw	09/06/01		SA296
Benzo (b) fluoranthene	<350ug/kg dw	09/06/01		5A296
Benzo (k) fluoranthene	<350ug/kg dw	09/06/01		SA296
Benzo(a) pyrene	<350ug/kg dw	09/06/01		SA296
Indeno(1,2,3-cd) pyrene	<350ug/kg dw	09/06/01		SA296
Dibenzo (a, h) anthracene	<350ug/kg dw	09/06/01		SA296
Benzo(ghi)perylene	<350ug/kg dw	09/05/01		5A296
EPA Method 8150				
2,4-D	<34ug/kg dw	08/25/01		GA08:
~, • ~	<34ug/kg dw	08/25/01		GA082

Upstate Laboratories, Inc.

Analysis Results

Report Number: 23301033

-	Plient I.D.: CIMINELLI SERVICES GROUP CORP. Sampled by: Client				
ID:23301033	MAE:Soil MCKENNA LANDRILL	BROCKPORT 1 08/17/01			·
	RAMETERS	RESULTS	DATE ANAL.		file#
<del></del>	2 4 5-mp (641)		00/05/05		
	2,4,5-TP (Silvex) Dinoseb	<34ug/kg dw <34ug/kg dw	08/25/01 08/25/01		GA0823 GA0823
,	TCL Pesticides/Aroclors by EPA 8	O <b># 2</b>			
	BHC (a-isomer)	<1.8ug/kg dw	08/25/01		GA0922
	BHC (b-isomer)	<1.8ug/kg dw	08/25/01		GA0922
	BHC (d-isomer)	<1.8ug/kg dw	08/25/01		GA0922
	BHC (g-isomer)	<1.8ug/kg dw	08/25/01		GA0922
	Heptachlor	<1.8kg/kg dw	08/25/01		GA0922
	Aldrin	<1.8ug/kg dw	08/25/01		GA0922
	Heptachlor Epoxide	<1.8ug/kg dw	08/25/01		GA0922
	Endosulfan I	<1.8ug/kg dw	08/25/01		GA0922
	Dieldrin	<3.4ug/kg dw	08/25/01		GA0922
	4,4'-DDE	. 3.4ug/kg dw	08/25/ <b>01</b>		GA0922
	Endrin	<3.4ug/kg dw	08/25/01		GA0922
	Endosulfan II	<3.4ug/kg dw	08/25/01		GA0922
	4,4'-DDD	<3.4ug/kg dw	08/25/01		GA0922
	Endosulfan Sulfate	<3.4ug/kg dw	08/25/01		GA0912
	4,4'-DDT	<3.4ug/kg dw	08/25/01		GA0922
	Methoxychlor	<18ug/kg dw	CB/25/01		GA0922
	Endrin Ketone	<3.4ug/kg dw	08/25/01		GA0922
	Endrin Aldehyde	<3.4ug/kg dw	03/25/01		GA0922
	alpha-Chlordane	<1.8ug/kg dw	08/25/01		GA0922
	gamma-Chlordano	<1.8ug/kg dw	08/25/01		GA0922
	Toxaphene	<180ug/kg dw	08/25/01		GA0922
	Aroclor 1016	<1.8ug/kg dw	C8/25/01		GA0922
	Aroclor 1221	<1.8ug/kg dw	08/25/01		GA0922
	Arodlor 1232	<1.8ug/kg dw	08/25/01		GA0922
	Aroclor 1242	<1.8ug/kg dw	08/25/01		GA0922
	Aroclor 1248	<1.8ug/kg dw	08/25/01		GA0922
	Aroclor 1254	<1.8ug/kg dw	08/25/01		GA0922
	Aroclor 1260	<1.8ug/kg dw	08/25/01		GA0922
ID:23301034	Mat:Soil MCKENNA LANDFILL	BROCKPORT 2 08/17/01	m		·
PA	RAMETERS	RESULTS	DATE ANAL.		FILE#
• •	Tangent Califa	0.55	00/01/01		
	Percent Solids	96%	08/23/01		` WD6033
m1	Total Cyanide	<1.0mg/kg dw	08/28/01		WD5988
Total	Aluminum	4400mg/kg dw	08/24/01		MDB 3777
Total	Antimony	<31mg/kg dw	08/24/01		MB3777
Total	Arsenic by furnace method	2.4mg/kg dw	08/29/01		MB3790
Total	Barium	47mg/kg dw	08/24/01		MB3777
Total	Beryllium	<0.51mg/kg dw	08/24/01		MB3777
1	and a be				

Upstate Laboratories, Inc. Analysis Results Report Number: 23301033 Client I.D.: CIMINELLI SERVICES GROUP CORP. APPROVAL:\_ \_ - ~ QC: M Lab I.D.: 10170 Sampled by: Client

CITCHE A.D.: CIMINABIL BEKVICES GROOP CORP.	sambiag ph:	Client		
ID:23301034 Mat:Soil MCKENNA LANDFILL	BROCKFORT 2 08717/01		~	
PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Total Cadmium	0.90mg/kg dw	08/24/01		
Total Calcium Mon Ferron Berlyson	46000mg/kg dw			MB3777
Total Chromium	8.5mg/kg dw	08/24/01 08/24/01		MB3777
Total Cobalt	15mg/kg dw	08/24/01		MB3777
Total Copper	10mg/kg dw	08/24/01		MB3777
Total Iron	8200mg/kg dw	08/24/01		MB3777 MB3777
Total Lead	<10mg/kg dw	08/24/01		MB3777
Total Magnesium	4300mg/kg dw	08/24/01		MB3777
Total Manganese	260mg/kg dw	08/24/01		MB3777
Total Mercury	<0.15mg/kg dw	08/29/01		MB3788
Total Nickel	14mg/kg dw	08/24/01		MB3777
Total Potassium	1200mg/kg dw	08/27/01		MB3783
Total Selenium by furnace method	<0.11mg/kg dw	08/24/01		ив3778
Total Silver	<5.1mg/kg dw	08/24/01		ив3777
Total Sodium	400mg/kg dw	08/27/01		MB3783
Total Thallium	<0.32mg/kg dw	09/11/01		MB3821
Total Vanadium	<31mg/kg dw	08/24/01		MB3777
Total Zinc	22mg/kg dw	08/24/01		MB3777
TCL Volatiles by BPA Method 826 Chloromethane	o <3ug/kg dw	08/22/01		
Bromomethane	<3ug/kg dw	08/22/01		VM3585
Vinyl Chloride	<2ug/kg dw	08/22/01		VM3585
Chloroethane	<3ug/kg dw	08/22/01	•	VM3585
Methylene Chloride	. 10ug/kg dw	08/22/01	44	VM3585 VM3585
Acetone	<10ug/kg dw	08/22/01	77	VM3585
Carbon Disulfide	<3ug/kg dw	08/22/01		VM3585
1,1-Dichloroethene	<3ug/kg dw	08/22/01		VM3585
1,1-Dichloroethane	<3ug/kg dw	08/22/01		VM3585
trans-1,2-Dichloroethene	<3ug/kg dw	03/22/01		VM3565
cis-1,2-Dichloroethene	<3 ug/kg dw	08/22/01		VM3585
Chloroform	<3ug/kg dw	08/22/01		VM3585
1,2-Dichloroethane	<3ug/kg dw	08/22/01		VM3585
2-Butanone	<10ug/kg dw	08/22/01		VM3585
1,1,1-Trichloroethane	<3 ug/kg dw	08/22/01		VM3585
Carbon Tetrachloride	<3 ug/kg dw	08/22/01		VM3585
Bromodichloromethane	<3ug/kg dw	08/22/01		VM3585
1,2-Dichloropropane	<3ug/kg dw	08/22/01		VM3585
cis-1,3-Dichloropropene	<3ug/kg dw	C8/22/01		VM3585
Trichloroethene	<3ug/kg dw	06/22/01		VM3565
Dibromochloromethana	<3ug/kg dw	08/22/01		VM3585
1,1,2-Trichloroethane	<3ug/kg dw	08/22/01		VN3585
Benzene	<3ug/kg dw	08/22/01		VM3585
trans-1,3-Dichloropropens	<3ug/kg dw	08/23/01		VN3585

dw = Dry weight

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Analysis Recults

Report Number: 23301033

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ \_ \_ \_ QC: M - Lab I.D.: 10170 Sampled by: Client

PARAMETERS	RESULTS	DATE ANAL,	KEY	FILE#
				• • • • • •
Bromoform	<3ug/kg dw	08/22/01		VM3585
4-Mcthyl-2-pentanone	<10ug/kg dw	08/22/01		VM3585
2-Hexanone	<10ug/kg dw	08/22/01		VM3585
Tetrachloroethene	<3ug/kg dw	08/22/01		VM3585
1,1,2,2-Tetrachloroethame	<3ug/kg dw	08/22/01		VM3585
Toluene	<3ug/kg dw	08/22/01		VM3585
Chlorobenzene	<3 ug/kg dw	08/22/01		VM3585
Ethylbenzene	<3ug/kg dw	08/22/01		VM3585
Styrene	<3ug/kg dw	08/22/01		VM3585
m,p-xylene	<3 ug/kg dw	08/22/01	,	VM3585
o-Xylene	<3ug/kg dw	08/22/01		VM3585
TCL Semivolatiles by EPA Nothod 827	70			
Phenol	<350ug/kg dw	09/05/01		SA2969
bis (2-Chloroethyl) ether	<350ug/kg dw	09/06/01		SA2969
2-Chlorophenol	<350ug/kg dw	09/06/01		SA2969
1,3-Dichlorobenzene	<350ug/kg dw	09/06/01		SA2969
1,4-Dichlorobenzene	<350ug/kg dw	09/06/01		5A2969
1,2-Dichlorobenzene	<350ug/kg dw	09/06/01		SA2969
2-Methylphenol	<350ug/kg dw	09/06/01		
2,2'-0xybis(1-Chloropropane)	<350ug/kg dw	09/06/01		SA2969
4-Mothylphenol	<350ug/kg dw	09/06/01		SA2969 SA2969
n-Nitrosodi-n-propylamine	<350ug/kg dw	09/06/01		SA2969
Hexachloroethane	<350ug/kg dw	09/06/01		SA2959
Nitrobenzene	<350ug/kg dw	09/06/01		SA2969
Isophorone	<350ug/kg dw	09/06/01		SA2969
2-Nitrophenol	<350ug/kg dw	09/06/01		SA2969
2,4-Dimethylphenol	<350ug/kg dw	09/06/01		
bis (2-Chloroethoxy) methane	<350ug/kg dw	09/06/01		SA2969
2,4-Dichlorophenol	<350ug/kg dw	09/06/01		SA2969
1, 2, 4-Trichlorobenzene	<350ug/kg dw	09/06/01		SA2969
Naphthalone	<350ug/kg dw	09/06/01		SA2969
4-Chloroaniline	<350ug/kg dw	09/06/01		SA2969 SA2969
Hexachlorobutadiene	<350ug/kg dw	09/06/01		SA2969
4-Chloro-3-methylphenol	<350ug/kg dw	09/06/01		SA2969
2-Methylnaphthalene	<350ug/kg dw	09/06/01		SA2969
Hexachlorocyclopentadiene	<350ug/kg dw	09/06/01		SA2969
2,4,6-Trichlorophenol	<350ug/kg dw	09/06/01		SA2969
2,4,5-Trichlorophenol	<350ug/kg dw	09/06/01		SA2969
2-Chloronaphthalene	<350ug/kg dw	09/06/01		SA2969
2-Nitroaniline	<3500ug/kg dw	• •		
Dimethylphthalate	<350ug/kg dw	09/06/01		SA2969
~~ we sat A Thirlig Tore	<a href="mailto:com/">caaanaanaanaanaanaanaanaanaanaanaanaanaa</a>	09/06/01		3A2959
Acenaphthylene	<350 ug/kg dw	09/06/01		SA2959

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Report Number: 23301033 Client I.D., CIMINELLI SERVICES GROUP CORP. Sampled by: Client

ID:23301034 Mat:Soil MCKENNA LANDFILL BROCKPORT 2 08/17/01

	200000000000000000000000000000000000000			
PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
2. Niferentiine	2500v+/b= do	00/05/01		40.00
3-Nitroaniline	<3500ug/kg dw	09/06/01		SA2969
Acenaphthene	<350ug/kg dw	09/06/01		SA2969
2,4-Dinitrophenol	<3500ug/kg dw	09/06/01		SA2969
4-Nitrophenol	<3500ug/kg dw	09/06/01		SA2969
Dibenzofuran	<350ug/kg dw	09/06/01		SA2969
2,4-Dinitrotoluene	<350ug/kg dw	09/06/01		SA2969
Diethylphthalate	<350ug/kg dw	09/06/01		SA2969
4-Chlorophenylphenylether	<350ug/kg dw	09/06/01		SA2969
Fluorene	<350ug/kg dw	09/06/01		9 <b>0296</b> 9
4-Nitroaniline	<3500ug/kg dw	09/06/01		SA2969
2-Methyl-4,6-dinitrophenol	<3500ug/kg dw	09/05/01		SA2969
n-Nitrosodiphenylamine	<350ug/kg dw	09/06/01		SA2969
4-Bromophenylphenylether	<350ug/kg dw	09/06/01		SA2969
Hexachlorobenzene	<350ug/kg dw	09/05/01		SA2969
Pentachlorophenol	<690ug/kg dw	09/06/01		SA2969
Phenanthrene	<350ug/kg dw	09/06/01		SA2969
Anthracene	<350ug/kg dw	09/05/01		SA2969
Carbazole	<350ug/kg dw	09/05/01		SA2969
di-n-butylphthalate	<350ug/kg dw	09/06/01		5A2969
Fluoranthene	<350ug/kg dw	09/06/01		SA2969
Pyrene	<350ug/kg dw	09/06/01		SA2969
Butylbenzylphthalate	<350ug/kg dw	09/06/01		SA2969
3,3'-Dichlorobenzidino	<350ug/kg dw	09/06/01		SA2969
Benzo(a) anthracene	<350ug/kg dw	09/06/01		SA2969
Chrysene	<350ug/kg dw	09/06/01		8A2969
bis (2-Ethylhexyl) phthalate	<350ug/kg dw	09/06/01		SA2969
di-n-octylphthalate	<350ug/kg dw	09/06/01		SA2969
Benzo(b) fluoranthene	<350ug/kg dw	09/06/01		SA2969
Benzo(k) fluoranthene	<350ug/kg dw	09/06/01		SA2969
Banzo (a) pyrene	<350ug/kg dw	09/05/01		SA2969
Indeno(1,2,3-cd)pyrene	<350ug/kg dw	09/05/01		SA2969
Dibanzo (a, h) anthracene	<350ug/kg dw	09/06/01		SA2969
Benzo (ghi) perylene	<350ug/kg dw	09/06/01		SA2969
EPA Method 8150				
2, 4 - D	<34ug/kg dw	08/25/01		GA0923
2,4,5-T	<34ug/kg dw	08/25/01		GA0923
2,4,5-TP (Silvex)	<34ug/kg dw	08/25/01		GA0923
Dinosob	<34ug/kg dw	08/25/01		GA0923
	<del>-</del> . <del>"</del>	00, 23, 02		CROSES
TCL Posticides/Arodlors by EPA 80	)82			
BHC (a-isomer)	<1.8ug/kg dw	08/25/01		GA0922
BHC (b-isomer)	<1.8ug/kg dw	08/25/01		GA0922
BHC (d-isomer)	<1.8ug/kg dw			
DUC (G-IROMAE)	<1.00g/kg dw	08/25/01		GA0922

Upstate Laboratories, Inc. Analysis Results

Report Number: 23301033

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:

CC:

Lab I.D.: 10170

Sampled by: Client

Client I.D.;	CIMINELLI SERVICES GROUP CORP.	Sampled by: Client			
TD723301034 M	Mat:Soil MCKENNA LANDFILL	BROCKPORT 2 08/17/01			~
PAR	AMETERS	RESULTS	DATE ANAL.	KEL	PILZ#
	BHC (g-isomer)	<1.8ug/kg dw	08/25/01		~~ <b>~~</b>
	Heptachlor	<1.8ug/kg dw	08/25/01		GA0922
	Aldrin	<1.8ug/kg dw	08/25/01		GA0922
	Heptachlor Epoxide	<1.8ug/kg dw	08/25/01		GA0922
	Endosulfan I	<1.8ug/kg dw	08/25/01		GA0922
	Dieldrin	<3.4ug/kg dw	08/25/01		GA0922
	4,4'-DDE	<3.4ug/kg dw	08/25/01		GA0922 GA0922
	Endrin	<3.4ug/kg dw	08/25/01		
	Endosulfan II	<3.4ug/kg dw	08/25/01		GA0922
	4,4'-DDD	<3.4ug/kg dw	08/25/01		GA0922
	Endosulfan Sulfato	<3.4ug/kg dw	08/25/01		GA0922 GA0922
	4,4'-DDT	<3.4ug/kg dw	08/25/01		GA0922
	Methoxychlor	<18ug/kg dw	08/25/01		GA0922
	Endrin Ketone	<3.4ug/kg dw	08/25/01		GA0922
	Endrin Aldehyde	<3.4ug/kg dw	08/25/01		GA0522
	alpha-Chlordane	<1.9ug/kg dw	08/25/01		GA0922
	gamma-Chlordane	<1.8ug/kg dw	08/25/01		GA0922
	Toxaphene	<180ug/kg dw	08/25/01		GA0922
	Arcelor 1015	<1.8ug/kg dw	08/25/01	•	GA0522
	Arcclor 1221	<1.8ug/kg dw	08/25/01		GA0922
	Aroclor 1232	<1.8ug/kg dw	08/25/01		GA0922
	Aroclor 1242	<1.8ug/kg dw	08/25/01		GA0922
	Aroclor 1248	<1.8ug/kg dw	08/25/01		GA0922
	Aroclor 1254	<1.8ug/kg dw	08/25/C1		GA0922
	Aroclor 1260	<1.8ug/kg dw	08/25/01		GA0922
ĪD:23301035 Ā	(at:Soil MCKENNA LANDFILL	BROCKFORT 3 08/17/01			
	RAMETERS	RESULTS	DATE AMAL.	KEY	FILE#
	Donald California	0.50	00/00/00		
	Percent Solids	95%	08/23/01		WD6033
mata1	Total Cyanide	<1.0mg/kg dw	08/28/01		WD5988
Total	Aluminum	4400nig/kg dw	08/24/01		MB3777
Total	Antimony Shot La Ender Building	45mg/kg dw	08/24/01		ME3777
Total Total	Arsenic by furnace method	2.6mg/kg dw	08/29/01		MB3790
Total	Barium Beryllium	66mg/kg dw	08/24/01		MB3777
	<b>-</b>	<0.52mg/kg dv	08/24/01		мв3777
Total Total	Cadmium	0.75mg/kg dw	08/24/01		MB3777
Total	Calcium About Essina Buchtown	51000mg/kg dw	08/24/01		MB3777
Total	Chromium Cobalt	7.6mg/kg dw	08/24/01		MB3777
		16ng/kg dw	08/24/01		XG3777
Total	Copper	12mg/kg dw	08/24/01		M63777
Total	Iron	8400mg/kg dw	08/24/01		MB3777
Total	Lead	<10mg/kg dw	08/24/01		MB3777

Ipstate Laboratories, Inc. Analysis Rosults

Report Number: 23301033 Client I.D.: CIMINELLI SERVICES GROUP CORP.

Lab I.D.: 10170 Sampled by: Client

PARAM		RESULTS	DATE ANAL.	KEY	file#
Total M	agnesium Above Fastern Backtron	6200mg/kg dw	08/24/01		MB3777
Total M	anganese	420 mg/kg dw	08/24/01		MB3777
	ercury	<0.15mg/kg dw	08/29/01		MB3788
Total N	ickel	12mg/kg dw	08/24/01		M83777
Total P	otassium	1200mg/kg dw	08/27/01		MB3783
Total S	elenium by furnace method	<0.11mg/kg dw	08/34/01		MB3778
Total S	ilver	<5.2mg/kg dw	08/24/01		ME3777
Total S	odium	570mg/kg dw	08/27/01		мв3783
Total T	hallium	<0.32mg/kg dw	09/11/01		MB3821
Total V	anadium	<31mg/kg dw	08/24/01		ив3777
Total Z	ine	19mg/kg dw	08/24/01		MB3777
TCL	Volatiles by EPA Method 8260				
C.	hloromethane	<3ug/kg dw	08/22/01		VN3585
В	romomethane	<3ug/kg dw	08/22/01		VM3 585
v	inyl Chloride	<2ug/kg dw	08/22/01		VM3 585
C	hloroethane	<3ug/kg dw	08/22/01		VM3585
M	athylene Chloride	10ug/kg dw	08/22/01	44	VM3585
A	cetone	<1lug/kg dw	08/22/01		VM3585
С	arbon Disulfide	<3ug/kg dw	08/22/01		VM3585
1	,1-Dichloroethene	<3ug/kg dw	08/22/01		VM3585
1	,1-Dichloroethame	<3ug/kg đŵ	08/22/01		VM3585
ŧ	rans-1,2-Dichloroothene	<3ug/kg dw	08/22/01		VM3585
C	is-1,2-Dichloroethene	<3ug/kg dw	08/22/01		VM3585
C.	hloroform	<3ug/kg dw	08/22/01		VM3585
1	, 2-Dichloroethane	<3 ug/kg dw	08/22/01		VM3585
2	Butanone	<11ug/kg dw	08/22/01		VM3585
1	,1,1-Trichloroethane	<3 ug/kg dw	08/22/C1		VM3585
	arbon Tetrachloride	<3ug/kg dw	08/22/01		VM3585
13:	romodichloromethane	<3ug/kg dw	08/22/01		VM3585
1	, 2-Dichloropropane	<3 ug/kg dw	09/22/01		VM3585
	is-1,3-Dichloropropene	<3 ug/kg dw	08/22/01		VM3585
	richloroethene	<3 ug/kg dw	08/22/01		VM3585
	ibromochloromechane	<3ug/kg dw	08/22/01		VM3585
	,1,2-Trichloroethane	<3ug/kg dw	08/22/01		VM3585
	enzene	<3ug/kg dw	08/22/01		VM3585
	rang-1,3-Dichloropropene	<3ug/kg dw	08/22/01		VM3585
	romoform	<3ug/kg dw	08/22/01		VM3585
	-Mothyl-2-pentanone	<11ug/kg dw	08/22/01		VM3585
	- Hexanone	<11ug/kg dw	08/22/01		VM3585
	etrachloroethene	<3ug/kg dw	08/22/01		VM3585
	,1,2,2-Tetrachloroethane	<3ug/kg dw	08/22/01		VM3585
	oluene	<3ug/kg dw	08/22/01		VM3585
	<del>-</del>		441		- May 2 (2)

Upstate Laboratories, Inc. Analysis Results

Report Number: 23301033

Client I.D., CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ \_ - ~ QC: 1 - Lab I.D.: 10170 Sampled by: Client

ID:23301035 Mat:Soil MCKENNA LANCFILL BROCKPORT 3 08/17/01

ARAMETERS	RESULTS	DATE ANAL.	KBY	FILE#
			~	
Ethylbenzene	<3ug/kg dw	08/22/01		VM358
Styrene	<3na/ka qm	08/22/01		VM358
m,p-xylene	<3ug/kg dw	08/22/01		VK358
o-Xylene	<3ug/kg dw	08/22/01		VM358
TCL Semivolatiles by EPA Method $\boldsymbol{\xi}_i$	270			
Phenol	<350ug/kg dw	00/06/07		42000
bis (2-Chloroethyl) ether	<350ug/kg dw	09/06/01		SA296
2-Chlorophenol	<350ug/kg dw	09/06/01		5A296
1,3-Dichlorobenzene	<350ug/kg dw	09/06/01		SA296
1,4-Dichlorobenzene	<350ug/kg dw	09/06/01 09/06/01		SA296
1,2-Dichlorobenzene	<350ug/kg dw			SA296
2-Methylphenol	<350ug/kg dw	09/06/01		SA296
2,2'-Oxybis(1-Chloroprogane)	<350ug/kg dw	09/06/01 09/06/01		SA296
4-Methylphonol	<350ug/kg dw			5A296
n-Nitrosodi-n-propylamine	<350ug/kg dw	09/06/01 09/06/01		SA296
Hexachloroethane	<350ug/kg dw	09/06/01		SA296
Nitrobenzone	<350ug/kg dw	•		3A296
Isophorone	<350ug/kg dw	09/06/01 09/06/01		SA296
2-Nitrophenol	<350ug/kg dw			SA296
2,4-Dimethylphenol	<3504g/kg dw	09/06/01		SA296
bis (2-Chloroothoxy) methane	<350ug/kg 'dw	09/06/01 09/06/01		SA296
2,4-Dichlorophenol	<350ug/kg dw			SA296
1,2,4-Trichlorobenzene		09/06/01		SA296
Naphthalene	<350ug/kg dw	09/06/01		SA299
4-Chloroaniling	<350ug/kg dw	09/06/01		SA296
	<350ug/kg dw	09/06/01		SA256
Hoxachlorobutadiene	<350ug/kg dw	09/06/01		\$A296
4-Chloro-3-methylphenol	<350ug/kg dw	09/06/01		SA296
2-Methylnaphthalene Hexachlorocyclopentadiene	<350ug/kg dw	09/06/01		SA296
2,4,6-Trichlorophenol	<350ug/kg dw <350ug/kg dw	09/06/01 09/06/01		SA296
2,4,5-Trichlorophenol	<350ug/kg dw	09/06/01		SA296
2-Chloronaphthalene	<350ug/kg dw	09/06/01		SA296
2-Nitroaniline	<3500ug/kg dw	09/06/01		SA296
Dimethylphthalate	<350ug/kg dw	09/06/01		SA296 SA296
Acenaphthylene	<350ug/kg dw	09/06/01		
2,6-Dinitrotoluone	<350ug/kg dw	09/05/01		SA296 SA296
3-Nitroaniline	<3500ug/kg dw	09/05/01		
Acenaphthene	<350ug/kg dw	09/06/01		\$A296 \$A296
2,1-Dinitrophenol	. <3500ug/kg dw	09/06/01		
4-Nitrophenol	<3500ug/kg dw	09/06/01		SA296
Dibenzofuran	<350ug/kg dw	09/06/01		8A296
2,4-Dinitrotoluene	<350ug/kg dw	09/06/01		SA296
Diethylphthalate	<350ug/kg dw	09/06/01		SA296

pstate Laboratories, Inc.

halysis Results

Report Number: 23301033

Client I.D.: CIMINELLI SERVICES GROUP CORP. Sampled by: Client

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE
4 (6)	.276 (b			
4-Chlorophenylphenylether	<350ug/kg dw	09/06/01		SA29
Fluorene	<350ug/kg dw	09/06/01		EA29
4-Nitroaniline	<3500ug/kg dw	09/06/01		SA29
2-Methyl-4,6-dinitrophenol	<3500ug/kg dw	09/06/01		SA29
n-Nitrosodiphenylamine	<350ug/kg dw	09/06/01		SA2S
4-Bromophenylphenylether	<350ug/kg dw	09/06/01		SAZ
Hexachlorobenzene	<350ug/kg dw	09/06/01		SA2
Pentachlorophenol	<700ug/kg dw	09/06/01		SA2
Phenanthrone	<350ug/kg dw	09/06/01		SA29
Anthrocene	<350ug/kg dw	09/06/01		SA2
Carhazole	<350ug/kg dw	09/06/01		SA2
di-n-butylphthalate	<350ug/kg dw	09/06/01		SA2
Fluoranthono	<350ug/kg dw	09/06/01		SA2
Pyrene	<350ug/kg dw	09/06/01		SA2
Butylbenzylphthalate	<350ug/kg dw	09/06/01		SA2
3,3'-Dichlorobenzidine	<350ug/kg dw	09/06/01		SA2
Benzo (a) anthracena	<350ug/kg dw	09/06/01		SA2
Chrysone	<350ug/kg dw	09/06/01		SA2
bis(2-Ethylhexyl)phthalate	<350ug/kg dw	09/06/01		SA2
di-n-octylphthalate	<350ug/kg dw	09/06/01		6A2
Benzo(b) fluoranthene	<350ug/kg dw	09/06/01		SAZ
Bonzo(k) flucranthene	<350ug/kg dw	09/06/01		SA29
Benzo(a) pyrene	<350ug/kg 'dw	09/06/01		SA2S
Indeno (1,2,3-cd) pyrene	<350ug/kg dw	09/06/01		SA2
Dibenzo(a,h)anthracene	<350ug/kg dw	09/06/01		SA2
Benzo(ghi)perylene	<350ug/kg dw	09/05/01		SAS
EPA Method 8150				
2.4-D	<35ug/kg dw	08/25/01		GA 0
2,4,5-T	<35ug/kg dw	08/25/01		GAO:
2,4,5-TP (Silvex)	<35ug/kg dw	08/25/01		GAO.
Dinoseb	<35ug/kg dw	08/25/01		GA0
TCL Pesticides/Aroclors by EPA 8082				
BHC (a-isomer)	<1.8ug/kg dw	08/25/01		GA0
BHC (b-isomer)	<1.8ug/kg dw	08/25/01		GA0
BHC (d-isomer)	<1.8ug/kg dw	08/25/01		GAO:
BHC (g-isomer)	<1.8ug/kg dw	08/25/01		GAOS
Heptachlor	<1.8ug/kg dw	08/25/01		GAO:
Aldrin	<1.8ug/kg dw	08/25/01		GA0
Heptachlor Epoxide	<1.8ug/kg dw	08/25/01		GA0
Endosulfan I	<1.8ug/kg dw	08/25/01		GA0
Dieldrin	<3.4ug/kg dw	08/25/01		GA 0
4,4'-DDE	<3.4ug/kg dw	08/25/01		CAO

Upstate Laboratories, Inc. Analysis Results Report Number: 23301033

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPECVAL:
QC:
Lab I.D.: 10170
Sampled by: Client

	2			
ID:23301035 Mat:Soil MCKENNA LANDFILL	BROCKPORT 3 08/17/01			~
PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	·			
Endrin	<3.4ug/kg dw	08/25/01		GA0922
Endosulfan II	<3.4ug/kg dw	08/25/01		GA0922
4,4'-DDD	<3.4ug/kg dw	08/25/01		GA0922
Endosulfan Sulfato	<3,4ug/kg dw	08/25/01		GA0922
4,4'-DDT	<3.4ug/kg dw	08/25/01		GA0922
Methoxychlor	<18ug/kg dw	08/25/01		GA0922
Endrin Ketone	<3.4ug/kg dw	08/25/01		GA0922
Endrin Aldehyde	<3.4ug/kg dw	08/25/01		GA0922
alpha-Chlordane	<1.8ug/kg dw	08/25/01		GA0922
gamma-Chlordane	<1.8ug/kg dw	08/25/01		GA0922
Toxaphene	<180ug/kg dw	08/25/01		GA0922
Aroclor 1016	<1.8ug/kg dw	08/25/01		GA0922
Aroclor 1221	<1.8ug/kg dw	08/25/01		GA0922
Aroclor 1232	<1.8ug/kg dw	08/25/01		GA0922
Aroclor 1242	<1.8ug/kg dw	08/25/01		GA0922
Aroclor 1248	<1.8ug/kg dw	08/25/01		GA0922
Aroclor 1254	<1.8ug/kg dw			
	• • •	08/25/01		GA0922
Aroclor 1260	<1.8ug/kg dw	08/25/01		GA0922

"rstate Laboratories, Inc.

Alysis Results
Report Number: 23601001

Client I.D.: CIMINELLI SERVICES GROUP CORP. MCKENNA LANDFILL BROCKPORT 4 08/22/01 G Sampled by: Client

ULI I.D.: 23601001 Matrix: Soil

02	1 1.5 23002002				
PA	RAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	Percent Solids	89%	08/27/01		WD6049
	Total Cyanide	<1.1mg/kg dw	09/05/01		WD6161
Total	Aluminum	4600mg/kg dw	08/26/01		MB3779
Total	Antimony	<34mg/kg dw	08/26/01		MB3779
Total	Arsenic by furnace method	3.2mg/kg dw	08/29/01		MB3790
Total	Barium	47mg/kg dw	08/26/01		MB3779
Total	Beryllium	< 0.56 mg/kg dw	08/26/01		MB3779
Total	Cadmium	< 0.56mg/kg dw	08/26/01		MB3779
Total	Calcium	57000mg/kg dw	08/26/01		MB3779
Total	Chromium	7.8mg/kg dw	08/26/01		MB3779
Total	Cobalt	7.0mg/kg dw	08/26/01		MB3779
Total	Copper	10mg/kg dw	08/26/01		MB3779
Total	Iron	8000mg/kg dw	08/26/01		MB3779
Total	Lead	<11mg/kg dw	08/26/01		MB3779
Total	Magnesium	3900mg/kg dw	08/26/01		MB3779
Total	Manganese	280mg/kg dw	08/26/01		MB3779
Total	Mercury	< 0.17 mg/kg dw	09/11/01		MB3809
Total	Nickel	15mg/kg dw	08/26/01		MB3779
Total	Potassium	1400mg/kg dw	08/27/01		MB3783
Total	Selenium by furnace method	<0.12mg/kg dw	08/24/01		MB3778
Total	Silver	< 5.6 mg/kg  dw	08/26/01		MB3779
Total	Sodium	400mg/kg dw	08/27/01		MB3783
Total	Thallium by furnace method	<0.34mg/kg dw	09/11/01		MB3821
Total	Vanadium	<34mg/kg dw	08/26/01		MB3779
Total	Zinc	22mg/kg dw	08/26/01		MB3779
_					
	ICL Volatiles by EPA Method 8260				
	Chloromethane	<3ug/kg dw	08/28/01		VM3592
	Bromomethane	<3ug/kg dw	08/28/01		VM3592
	Vinyl Chloride	<2ug/kg dw	08/28/01		VM3592
	Chloroethane	<3ug/kg dw	08/28/01		VM3592
	Methylene Chloride	7ug/kg dw	08/28/01	44	VM3592
	Acetone	<11ug/kg dw	08/28/01		VM3592
	Carbon Disulfide	<3ug/kg dw	08/28/01		VM3592
	1,1-Dichloroethene	<3ug/kg dw	08/28/01		VM3592
	1,1-Dichloroethane	<3ug/kg dw	08/28/01		VM3592
	trans-1,2-Dichloroethene	<3ug/kg dw	08/28/01		VM3592
	cis-1,2-Dichloroethene	<3ug/kg dw	08/28/01		VM3592
	Chloroform	<3ug/kg dw	08/28/01		VM3592
	1,2-Dichloroethane	<3ug/kg dw	08/28/01		VM3592

APPROVAL:

Upstate Laboratories, Inc.

Analysis Results

Report Number: 23601001

Client I.D.: CIMINELLI SERVICES GROUP CORF. MCKENNA LANDFILL

Sampled by: Client BROCKPORT 4 08/22/01 G

---- ULI I.D.: 23601001 Matrix: Soil

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
2,4-Dichlorophenol	<370ug/kg dw	08/30/01		SA2976
1,2,4-Trichlorobenzene	<370ug/kg dw	08/30/01		SA2976
Naphthalene	<370ug/kg dw	08/30/01		SA2976
4-Chloroaniline	<370ug/kg dw	08/30/01		SA2976
Hexachlorobutadiene	<370ug/kg dw	08/30/01		SA2976
4-Chloro-3-methylphenol	<370ug/kg dw	08/30/01		SA2976
2-Methylnaphthalene	<370ug/kg dw	08/30/01		SA2976
Hexachlorocyclopentadiene	<370ug/kg dw	08/30/01		SA2976
2,4,6-Trichlorophenol	<370ug/kg dw	08/30/01		SA2976
2,4,5-Trichlorophenol	<370ug/kg dw	08/30/01		SA2976
2-Chloronaphthalene	<370ug/kg dw	08/30/01		SA2976
2-Nitroaniline	<3700ug/kg dw	08/30/01		SA2976
Dimethylphthalate	<370ug/kg dw	08/30/01		SA2976
Acenaphthylene	<370ug/kg dw	08/30/01		SA2976
2,6-Dinitrotoluene	<370ug/kg dw	08/30/01		SA2976
3-Nitroaniline	<3700ug/kg dw	08/30/01		SA2976
Acenaphthene	<370ug/kg dw	08/30/01		SA2976
2,4-Dinitrophenol	<3700ug/kg dw	08/30/01		SA2976
4-Nitrophenol	<3700ug/kg dw	08/30/01		SA2976
Dibenzofuran	<370ug/kg dw	08/30/01		SA2
2,4-Dinitrotoluene	. <370ug/kg dw	08/30/01		SA
Diethylphthalate	<370ug/kg dw	08/30/01		SA2976
4-Chlorophenylphenylether	<370ug/kg dw	08/30/01		SA2976
Fluorene	<370ug/kg dw	08/30/01		SA2976
4-Nitroaniline	<3700ug/kg dw	08/30/01		SA2976
2-Methyl-4,6-dinitrophenol	<3700ug/kg dw	08/30/01		SA2976
n-Nitrosodiphenylamin <b>e</b>	<370ug/kg dw	08/30/01		SA2976
4-Bromophenylphenylether	<370ug/kg dw	08/30/01		SA2976
Hexachlorobenzene	<370ug/kg dw	08/30/01		SA2976
Pentachlorophenol	<750ug/kg dw	08/30/01		SA2976
Phenanthrene	<370ug/kg dw	08/30/01		SA2976
Anthracene	<370ug/kg dw	08/30/01		SA2976
Carbazole	<370ug/kg dw	08/30/01		SA2976
di-n-butylphthalate	<370ug/kg dw	08/30/01		SA2976
Fluoranthene	<370ug/kg dw	08/30/01		SA2976
Pyrene	<370ug/kg dw	08/30/01		SA2976
Butylbenzylphthalate	<370ug/kg dw	08/30/01		SA2976
3,3'-Dichlorobenzidine	<370ug/kg dw	08/30/01		SA2976
Benzo(a)anthracene	<370ug/kg dw	08/30/01		SA2976
Chrysene	<370ug/kg dw	08/30/01		SA2976

APPROVAL!

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"nstate Laboratories, Inc.

alysis Results Report Number: 23601001

Client I.D.: CIMINELLI SERVICES GROUP CORP. MCKENNA LANDFILL

BROCKPORT 4 08/22/01 G Sampled by: Client

ULI	I	.D	. :	23	360	110	00:	1						1	1at	r	ix:	: :	So:	il

ULI I.D.: 23601001	Matrix: Soil			
PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
2-Butanone	<11ug/kg dw	08/28/01		VM3592
1,1,1-Trichloroethane	<3ug/kg dw	08/28/01		VM3592
Carbon Tetrachloride	<3ug/kg dw	08/28/01		VM3592
Bromodichloromethane	<3ug/kg dw	08/28/01		VM3592
1,2-Dichloropropane	<3ug/kg dw	08/28/01		VM3592
cis-1,3-Dichloropropene	<3ug/kg dw	08/28/01		VM3592
Trichloroethene	<3ug/kg dw	08/28/01		VM3592
Dibromochloromethane	<3ug/kg dw	08/28/01		VM3592
1,1,2-Trichloroethane	<3ug/kg dw	08/28/01		VM3592
Benzene	<3ug/kg dw	08/28/01		VM3592
trans-1,3-Dichloropropene	<3ug/kg dw	08/28/01		VM3592
Bromoform	<3ug/kg dw	08/28/01		VM3592
4-Methyl-2-pentanone	<11ug/kg dw	08/28/01		VM3592
2-Hexanone	<11ug/kg dw	08/28/01		VM3592
Tetrachloroethene	<3ug/kg dw	08/28/01		VM3592
1,1,2,2-Tetrachloroethane	<3ug/kg dw	08/28/01		VM3592
Toluene	<3ug/kg dw	08/28/01		VM3592
Chlorobenzene	<3ug/kg dw	08/28/01		VM3592
Ethylbenzene	<3ug/kg dw	08/28/01		VM3592
Styrene	<3ug/kg dw	08/28/01		VM3592
m,p-xylene	. <3ug/kg dw	08/28/01		VM3592
o-Xylene	<3ug/kg dw	08/28/01		VM3592
TCL Semivolatiles by EPA Method 8270				
Phenol	<370ug/kg dw	08/30/01		SA2976
bis(2-Chloroethyl)ether	<370ug/kg dw	08/30/01		SA2976
2-Chlorophenol	<370ug/kg dw	08/30/01		SA2976
1,3-Dichlorobenzene	<370ug/kg dw	08/30/01		SA2976
1,4-Dichlorobenzene	<370ug/kg dw	08/30/01		SA2976
1,2-Dichlorobenzene	<370ug/kg dw	08/30/01		SA2976
2-Methylphenol	<370ug/kg dw	08/30/01		SA2976
2,2'-Oxybis(1-Chloropropane)	<370ug/kg dw	08/30/01		SA2976
4-Methylphenol	<370 <b>ug/kg dw</b>	08/30/01		SA2976
n-Nitrosodinpropylamine	<370ug/kg dw	08/30/01		SA2976
Hexachloroethane	<370ug/kg dw	08/30/01		SA2976
Nitrobenzene	<370ug/kg dw	08/30/01		SA2976
Isophorone	<370ug/kg dw	08/30/01		SA2976
2-Nitrophenol	<370ug/kg dw	08/30/01		SA2976
2,4-Dimethylphenol	<370ug/kg dw	08/30/01		SA2976
bis(2-Chloroethoxy)methane	<370ug/kg dw	08/30/01		SA2976

Upstate Laboratories, Inc.

Analysis Results

Report Number: 23601001

Client I.D.: CIMINELLI SERVICES GROUP CORF. MCKENNA LANDFILL

Sampled by: Client BROCKPORT 4 08/22/01 G

ULI I.D.: 23601001 Matrix: Soil

ULI 1.D.: 23601001	Matrix: Soil			
PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
bis(2-Ethylhexyl)phthalate	<370ug/kg dw	08/30/01		SA2976
di-n-octylphthalate	<370ug/kg dw	08/30/01		SA2976
Benzo(b) fluoranthene	<370ug/kg dw	08/30/01		SA2976
Benzo(k) fluoranthene	<370ug/kg dw	08/30/01		SA2976
Benzo(a)pyrene	<370ug/kg dw	08/30/01		SA2976
Indeno(1,2,3-cd)pyrene	<370ug/kg dw	08/30/01		SA2976
Dibenzo(a,h)anthracene	<370ug/kg dw	08/30/01		SA2976
Benzo(ghi)perylene	<370ug/kg dw	08/30/01		SA2976
EPA Method 8150				
2,4-D	<37ug/kg dw	09/06/01		GA0952
2,4,5-T	<37ug/kg dw	09/06/01		GA0952
2,4,5-TP (Silvex)	<37ug/kg dw	09/06/01		GA0952
Dinoseb	<37ug/kg dw	09/06/01		GA0952
TCL Pesticides/Aroclors by EPA 808	32			
BHC (a-isomer)	<1.9ug/kg dw	09/11/01		GA0960
BHC (b-isomer)	<1.9ug/kg dw	09/11/01		GA( )
BHC (d-isomer)	<1.9ug/kg dw	09/11/01		GA
BHC (g-isomer)	<1.9ug/kg dw	09/11/01		GA0960
Heptachlor	<1.9ug/kg dw	09/11/01		GA0960
Aldrin	<1.9ug/kg dw	09/11/01		GA0960
Heptachlor Epoxide	<1.9ug/kg dw	09/11/01		GA0960
Endosulfan I	<1.9ug/kg dw	09/11/01		GA0960
Dieldrin	<3.7ug/kg dw	09/11/01		GA0960
4,4'-DDE	28ug/kg dw	09/11/01		GA0960
Endrin	<3.7ug/kg dw	09/11/01		GA0960
Endosulfan II	<3.7ug/kg dw	09/11/01		GA0960
4,4'-DDD	<3.7ug/kg dw	09/11/01		GA0960
Endosulfan Sulfate	<3.7ug/kg dw	09/11/01		GA0960
4,4'-DDT	<3.7ug/kg dw	09/11/01		GA0960
Methoxychlor	<19ug/kg dw	09/11/01		GA0960
Endrin Ketone	<3.7ug/kg dw	09/11/01		GA0960
Endrin Aldehyde	<3.7ug/kg dw	09/11/01		GA0960
alpha-Chlordane	<1.9ug/kg dw	09/11/01		GA0960
gamma-Chlordane	<1.9ug/kg dw	09/11/01		GA0960
Toxaphene	<190ug/kg dw	09/11/01		GA0960
Aroclor 1016	<37ug/kg dw	09/11/01		GA0960
Aroclor 1221	<37ug/kg dw	09/11/01		GA0960
Aroclor 1232	<37ug/kg dw	09/11/01		GA0960

APPROVAL:
QC:
Lab I.D.: 10170

state Laboratories, Inc.

alysis Results Report Number: 23601001

Client I.D.: CIMINELLI SERVICES GROUP CORP. MCKENNA LANDFILL

Sampled by: Client BROCKPORT 4 08/22/01 G

ULI I.D.: 23601001 Matrix: Soil ------

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Aroclor 1242	<37ug/kg dw	09/11/01		GA0960
Aroclor 1248	<37ug/kg dw	09/11/01		GA0960
Aroclor 1254	<37ug/kg dw	09/11/01		GA0960
Aroclor 1260	<37ug/kg dw	09/11/01		GA0960

Upstate Laboratories, Inc.

Analysis Results

Report Number: 23601001

Client I.D.: CIMINELLI SERVICES GROUP CORF. MCKENNA LANDFILL

Sampled by: Client BROCKPORT 5 08/22/01 G

ULI I.D.: 23601002 Matrix: Soil

02.					
PA	RAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	Percent Solids	90%	08/27/01		WD6049
	Total Cyanide	<1.1mg/kg dw	09/05/01		WD6161
Total	Aluminum	4300mg/kg dw	08/26/01		MB3779
Total	Antimony	<33mg/kg dw	08/26/01		MB3779
Total	Arsenic by furnace method	2.9mg/kg dw	08/29/01		MB3790
Total	Barium	290mg/kg dw	08/26/01		MB3779
<b>Total</b>	Beryllium	<0.55mg/kg dw	08/26/01		MB3779
<b>Total</b>	Cadmium	< 0.55 mg/kg dw	08/26/01		MB3779
<b>Total</b>	Calcium	54000mg/kg dw	08/26/01		MB3779
Total	Chromium	7.2mg/kg dw	08/26/01		MB3779
Total	Cobalt	7.3mg/kg dw	08/26/01		MB3779
Total	Copper	11mg/kg dw	08/26/01		MB3779
Total	Iron	7900mg/kg dw	08/26/01		MB3779
<b>Total</b>	Lead	<11mg/kg dw	08/26/01		MB3779
<b>Total</b>	Magnesium	4800mg/kg dw	08/26/01		MB3779
<b>Total</b>	Manganese	270mg/kg dw	08/26/01		MB3779
Total	Mercury	<0.17mg/kg dw	09/11/01		MB3809
<b>Total</b>	Nickel	14mg/kg dw	08/26/01		MB3779
Total	Potassium	1300mg/kg dw	08/27/01		MB3783
<b>Total</b>	Selenium by furnace method	<0.12mg/kg dw	08/24/01		MB'
Total	Silver	< 5.5 mgs/kg dw	08/26/01		MB
Total	Sodium	460mg/kg dw	08/27/01		MB3783
Total	Thallium by furnace method	< 0.34 mg/kg dw	09/11/01		MB3821
Total	Vanadium	<33mg/kg dw	08/26/01		MB3779
Total	Zinc	20mg/kg dw	08/26/01		MB3779
•	ICL Volatiles by EPA Method 8260				
		,			
	Chloromethane	<3ug/kg dw	08/28/01		VM3592
	Bromomethane	<3ug/kg dw	08/28/01		VM3592
	Vinyl Chloride	<2ug/kg dw	08/28/01		VM3592
	Chloroethane	<3ug/kg dw	08/28/01		VM3592
	Methylene Chloride	6ug/kg dw	08/28/01	44	VM3592
	Acetone	<11ug/kg dw	08/28/01		VM3592
	Carbon Disulfide	<3ug/kg dw	08/28/01		VM3592
	1,1-Dichloroethene	<3ug/kg dw	08/28/01		VM3592
	1,1-Dichloroethane	<3ug/kg dw	08/28/01		VM3592
	trans-1,2-Dichloroethene	<3ug/kg dw	08/28/01		VM3592
	cis-1,2-Dichloroethene	<3ug/kg dw	08/28/01		VM3592
	Chloroform	<3ug/kg dw	08/28/01		VM3592
	1,2-Dichloroethane	<3ug/kg dw	08/28/01		VM3592

APPROVAL:

state Laboratories, Inc.

alysis Results Report Number: 23601001

APPROVAL:
QC:
Lab I.D.: 10170 Client I.D.: CIMINELLI SERVICES GROUP CORP. MCKENNA LANDFILL BROCKPORT 5 08/22/01 G Sampled by: Client

ULI I.D.: 23601002	Matrix: Soil			
PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
2-Butanone	<11ug/kg dw	08/28/01		VM3592
1,1,1-Trichloroethane	<3ug/kg dw	08/28/01		VM3592
Carbon Tetrachloride	<3ug/kg dw	08/28/01		VM3592
Bromodichloromethane	<3ug/kg dw	08/28/01		VM3592
1,2-Dichloropropane	<3ug/kg dw	08/28/01		VM3592
cis-1,3-Dichloropropene	<3ug/kg dw	08/28/01		VM3592
Trichloroethene	<3ug/kg dw	08/28/01		VM3592
Dibromochloromethane	<3ug/kg dw	08/28/01		VM3592
1,1,2-Trichloroethane	<3ug/kg dw	08/28/01		VM3592
Benzene	<3ug/kg dw	08/28/01		VM3592
trans-1,3-Dichloropropene	<3ug/kg dw	08/28/01		VM3592
Bromoform	<3ug/kg dw	08/28/01		VM3592
4-Methyl-2-pentanone	<11ug/kg dw	08/28/01		VM3592
2-Hexanone	<11ug/kg dw	08/28/01		VM3592
Tetrachloroethene	<3ug/kg dw	08/28/01		VM3592
1,1,2,2-Tetrachloroethane	<3ug/kg dw	08/28/01		VM3592
Toluene	<3ug/kg dw	08/28/01		VM3592
Chlorobenzene	<3ug/kg dw	08/28/01		VM3592
Ethylbenzene	<3 ug/kg dw	08/28/01		VM3592
Styrene	<3ug/kg dw	08/28/01		VM3592
m,p-xylene	. <3 ug/kg dw	08/28/01		VM3592
o-Xylene	<3ug/kg dw	08/28/01		VM3592
TCL Semivolatiles by EPA Method 827	0			
Phenol	<370ug/kg dw	08/30/01		SA2976
bis(2-Chloroethyl)ether	<370ug/kg dw	08/30/01		SA2976
2-Chlorophenol	<370ug/kg dw	08/30/01		SA2976
1,3-Dichlorobenzene	<370ug/kg dw	08/30/01		SA2976
1,4-Dichlorobenzene	<370ug/kg dw	08/30/01		SA2976
1,2-Dichlorobenzene	<370ug/kg dw	08/30/01		SA2976
2-Methylphenol	<370ug/kg dw	08/30/01		SA2976
2,2'-Oxybis(1-Chloropropane)	<370ug/kg dw	08/30/01		SA2976
4-Methylphenol	<370ug/kg dw	08/30/01		SA2976
n-Nitrosodinpropylamine	<370ug/kg dw	08/30/01		SA2976
Hexachloroethane	<370ug/kg dw	08/30/01		SA2976
Nitrobenzene	<370ug/kg dw	08/30/01		SA2976
Isophorone	<370ug/kg dw	08/30/01		SA2976
2-Nitrophenol	<370ug/kg dw	08/30/01		SA2976
2,4-Dimethylphenol	<370ug/kg dw	08/30/01		SA2976
bis(2-Chloroethoxy)methane	<370ug/kg dw	08/30/01		SA2976

Upstate Laboratories, Inc.

Analysis Results

Report Number: 23601001

Client I.D.: CIMINELLI SERVICES GROUP CORP. MCKENNA LANDFILL

Sampled by: Client BROCKPORT 5 08/22/01 G

RAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
2,4-Dichlorophenol	<370ug/kg dw	08/30/01		SA2976
1,2,4-Trichlorobenzene	<370ug/kg dw	08/30/01		SA2976
Naphthalene	<370ug/kg dw	08/30/01		SA2976
4-Chloroaniline	<370ug/kg dw	08/30/01		SA2976
Hexachlorobutadiene	<370ug/kg dw	08/30/01		SA2976
4-Chloro-3-methylphenol	<370ug/kg dw	08/30/01		SA2976
2-Methylnaphthalene	<370ug/kg dw	08/30/01		SA2976
Hexachlorocyclopentadi ene	<370ug/kg dw	08/30/01		SA2976
2,4,6-Trichlorophenol	<370ug/kg dw	08/30/01		SA2976
2,4,5-Trichlorophenol	<370ug/kg dw	08/30/01		SA2976
2-Chloronaphthalene	<370ug/kg dw	08/30/01		SA2976
2-Nitroaniline	<3700ug/kg dw	08/30/01		SA2976
Dimethylphthalate	<370ug/kg dw	08/30/01		SA2976
Acenaphthylene	<370ug/kg dw	08/30/01		SA2976
2,6-Dinitrotoluene	<370ug/kg dw	08/30/01		SA2976
3-Nitroaniline	<3700ug/kg dw	08/30/01		SA2976
Acenaphthene	<370ug/kg dw	08/30/01		SA2976
2,4-Dinitrophenol	<3700ug/kg dw	08/30/01		SA2976
4-Nitrophenol	<3700ug/kg dw	08/30/01		SA2976
Dibenzofuran	<370ug/kg dw	08/30/01		SA'
2,4-Dinitrotoluene	. <370ug/kg dw	08/30/01		SAZ
Diethylphthalate	<370ug/kg dw	08/30/01		SA2976
4-Chlorophenylphenylether	<370ug/kg dw	08/30/01		SA2976
Fluorene	<370ug/kg dw	08/30/01		SA2976
4-Nitroaniline	<3700ug/kg dw	08/30/01		SA2976
2-Methyl-4,6-dinitrophenol	<3700ug/kg dw	08/30/01		SA2976
n-Nitrosodiphenylamine	<370ug/kg dw	08/30/01		SA2976
4-Bromophenylphenylether	<370ug/kg dw	08/30/01		SA2976
Hexachlorobenzene	<370ug/kg dw	08/30/01		SA2976
Pentachlorophenol	<740ug/kg dw	08/30/01		SA2976
Phenanthrene	<370ug/kg dw	08/30/01		SA2976
Anthracene	<370ug/kg dw	08/30/01		SA2976
Carbazole	<370ug/kg dw	08/30/01		SA2976
di-n-butylphthalate	<370ug/kg dw	08/30/01		SA2976
Fluoranthene	<370ug/kg dw	08/30/01		SA2976
Pyrene	<370ug/kg dw	08/30/01		SA2976
Butylbenzylphthalate	<370ug/kg dw	08/30/01		SA2976
3,3'-Dichlorobenzidine	<370ug/kg dw	08/30/01		SA2976
Benzo (a) anthracene	<370ug/kg dw	08/30/01		SA2976
Chrysene	<370ug/kg dw	08/30/01		

APPROVAL:
QC:
Lab I.D.: 10170

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"ostate Laboratories, Inc.

alysis Results Report Number: 23601001

Client I.D.: CIMINELLI SERVICES GROUP CORP. MCKENNA LANDFILL

BROCKPORT 5 08/22/01 G Sampled by: Client

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RAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
bis(2-Ethylhexyl)phthalate	<370ug/kg dw	08/30/01		SA297
di-n-octylphthalate	<370ug/kg dw	08/30/01		SA2976
Benzo (b) fluoranthene	<370ug/kg dw	08/30/01		SA2976
Benzo(k) fluoranthene	<370ug/kg dw	08/30/01		SA2976
Benzo(a)pyrene	<370ug/kg dw	08/30/01		SA2976
Indeno(1,2,3-cd)pyrene	<370ug/kg dw	08/30/01		SA2976
Dibenzo(a,h)anthracene	<370ug/kg dw	08/30/01		SA2976
Benzo(ghi)perylene	<370ug/kg dw	08/30/01		SA2976
EPA Method 8150				
2,4-D	<37ug/kg dw	09/06/01		GA0952
2,4,5-T	<37ug/kg dw	09/06/01		GA0952
2,4,5-TP (Silvex)	<37ug/kg dw	09/06/01		GA0952
Dinoseb	<37ug/kg dw	09/06/01		GA0952
CL Pesticides/Aroclors by EPA 8082				
BHC (a-isomer)	<1.9ug/kg dw	09/11/01		GA0960
BHC (b-isomer)	<1.9ug/kg dw	09/11/01		GA0960
BHC (d-isomer)	. <1.9ug/kg dw	09/11/01		GA0960
BHC (g-isomer)	<1.9ug/kg dw	09/11/01		GA0960
Heptachlor	<1.9ug/kg dw	09/11/01		GA0960
Aldrin	<1.9ug/kg dw	09/11/01		GA0960
Heptachlor Epoxide	<1.9ug/kg dw	09/11/01		GA0960
Endosulfan I	<1.9ug/kg dw	09/11/01		GA0960
Dieldrin	<3.7ug/kg dw	09/11/01		GA0960
4,4'-DDE	22ug/kg dw	09/11/01		GA0960
Endrin	<3.7ug/kg dw	09/11/01		GA0960
Endosulfan II	<3.7ug/kg dw	09/11/01		GA0960
4,4'-DDD	<3.7ug/kg dw	09/11/01		GA0960
Endosulfan Sulfate	<3.7ug/kg dw	09/11/01		GA0960
4,4'-DDT	<3.7ug/kg dw	09/11/01		GA0960
Methoxychlor	<19ug/kg dw	09/11/01		GA0960
Endrin Ketone	<3.7ug/kg dw	09/11/01		GA0960
Endrin Aldehyde	<3.7ug/kg dw	09/11/01		GA0960
alpha-Chlordane	<1.9ug/kg dw	09/11/01		GA0960
gamma-Chlordane	<1.9ug/kg dw	09/11/01		GA0960
Toxaphene	<190ug/kg dw	09/11/01		GA0960
Aroclor 1016	<37ug/kg dw	09/11/01		GA0960
Aroclor 1221	<37ug/kg dw	09/11/01		GA0960
Aroclor 1232	<37ug/kg dw	09/11/01		GA0960

Upstate Laboratories, Inc.

Analysis Results

Report Number: 23601001

Client I.D.: CIMINELLI SERVICES GROUP CORP. MCKENNA LANDFILL

Sampled by: Client BROCKPORT 5 08/22/01 G

ULI I.D.: 23601002 Matrix: Soil

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Aroclor 1242	<37ug/kg dw	09/11/01		GA0960
Aroclor 1248	<37ug/kg dw	09/11/01		GA0960
Aroclor 1254	<37ug/kg dw	09/11/01		GA0960
Aroclor 1260	<37ug/kg dw	09/11/01		GA0960

APPROVAL:

Lab I.D.: 10170

Instate Laboratories, Inc.

plysis Results

Report Number: 23601001

APPROVAL:

QC:

Lab I.D.: 10170

Client I.D.: CIMINELLI SERVICES GROUP CORP. MCKENNA LANDFILL

Sampled by: Client BROCKPORT 7 SUITABLE FILL 08/22/01 G

BARRIER PROTECTION

ULI I.D.: 23601003	Matrix:	Soil
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	RAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	Percent Solids	90%	08/27/01		WD6049
	Total Cyanide	<1.1mg/kg dw	09/05/01		WD6161
Cotal	Aluminum	5500mg/kg dw	08/26/01		MB3779
Cotal	Antimony	<33ug/kg dw	08/26/01		MB3779
Cotal	Arsenic by furnace method	2.9mg/kg dw	08/29/01		MB3790
Cotal	Barium	55mg/kg dw	08/26/01		MB3779
Cotal	Beryllium	<0.56mg/kg dw	08/26/01		MB3779
Cotal	Cadmium	<0.56mg/kg dw	08/26/01		MB3779
[otal	Calcium	38000mg/kg dw	08/26/01		MB3779
Cotal	Chromium	8.5mg/kg dw	08/26/01		MB3779
Cotal	Cobalt	9.5mg/kg dw	08/26/01		MB3779
Cotal	Copper	9.9mg/kg dw	08/26/01		MB3779
otal	Iron	8700mg/kg dw	08/26/01		MB3779
Cotal	Lead	<11mg/kg dw	08/26/01		MB3779
Cotal	Magnesium	4700mg/kg dw	08/26/01		MB3779
otal	Manganese	300mg/kg dw	08/26/01		MB3779
otal	Mercury	<0.17mg/kg dw	09/11/01		MB3809
otal	Nickel	16mg/kg dw	08/26/01		MB3779
otal	Potassium	1400mg/kg dw	08/27/01		MB3783
otal	Selenium by furnace method	< 0.12 mg/kg dw	08/24/01		MB3778
otal	Silver	. <5.6mg√kg dw	08/26/01		MB3779
otal	Sodium	370mg/kg dw	08/27/01		MB3783
otal	Thallium by furnace method	< 0.34 mg/kg dw	09/11/01		MB3821
otal	Vanadium	<33mg/kg dw	08/26/01		MB3779
otal	Zinc	23mg/kg dw	08/26/01		MB3779
7	TCL Volatiles by EPA Method 8260	•			
	Chloromethane	<3ug/kg dw	08/28/01		VM3592
	Bromomethane	<3ug/kg dw	08/28/01		VM3592
	Vinyl Chloride	<2ug/kg dw	08/28/01		VM3592
	Chloroethane	<3ug/kg dw	08/28/01		VM3592
	Methylene Chloride	7ug/kg dw	08/28/01	44	VM3592
	Acetone	<11ug/kg dw	08/28/01		VM3592
	Carbon Disulfide	<3ug/kg dw	08/28/01		VM3592
	1,1-Dichloroethene	<3ug/kg dw	08/28/01		VM3592
	1,1-Dichloroethane	<3ug/kg dw	08/28/01		VM3592
	trans-1,2-Dichloroethene	<3ug/kg dw	08/28/01		VM3592
			,,		
		<3ug/kg dw	08/28/01		VM3592
	cis-1,2-Dichloroethene Chloroform	<3ug/kg dw <3ug/kg dw	08/28/01 08/28/01		VM3592 VM3592

Upstate Laboratories, Inc.

Analysis Results

Report Number: 23601001

APPROVAN:
QC:
Lab I.D.: 10170 Client I.D.: CIMINELLI SERVICES GROUP CORP. MCKENNA LANDFILL

BROCKPORT 7 SUITABLE FILL 08/22/01 G Sampled by: Client

BARRIER PROTECTION

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PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
2-Butanone	<11ug/kg dw	08/28/01		VM3592
1,1,1-Trichloroethane	<3ug/kg dw	08/28/01		VM3592
Carbon Tetrachloride	<3ug/kg dw	08/28/01		VM3592
Bromodichloromethane	<3ug/kg dw	08/28/01		VM3592
1,2-Dichloropropane	<3ug/kg dw	08/28/01		VM3592
cis-1,3-Dichloropropen;	<3ug/kg dw	08/28/01		VM3592
Trichloroethene	<3ug/kg dw	08/28/01		VM3592
Dibromochloromethane	<3ug/kg dw	08/28/01		VM3592
1,1,2-Trichloroethane	<3ug/kg dw	08/28/01		VM3592
Benzene	<3ug/kg dw	08/28/01		VM3592
trans-1,3-Dichloropropene	<3ug/kg dw	08/28/01		VM3592
Bromoform	<3ug/kg dw	08/28/01		VM3592
4-Methy1-2-pentanone	<11ug/kg dw	08/28/01		VM3592
2-Hexanone	<11ug/kg dw	08/28/01		VM3592
Tetrachloroethene	<3ug/kg dw	08/28/01		VM3592
1,1,2,2-Tetrachloroethane	<3ug/kg dw	08/28/01		VM3592
Toluene	<3ug/kg dw	08/28/01		VM3592
Chlorobenzene	<3ug/kg dw	08/28/01		VM3592
Ethylbenzene	<3ug/kg dw	08/28/01		VM3592
Styrene	<3ug/kg dw	08/28/01		VM?
m,p-xylene	. <3ug/kg dw	08/28/01		VM3
o-Xylene	<3ug/kg dw	08/28/01		VM3592
TCL Semivolatiles by EPA Method 8270				
	272 /1 1	00/00/07		a
Phenol	<370ug/kg dw	08/30/01		SA2976
bis(2-Chloroethyl)ether	<370ug/kg dw	08/30/01		SA2976
2-Chlorophenol	<370ug/kg dw	08/30/01		SA2976
1,3-Dichlorobenzene	<370ug/kg dw	08/30/01		SA2976
1,4-Dichlorobenzene	<370ug/kg dw	08/30/01		SA2976
1,2-Dichlorobenzene	<370ug/kg dw	08/30/01		SA2976
2-Methylphenol	<370ug/kg dw	08/30/01		SA2976
2,2'-Oxybis(1-Chloropropane)	<370ug/kg dw	08/30/01		SA2976
4-Methylphenol	<370ug/kg dw	08/30/01		SA2976
n-Nitrosodinpropylamine	<370ug/kg dw	08/30/01		SA2976
Hexachloroethane	<370ug/kg dw	08/30/01		SA2976
Nitrobenzene	<370ug/kg dw	08/30/01		SA2976
Isophorone	<370ug/kg dw	08/30/01		SA2976
2-Nitrophenol	<370ug/kg dw	08/30/01		SA2976
2,4-Dimethylphenol	<370ug/kg dw	08/30/01		SA2976
bis(2-Chloroethoxy)methane	<370ug/kg dw	08/30/01		SA2976

"nstate Laboratories, Inc.

alysis Results Report Number: 23601001

Client I.D.: CIMINELLI SERVICES GROUP CORP. MCKENNA LANDFILL

BROCKPORT 7 SUITABLE FILL 08/22/01 G Sampled by: Client

BARRIER PROTECTION \_\_\_\_\_\_

APPROVAT:

Lab I.D.: 10170

---- ULI I.D.: 23601003 Matrix: Soil

PAR	AMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	2,4-Dichlorophenol	<370ug/kg dw	08/30/01		SA2976
	1,2,4-Trichlorobenzene	<370ug/kg dw	08/30/01		SA2976
	Naphthalene	<370ug/kg dw	08/30/01		SA2976
-	4-Chloroaniline	<370ug/kg dw	08/30/01		SA2976
	Hexachlorobutadiene	<370ug/kg dw	08/30/01		SA2976
	4-Chloro-3-methylphenol	<370ug/kg dw	08/30/01		SA2976
	2-Methylnaphthalene	<370ug/kg dw	08/30/01		SA2976
	Hexachlorocyclopentadiene	<370ug/kg dw	08/30/01		SA2976
	2,4,6-Trichlorophenol	<370ug/kg dw	08/30/01		SA2976
	2,4,5-Trichlorophenol	<370ug/kg dw	08/30/01		SA2976
	2-Chloronaphthalene	<370ug/kg dw	08/30/01		SA2976
	2-Nitroaniline	<3700ug/kg dw	08/30/01		SA2976
	Dimethylphthalate	<370ug/kg dw	08/30/01		SA2976
	Acenaphthylene	<370ug/kg dw	08/30/01		SA2976
	2,6-Dinitrotoluene	<370ug/kg dw	08/30/01		SA2976
	3-Nitroaniline	<3700ug/kg dw	08/30/01		SA2976
	Acenaphthene	<370ug/kg dw	08/30/01		SA2976
	2,4-Dinitrophenol	<3700ug/kg dw	08/30/01		SA2976
	4-Nitrophenol	<3700ug/kg dw	08/30/01		SA2976
	Dibenzofuran	<370ug/kg dw	08/30/01		SA2976
	2,4-Dinitrotoluene	. <370ug/kg dw	08/30/01		SA2976
	Diethylphthalate	<370ug/kg dw	08/30/01		SA2976
	4-Chlorophenylphenylether	<370ug/kg dw	08/30/01		SA2976
	Fluorene	<370ug/kg dw	08/30/01		SA2976
	4-Nitroaniline	<3700ug/kg dw	08/30/01		SA2976
	2-Methyl-4,6-dinitrophenol	<3700ug/kg dw	08/30/01		SA2976
	n-Nitrosodiphenylamine	<370ug/kg dw	08/30/01		SA2976
	4-Bromophenylphenylether	<370ug/kg dw	08/30/01		SA2976
	Hexachlorobenzene	<370ug/kg dw	08/30/01		SA2976
	Pentachlorophenol	<740ug/kg dw	08/30/01		SA2976
	Phenanthrene	<370ug/kg dw	08/30/01		SA2976
	Anthracene	<370ug/kg dw	08/30/01		SA2976
	Carbazole	<370ug/kg dw	08/30/01		SA2976
	di-n-butylphthalate	<370ug/kg dw	08/30/01		SA2976
	Fluoranthene	<370ug/kg dw	08/30/01		SA2976
	Pyrene	<370ug/kg dw	08/30/01		SA2976
	Butylbenzylphthalate	<370ug/kg dw	08/30/01		SA2976
	3,3'-Dichlorobenzidine	<370ug/kg dw	08/30/01		SA2976
	Benzo(a) anthracene	<370ug/kg dw	08/30/01		SA2976
	Chrysene	<370ug/kg dw	08/30/01		SA2976
	<del>-</del>				

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Analysis Results

Report Number: 23601001

APPROVAL QC: Lab I.D.: 10170 Client I.D.: CIMINELLI SERVICES GROUP CORP. MCKENNA LANDFILL

BROCKPORT 7 SUITABLE FILL 08/22/01 G Sampled by: Client

BARRIER PROTECTION

ULI	I.D.:	23601003	Matrix:	Soil
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PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
bis(2-Ethylhexyl)phthalate	<370ug/kg dw	08/30/01		SA2976
di-n-octylphthalate	<370ug/kg dw	08/30/01		SA2976
Benzo(b) fluoranthene	<370ug/kg dw	08/30/01		SA2976
Benzo(k)fluoranthene	<370ug/kg dw	08/30/01		SA2976
Benzo(a)pyrene	<370ug/kg dw	08/30/01		SA2976
Indeno(1,2,3-cd)pyrene	<370ug/kg dw	08/30/01		SA2976
Dibenzo(a,h)anthracene	<370ug/kg dw	08/30/01		SA2976
Benzo(ghi)perylene	<370ug/kg dw	08/30/01		SA2976
EPA Method 8150				
2,4-D	<37ug/kg dw	09/06/01		GA0952
2,4,5-T	<37ug/kg dw	09/06/01		GA0952
2,4,5-TP (Silvex)	<37ug/kg dw	09/06/01		GA0952
Dinoseb	<37ug/kg dw	09/06/01		GA0952
TCL Pesticides/Aroclors by EPA 8082				
BHC (a-isomer)	<1.9ug/kg dw	09/11/01		GA0960
BHC (b-isomer)	<1.9ug/kg dw	09/11/01		GAC
BHC (d-isomer)	, <1.9ug/kg dw	09/11/01		GA (
BHC (g-isomer)	<1.9ug/kg dw	09/11/01		GA0960
Heptachlor	<1.9ug/kg dw	09/11/01		GA0960
Aldrin	<1.9ug/kg dw	09/11/01		GA0960
Heptachlor Epoxide	<1.9ug/kg dw	09/11/01		GA0960
Endosulfan I	<1.9ug/kg dw	09/11/01		GA0960
Dieldrin	<3.7ug/kg dw	09/11/01		GA0960
4,4'-DDE	37ug/kg dw	09/11/01		GA0960
Endrin	<3.7ug/kg dw	09/11/01		GA0960
Endosulfan II	<3.7ug/kg dw	09/11/01		GA0960
4,4'-DDD	<3.7ug/kg dw	09/11/01		GA0960
Endosulfan Sulfate	<3.7ug/kg dw	09/11/01		GA0960
4,4'-DDT	<3.7ug/kg dw	09/11/01		GA0960
Methoxychlor	<19ug/kg dw	09/11/01		GA0960
Endrin Ketone	<3.7ug/kg dw	09/11/01		GA0960
Endrin Aldehyde	<3.7ug/kg dw	09/11/01		GA0960
alpha-Chlordane	<1.9ug/kg dw	09/11/01		GA0960
gamma-Chlordane	<1.9ug/kg dw	09/11/01		'GA0960
Toxaphene	<190ug/kg dw	09/11/01		GA0960
Aroclor 1016	<37ug/kg dw	09/11/01		GA0960
Aroclor 1221	<37ug/kg dw	09/11/01		GA0960
Aroclor 1232	<37ug/kg dw	09/11/01		GA0960

"nstate Laboratories, Inc.

alysis Results Report Number: 23601001

Client I.D.: CIMINELLI SERVICES GROUP CORP. MCKENNA LANDFILL

BROCKPORT 7 SUITABLE FILL 08/22/01 G Sampled by: Client

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Lab I.D.: 10170

\_ \_ \_ BARRIER PROTECTION \_\_ \_ \_ \_ \_ \_ \_ \_ \_ ---- ULI I.D.: 23601003 Matrix: Soil

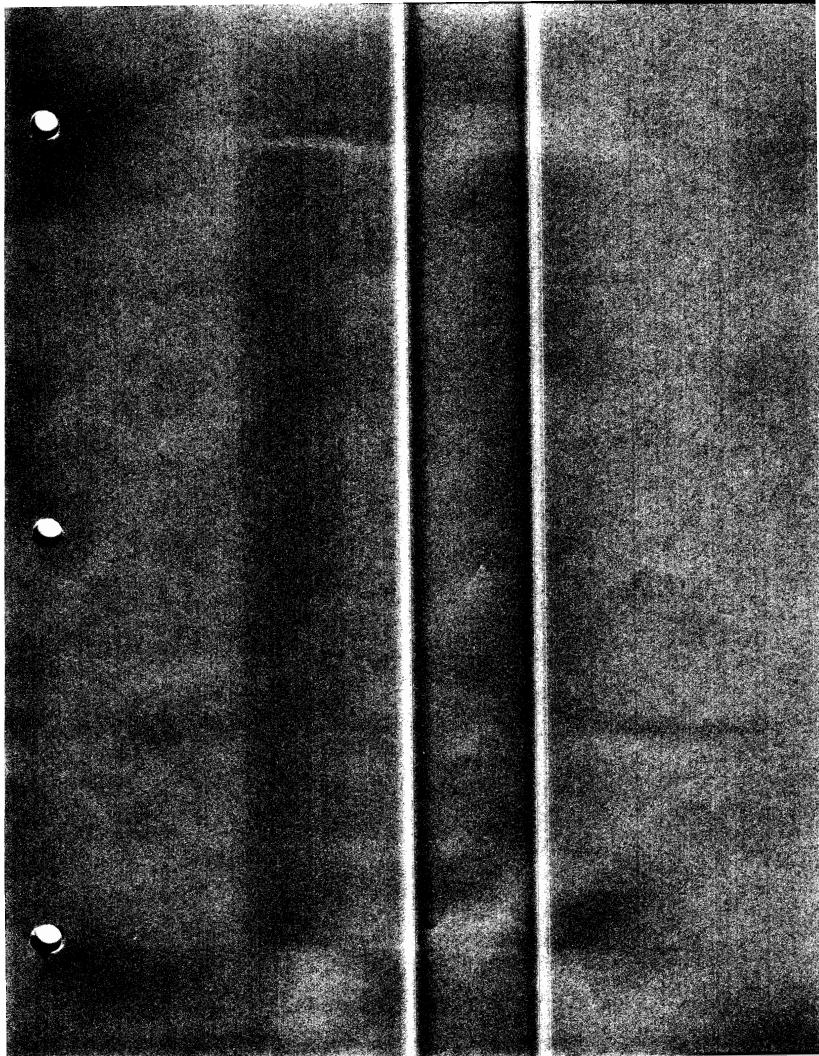
PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Aroclor 1242	<37ug/kg dw	09/11/01		GA0960
Aroclor 1248	<37ug/kg dw	09/11/01		GA0960
Aroclor 1254	<37ug/kg dw	09/11/01		GA0960
Aroclor 1260	<37ug/kg dw	09/11/01		GA0960

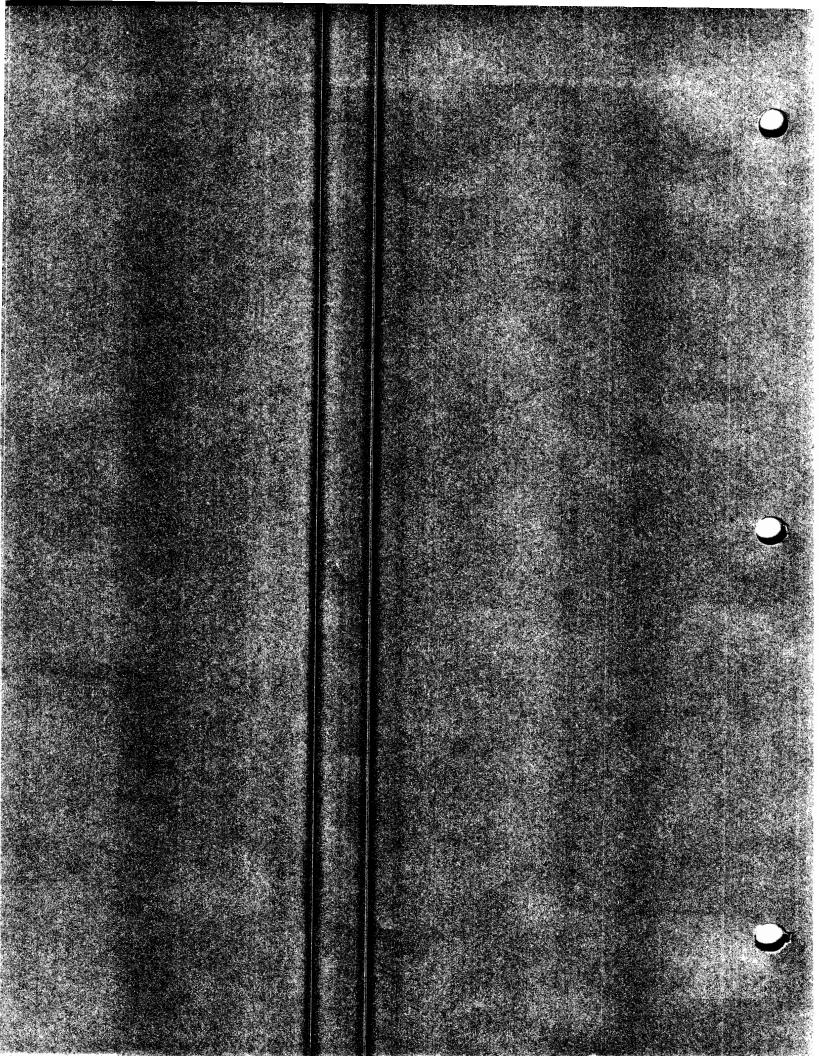
Upstate Laboratories, Inc. Analysis Results Report Numbor: 20101066 Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ \_ \_ \_ QC: 1 \_ Lab I.D.: 10170 Sampled by: Client

ID:20101066 Hat:Soil MCKENNA LANDFILL SOIL SAMPLE 07/18/01 C

0101000 1	DECITOTE MONDINGS SERIOR SAME	DOZE PIEREE 07/10/01	<b>~</b>		
PA	rameters	RESULTS	DATE ANAL.	KEY	FILE#
	Percent Solids	94%	07/23/01		WD5608
_	Total Cyanide	<1.0mg/kg dw	07/24/01		WD5601
Total	Aluminum	6800mg/kg dw	07/23/01		MB3695
Total	Antimony	120mg/kg dw	07/23/01		MB3695
Total	Arsenic by furnace method	7.4mg/kg dw	07/23/01		MB3709
Total	Barium	56mg/kg dw	07/23/01		MB3695
Total	Eeryllium	<0.52mg/kg dw	07/23/01		NB3695
Total	Cadmium	0.85mg/kg dw	07/23/01		MB3695
Total	Calcium	38000mg/kg dw	07/23/01		NB3695
Tota1	Chromium	10mg/kg dw	07/23/01		MB3695
Total	Cobalt	31mg/kg dw	07/23/01		MB3695
Total	Cobber	10mg/kg dw	07/23/01		MB3695
Total	Iron	9800mg/kg dw	07/23/01		MB3695
Total	Lead	<10mg/kg dw	07/23/01		MB3695
Total	Magnesium	4500mg/kg dw	07/23/01		MB3695
Total	Manganose	340mg/kg dw	07/23/01		MB3695
Total	Mercury	<0.16mg/kg dw	07/27/01		MB3705
Total	Nickel	14mg/kg dw	07/23/01		MB3695
Total	Potassium	1800mg/kg dw	07/26/01		MB3710
Total	Selenium by furnace method	<0.11mg/kg dw	07/26/01		MB3703
Total	Silver	6.1mg/kg dw	07/23/01		NE3695
Total	Thallium by furnace method .	<0.31mg/kg dw	07/25/01		ME4097
Total	Vanadium	<32mg/kg dw	07/23/01		MB3695
Total	Zinc	23mg/kg dw	07/23/01		<b>МВ3695</b>
	TCL Volatiles by EFA Method 8263				
	Chloromethane	<3ug/kg dw	07/24/01		
	Bromomethane	<3 mg/kg dw	07/24/01		VM3542
	Vinyl Chloride	<2ug/kg dw	07/24/01		VM3542
	Chloroothane	<3ug/kg dw	07/24/01		VM3542
	Methylene Chloride	<3ug/kg dw	07/24/01		VM3542
	Acetone	<li><li><li><li><li></li></li></li></li></li>	07/24/01		VM3542
	Carbon Disulfide	<3ug/kg dw	07/24/01		VM3542
	1,1-Dichloroethene	<3ug/kg dw	07/24/01		VM3542
	1,1-Dichloroethane	<3ug/kg dw	07/24/01		VM3542
	trans-1,2-Dichloroethene	<3ug/kg dw	07/24/01		VM3542
	cis-1,2-Dichlorosthene	<3vg/kg dw	07/24/01		VN3542
	Chloroform	<3ug/kg dw	07/24/01		VN3542
	1,2-Dichloroethane	<3ug/kg dw	07/24/01		VN3542
	2-Eutanone	<li>&lt;1lug/kg dw</li>			VM3542
	1,1,1-Trichloroethane	<3ug/kg dw	07/24/01 07/24/01		VN3542
	Carbon Tetrachloride				VN3542
	Browodichloromethane	<3ug/kg dw	07/24/01		VN3542
		<3ug/kg dw	07/24/01		VN3542
	1,2-Dichloropropane	<3ug/kg dw	07/24/01		VM3542





### **TOPSOIL**

Topsoil for the McKenna Landfill Remedial Closure Project final cover system construction was obtained from the following sources.

- 1. Recovery of existing topsoil from the landfill;
- 2. The Brockport borrow pit located in Brockport, New York;
- 3. The New Guinea Rd. borrow pit located in Clarendon, New York; and
- 4. The Kenyon Rd. borrow pit located in Fancher, New York.

Approximately 20,000 cubic yards of topsoil was used for topsoil construction. Laboratory testing consisted of natural moisture content (ASTM D2216), grain size analysis (ASTM D422), organic content (ASTM D2974), pH (ASTM D4972) and chemical characterization testing. Samples were collected at a rate of one sample per 5,000 cubic yards placed. Based on the laboratory test results, GZA considered the above sources acceptable for use as topsoil. Test results are summarized on the following pages.

#### EXISTING TOPSOIL RECOVERY

### Geotechnical Testing Summary

Approximately 13,000 cubic yards of the existing topsoil recovered from the landfill was used for topsoil construction. Test frequencies are summarized below. Table D13 summarizes the geotechnical laboratory test results.

#### EXISTING TOPSOIL GEOTECHNICAL LAB TESTING SUMMARY

<b>Test Designation</b>	Required	Number of	Estimated	<b>Estimated Test</b>
	Frequency	Tests Done	Quantity of	Frequency
			Fill Placed	
Natural Moisture	Ea. 5,000 Cubic	3	13,000 Cubic	Ea. 4,300 Cubic
Content (ASTM	Yards	}	Yards	Yards Placed
D2216)				
Grain Size	Ea. 5,000 Cubic	3	13,000 Cubic	Ea. 4,300 Cubic
Analysis (ASTM	Yards	}	Yards	Yards Placed
D422)				
Organic Content	Ea. 5,000 Cubic	3	13,000 Cubic	Ea. 4,300 Cubic
(ASTM D2974)	Yards		Yards	Yards Placed
pH (ASTM	Ea. 5,000 Cubic	3	13,000 Cubic	Ea. 4,300 Cubic
D4972)	Yards		Yards	Yards Placed

### Chemical Testing Summary

Pre-construction chemical characterization testing was done for the recovered onsite topsoil. Chemical characterization testing was required for every 5,000 cubic yards of soil used. Six (6) samples were tested for a test frequency of about 1 test per 2,200 cubic yards. The samples were tested for the following parameters.

Parameter	Extraction/Preparation (1)	Analysis (1)
TCL <sup>(2)</sup> Volatile Organic	5050	8260 (95-1)
Compounds		
TCL Semi-Volatile Organic	3540/3550	8270 (95-2)
Compounds		
Pesticides/PCB's	3540/3550	8080
Herbicides	3580	8150
TAL <sup>(3)</sup> Metals	3050	95-M
Cyanide		9012

<sup>&</sup>lt;sup>1</sup> EPA SW-846.

GZA reviewed the laboratory test results submitted by CSC's analytical laboratory, Upstate, and tabulated the compounds detected for each sample. A table of the compounds detected for each material type is included herein as Table D14, along with the laboratory data GZA compared the reported chemical concentrations versus recommended soil cleanup objective values and eastern United States background values shown in the tables.

Based on GZA's review, the chemical characterization test results for this material was acceptable. Therefore, the on-site recovered topsoil was considered acceptable for topsoil.

<sup>&</sup>lt;sup>2</sup> TCL – Target Compound List.

<sup>&</sup>lt;sup>3</sup> TAL – Target Analyte List.

## Table D13

## SUMMARY OF BULK SAMPLE LABORATORY TESTING ON-SITE TOPSOIL

#### MCKENNA LANDFILL REMEDIAL CLOSURE PROJECT ALBION, NY

SAMPLE NUMBER	NATURAL MOISTURE CONTENT	ORGANIC CONTENT (%)	ASH (%)	% FINER THAN #200 SEIVE	pH in H₂O	pH in 0.01M CaCl₂	BORROW SOURCE
09121-1	17.9	3.4	96.6	40	7.6	5.8	On-Site Source
09131-1	13.5	3.8	96.2	32	7.1	7.3	On-Site Source
12111-3	25.5	4.2	95.8	44	7.2	7.3	On-Site Source

# Chemical Characterizati, in Results for On-Site Topsoil Samples A27, D9, D21, G25, H2 and H12 Taken from Soil Recovery Area

# McKenna Lancfill Remedial Closure Project Albion, New York

Parameter	Recommended Soil Cleanup Objective ppm	Eastern USA Background ppm	A27	D9 ppm	D21	G25 ppm	H2 ppm	H12 ppm
VOC - EPA Method 8	5260 (ppm)		2 72		30	and the second	4.00	
Methylene Chloride	0.1	N/A	0.016	0.012	0.012	0.012	0.015	0.907
Acetone	0.2	N/A	0.37	N/D	ND	ND	0.05	ND
2-Butanone	0.3	N/A	N/D	N/D	ND	ND	ND	ND
n-Xylene and p-Xylene	1.2	N/A	0.011	N/D	ND	ND	ND	ND
SVOC - EPA Method	8270 (ррш)							FREE SE
No Compounds Detected	)	N/A	ND	ND	ND	ND	ND	ND
HERBICIDES - EPA	Method 8150 (ppm)			HARLEY HARRY				
2,4 -D	0.5	N/A	ND	ND	ND	ND .	ND	0.0073
CL Pesticides/Arock	ors EPA Method 8080 (	ppm)	A DOCUMENT				A Section Control	
4,4' - DDE	2.1	N/A	ND I	ND	0.008	ND	ND ND	ND
Priority Pollutant Me	tals (ppm)	AN SERVICE AND A SERVICE		18 Y 18 Y	15 Mar 19 (19 19 19 19 19 19 19 19 19 19 19 19 19 1			V 1884
Aluminum	SB	33,000	6900	ND	5400	6100	5900	6700
Antimony	SB	N/A	ND .	ND	ND	ND	ND	ND
Arsenic	7.5 or SB	3-12	2.3	2.5	1.5	4.1	2.1	4
Barium	300 or SB	15-600	58	61	ND	45	51	68
Beryllium	0.16 or SB	0-1.75	ND .	ND	0.63	ND	ND	ND
Cadmium	1 or SB	0.1-1	1.9	1.7	1.9	1.6	1.3	1.6
Calcium	SB	130-35,000	22,000	5,900	110,000	3300	13,000	4500
Chromium	10 or SB	1.5-40	13	12	12	10	9.3	10
Cobalt	30 or SB	2.5-60	39	32	41	29	29	34
Соррег	25 or SB	1-50	15	13	15	9.1	11	11
ron	2000 or SB	2000-550,000	12,000	10,000	12,000	8800	9200	9500
ead	SB	See Note 5	ND	ND	15	12	ND	ND
Magnesium	SB	100-5000	3,900	2,300	14,000	1700	3600	2000
Manganese	SB	50-5000	340	380	360	290	420	320
Mercury	0.1	0.001-0.2	N/D	N/D	ND	ND	ND	ND
Vickel	13 or SB	0.5-25	21	17	23	14	17	14
otassium	SB	8500-43,000	1300	730	1700	750	730	580
Selenium	2 or SB	0.1-3.9	0.59	0.4	0.16	ND	ND	0.24
Silver	SB	N/A	N/D	N/D	ND	ND	ND	ND
Sodium	SB	6000-8000	420	330	340	320	360	350
Thallium	SB	N/A	1.8	0.79	ND	ND	ND	ND
Vanadium	150 or SB	1-300	ND	ND	ND	ND	ND	ND
Zinc	20 or SB	9-50	46	40	36	30	29	42

Notes:

1. Only compounds detected in one or more samples are presented on this table. Refer to original data theets for list of all compounds included in analysis.

2. Analytical testing completed by Upstate Laboratories, Inc.

3. Recommended soil cleanup objectives are based on the Division Technical and Auministrative Guidence Memorandum
(TAGM) 4046 on Determination of Soil Cleanup Objectives and Cleanup Levels in its final form.

4. ND = not detected, NA = not available

5. Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4-61 ppm. Average background levels in metropolitan or suburban areas or near highways are much higher and typically rapage from 200-500 ppm.

<sup>6.</sup> mg/kg = ppm

PATE: / /

tate Laboratories, Inc.

Analysis Results

Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:

Sampled by: Client

ID:14000080 Mat:5011 29-00-0002 MCKENNA LANDFILL GRID H2 1700H 05/16/00 G

,000080	MACISOIT 23-00-0002 MCKEMPA	MANDE THE GRED HE 1,00	11 03, 10,00 0		
P	ARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	- 4 4	1 2 - / - 4.	06/00/00		MB2436
Total	Cadmium	1.3mg/kg dw	06/09/00		MB2436
Total	Calcium	13000mg/kg dw	06/09/00		MB2436
Total	Chromium	9.3mg/kg dw	06/09/00		
Total	Cobalt	29mg/kg dw	06/09/00		MB2436
Total	Copper	llmg/kg dw	06/09/00		MB2436
Total	Iron	9200mg/kg dw	06/09/00		MB2436
Total	Lead	<pre>&lt;1lmg/kg dw</pre>	06/09/00		MB2436
Total	Magnesium	3600mg/kg dw	06/09/00		MB2436
Total	Manganese	420mg/kg dw	06/09/00		MB2436
Total	Mexcury	<0.3mg/kg dw	05/26/00		MB2384
Total	Nickel	17mg/kg dw	06/09/00		MB2436
Total	Potassium	730mg/kg dw	06/12/00		мв2443
Total	Selenium by furnace method	<0.2mg/kg dw	05/30/00		WD2391
Total	Silver	<5,4mg/kg dw	06/09/00		MB2436
Total	Sodium	360mg/kg dw	06/12/00		MB2443
Total	Thallium by furnace method	<0.4mg/kg dw	06/09/00		ME2863
Total	Vanadium	<33mg/kg dw	06/09/00		MB2436
Total	Zinc	29mg/kg dw	06/09/00		MB2436
	TCL Volatiles by EPA Method 8260 Chloromethane	<3ug/kg ďw	05/26/00		VM2899
	Chloromethane Bromomethane	<pre>&lt;3ug/kg dw</pre>	05/26/00		VM2899
		<2ug/kg dw	· · · · · · · · · · · · · · · · · · ·		VM2899
	Vinyl Chloride		05/26/00		VM2899
	Chloroethane	<3ug/kg dw	05/26/00 05/26/00	44	VM2899
	Methylene Chloride	15ug/kg dw		44	VM2899
	Acetone	50ug/kg dw	05/26/00	77	VM2899
	Carbon Disulfide	<3ug/kg dw	05/26/00		VM2899
	1,1-Dichloroethene	<3ug/kg dw	05/26/00 05/26/00		VM2899
	1,1-Dichloroethane	<3ug/kg dw			VM2899
	trans-1,2-Dichloroethene	<3ug/kg dw	05/26/00 05/26/00		VM2899
	cis-1,2-Dichloroethene Chloroform	<3ug/kg dw <3ug/kg dw	05/26/00		VM2899
	1,2-Dichloroethane	<3ng/kg dw	05/26/00		VM2899
	2-Butanone	<li>&lt;1lug/kg dw</li>	05/26/00		VM2899
	1,1,1-Trichloroethane	<3ug/kg dw	05/26/00		VM2899
	Carbon Tetrachloride	<3ug/kg dw	05/26/00		VM2899
	Bromodichloromethane	<3/dy/kg dw	05/26/00		VM2899
	1,2-Dichloropropane	<3ug/kg dw	05/26/00		VM2899
	cis-1,3-Dichloropropene	<3ug/kg dw	05/26/00		VM2899
	Trichloroethane	<3ug/kg dw	05/26/00		VM2899
	Dibromochloromethane	<3ug/kg dw	05/25/00		VM2899
	1,1,2-Trichlorosthane	<3nd\ka gw	05/26/00		VM2899
	Benzene	<3ug/kg dw	05/26/00		VM2899
	trans-1,3-Dichloropropene	≥3/g/kg dw	05/26/00		VM2899
	Camera - T' a Dadwrotohroham	-243/V2 GH	52/24/40		

Upstate Laboratories, Inc. Analysis Results Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP,

APPROVAL:\_\_\_\_\_ QC: 1 - Lab I.D.: 10170

Sampled by: Client

ID:14000080 Mat:Soil	29-00-0002 MCHENNA	LANDFILL GRID H2	1700H 05/16/00 0		
PARAMETERS		RESULTS	DATE ANAL.	KEY	FILE#

FARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
*******	# - 4	~ * * * * *		
Bromoform	<3ug/kg dw	05/26/00		VM2899
4-Methyl-2-pentanone	<11ug/kg dw	05/26/00		VM2899
2-Hexanone	<11ug/kg dw	05/26/00		VM2899
Tetrachloroethene	<3ug/kg dw	05/26/00		VM2899
1,1,2,2-Tetrachlorosthana	<3ug/kg dw	05/26/00		VM2899
Toluene	<3ug/kg dw	05/26/00		VM2 699
Chlorobenzene	<3ug/kg dw	05/26/00		VM2899
Echylbensene	<3ug/kg dw	05/26/00		VM2899
Styrene	<3ug/kg dw	05/25/00		VM2899
m-Xylene and p-Xylene	<3ug/kg dw	05/26/00		VM2899
o-Xylene	<3ug/kg dw	05/26/00		VM2899
TCL Semivolatiles by EPA Method 8	270			
****				
Phenol	<370ug/kg dw	06/01/00		SA2428
bis(2-Chloroethy1)ether	<370ug/kg dw	06/01/00		<b>SA242B</b>
2-Chlorophenol	<370ug/kg dw	06/01/00		SA2428
1,3-Dichlorobenzene	<370ug/kg dw	06/01/00		SA2428
1,4-Dichlorobenzene	<370ug/kg dw	06/01/00		SA2428
1,2-Dichlorobenzene	<370ug/kg dw	06/01/00		SA2428
2-Methylphenol	<370ug/kg dw	06/01/00		SA2428
2,2'-Oxybis(1-Chloroprogane)	<370ug/kg dw	06/01/00		SA2428
4-Methylphenol	<370ug/kg dw	06/01/00		SA2428
n-Nitrosodi-n-propylamine	<370ug/kg dw	06/01/00		SA2428
Hexachloroethane	<370ug/kg dw	06/01/00		5A2428
Nitrobenzene	<370ug/kg dw	06/01/00		SA2428
Isophorone	<370ug/kg dw	06/01/00		SA2428
2-Nitrophenol	<370ug/kg dw	06/01/00		SA2428
2,4-Dimethylphenol	<370ug/kg dw	06/01/00		SA2428
bis (2-Chloroathoxy) methane	<370ug/kg dw	06/01/00		SA2428
2,4-Dichlorophenol	<370ug/kg dw	06/01/00		SA2428
1,2,4-Trichlorobenzene	<370ug/kg dw	06/01/00		5A2428
Naphthalene	<370ug/kg dw	06/01/00		SA2428
4-Chloroaniline	<370ug/kg dw	06/01/00		SA2428
Hexachlorobutadiene	<370ug/kg dw	06/01/00		SA2428
4-Chloro-3-methylphenol	<370ug/kg dw	06/01/00		SA2428
2-Methylnaphthalene	<370ug/kg dw	06/01/00		SA2428
Hexachlorocyclopentadiene	<370ug/kg dw	06/01/00		SA2428
2,4,6-Trichlorophenol	<370ug/kg dw	05/01/00		SA2428
2,4,5-Trichlorophenol	<370ug/kg dw	06/01/00		SA2428
2-Chloronaphthalene	<370ug/kg dw	06/01/00		SA2428
2-Nitroaniline	<3700ug/kg dw	05/01/00		SA2428
Dimethylphthalate	<370ug/kg dw	06/01/00		SA2428
Acenaphthylene	<370ug/kg dw	06/01/00		SA2426
2,6-Dinitrotoluene	<370ug/kg dw	06/01/00		SA2428
-,	ADIANAL VA	20107100		いかくエチウ

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state Laboratories, Inc.

Analysis Results

Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ \_ ~ ~

QC: 1 - Lab I.D.: 10170

Sampled by: Client

ID:14000080 Mat:Soil	29-00-0002 MCKENNA	LANDFILL GRID H2 1700H 05/16/00 G	

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
3-Nitrophiline	<3700ug/kg dw	06/01/00		SA2428
Acenaphthene	<370ug/kg dw	06/01/00		SA2428
2,4-Dinitrophenol	<3700ug/kg dw	06/01/00		SA2428
4-Nitrophenol	<3700ug/kg dw	06/01/00		SA2428
Dibenzofuran	<370ug/kg dw	06/01/00		522428
2,4-Dinitrotoluene	<370ug/kg dw	06/01/00		SA2428
Diethylphthalate	<370ug/kg dw	06/01/00		SA2426
4-Chlorophenylphenylether	<370ug/kg dw	06/01/00		SA2428
Fluorene	<370ug/kg dw	06/01/00		SA2428
4-Nitroaniline	<3700ug/kg dw	06/01/00		SA2428
2-Methyl-4,6-dinitrophenol	<3700ug/kg dw	06/01/00		SA2428
n-Nitrosodiphenylemine	<370ug/kg dw	06/01/00		SA2428
4-Bromophenylphenylether	<370ug/kg dw	06/01/00		SA2428
Rexachlorobenzene	<370ug/kg dw	06/01/00		SA2428
Pentachlorophenol	<740ug/kg dw	06/01/00		SA2428
Phenanthrene	<370ug/kg dw	06/01/00		9A2428
Anthracene	<370ug/kg dw	06/01/00		SA2428
Carbazole	<370ug/kg dw	06/01/00		SA2428
di-n-butylphthalate	<370ug/kg dw	06/01/00		SA2428
Fluoranthene	<370ug/kg dw	06/01/00		SA2428
Pyrene	<370ug/kg dw	06/01/00		SA2428
Butylbenzylphthalate	<370ug/kg dw	06/01/00		9A2428
3,3'-Dichlorobenzidine	<370ug/kg dw	06/01/00		SA2428
Benzo (a) anthracene	<370ug/kg dw	06/01/00		SA2428
Chrysene	<370ug/kg dw	06/01/00		SA2428
bis(2-Ethylhexyl)phthalate	<370ug/kg dw	06/01/00		5A2428
di-n-octylphthalate	<370ug/kg dw	06/01/00		SA2428
Benzo(b) fluoranthene	<370ug/kg dw	06/01/00		SA2428
Benzo (k) fluoranthens	<370ug/kg dw	06/01/00		SA2428
Benzo (a) pyrenė	<370ug/kg dw	06/01/00		SA2428
Indono (1,2,3-cd) pyrene	<370ug/kg dw	06/01/00		SA2428
Dibenzo(a,h) anthracene	<370ug/kg dw	06/01/00		SA2428
Benzo(ghi)pexylene	<370ug/kg dw	06/01/00		SA2428
BPA Method 8150				
2,4-D	<3.6ug/kg dw	06/01/00		GA0107
2,4,5-T	<3.6ug/kg dw	06/01/00		GA0107
2,4,5-TP (Silvex)	<3.6ug/kg dw	06/01/00		GA0107
Dinoseb	<3.6ug/kg dw	06/01/00		GA0107
	CJ. Udg/ kg da	00,01,00		Gilozof
TCL Pesticides/Aroclors by EPA 8080				
BHC (a-isomer)	<1.9ug/kg dw	06/02/00		GA0111
BHC (b-isomer)	<1.9ug/kg dw	06/02/00		GA0111
BHC (d-isomer)	<1.9ug/kg dw	06/02/00		CA0111

Upstate Laboratories, Inc.

Analysis Results

Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:

QC: 17 - Lab I.D., 10170

Sampled by: Client

			<b></b>
ID:14000080 Nat:Soil	29-00-0002 MCKENNA	LANDFILL GRID	H2 1700H 05/16/00 C

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
*****				
BHC (g-isomer)	<1.9ug/kg dw	06/02/00		GA0111
Heptachlor	<1.9ug/kg dw	06/02/00		GA0111
Aldrin	<1.9ug/kg dw	06/02/00		GA0111
Haptachlor Epoxide	<1.9ug/kg dw	06/02/00		GA0111
Endosulfan I	<1.9ug/kg dw	06/02/00		GA0111
Dieldrin	<3.6ug/kg dw	06/02/00		GA0111
4,4'-DDE	<3.6ug/kg dw	06/02/00		GA0111
Endrin	<3.5ug/kg <b>dw</b>	06/02/00		GA0111
Endosulfan II	<3.6ug/kg dw	06/02/00		<b>GA0111</b>
4,4'-DDD	<3.6ug/kg dw	06/02/00		GA0111
Endosulfan Sulfate	<3.6ug/kg dw	06/02/00		GA0111
4,4'-DDT	<3.6ug/kg dw	06/02/00		GA0111
Methoxychlor	<19ug/kg dw	06/02/00		GA0111
Endrin Ketone	<3. Sug/kg dw	06/02/00		GA0111
Endrin Aldehyde	<3.6ug/kg dw	06/02/00		GA0111
alpha-Chlordane	<1.9ug/kg dw	06/02/00		GA0111
gamma-Chlordane	<1.9ug/kg dw	05/02/00		GA0111
Toxaphene	<187ug/kg dw	06/02/00		GA0111
Arodlor 1016	<1.9ug/kg dw	06/02/00		GA0111
Aroclor 1221	<1.9ug/kg dw	06/02/00		GA0111
Aroclor 1232	<1.9ug/kg dw	06/02/00		GA0111
Aroclor 1242	<1.9ug/kg dw	06/02/00		GA0111
Argelor 1248	'cl.9ug/kg dw	06/02/00		GA0111
Arodlor 1254	<1.9ug/kg dw	06/02/00		GA0111
Aroclor 1260	<1.9ug/kg dw	06/02/00		GA0111

ID:14000081 Mat:Soil 29-00-0002 MCKENNA LANDFILL GRID H12 1700H 05/16/00 G

PAI	RAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	Percent Solids	85%	05/19/00		WD0313
	Total Cyanide	<1.1mg/kg dw	06/06/00		WD0423
Total	Aluminum	6700mg/kg dw	06/09/00		MB2436
Total	Antimony	<35mg/kg dw	06/09/00		MB2436
Total	Arsenic by furnace method	4.0mg/kg dw	05/30/00		MB2390
Total	Barium	68mg/kg dw	06/09/00		MB2435
Total	Beryllium	<0.58mg/kg dw	06/09/00		MB2436
Total	Cadmium	1.6mg/kg dw	06/09/00		MB2436
Total	Calcium	4500mg/kg dw	06/09/00		MB2436
Total	Chromium	10mg/kg dw	06/09/00		MB2436
Total	Cobalt	34mg/kg d₩	06/09/00		MB2436
Total	Copper	llmg/kg dw	06/09/00		MB2436
Total	Iron	9500mg/kg dw	06/09/00		MB2436
Total	Lead	<12mg/kg dw	06/09/00		MB2436

State Laboratories, Inc. Analysis Results Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:

QC: 15 Lab I.D.: 10170

Sampled by: Client

ID:14000081 Nat:Soil	29-00-0002 McX	CENNA LANDFILL GRID F	H12 1700H 05/16/00 G		
PARAMETERS		RESULTS	DATE ANAL.	KEY	FILE#

PAI	RAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	******				~
Total	Magnesium	2000mg/kg dw	06/09/00		MB2436
Total	Manganese	320mg/kg dw	06/09/00		MB2436
Total	Mercury	<0.3mg/kg dw	05/26/00		MB2384
Total	Nickel	14mg/kg dw	06/09/00		MB2436
Total	Potapeium	580mg/kg dw	06/12/00		MB2443
Total	Selenium by furnace method	0.24mg/kg dw	05/30/00		WD2391
Total	Silver	<5.8mg/kg dw	06/09/00		MB2436
Total	Sodium	350mg/kg đw	06/12/00		MB2443
Total	Thallium by furnace method	<0.4mg/kg dw	06/09/00		ME2863
Total	Vanadium	<35mg/kg dw	06/09/00		MB2436
Total	Zino	42mg/kg dw	06/09/00		MB2436
5	CCL Volatiles by EFA Method 8260				
	Chloromethane	<4ug/kg dw	05/30/00		VM2900
	Bromomethane	<4ug/kg dw	05/30/00		VM2900
	Vinyl Chloride	<2ug/kg dw	05/30/00		VM2900
	Chloroethane	<4ug/kg dw	05/30/00		VM2900
	Methylene Chloride	7ug/kg dw	05/30/00	44	VM2900
	Acetone	<13ug/kg æ	05/30/00		VM2900
	Carbon Disulfide	<4ug/kg dw	05/30/00		VM2900
	1,1-Dichloroethene	<4ug/kg dw	05/30/00		VM2900
	1,1-Dichloroothane	<4ug/kg dw	05/30/00		VM2900
	trans-1,2-Dichloroethene	<4ug/kg dw	05/30/00		VM2900
	cis-1,2-Dichloroathene	<4ug/kg dw	05/30/00		VM2900
	Chloroform	<4ug/kg dw	<b>0</b> 5/30/0 <b>0</b>		VM2900
	1,2-Dichloroethane	<4ug/kg dw	05/30/00		VM2900
	2-Butanone	<13ug/kg dw	05/30/00		VM2900
	1,1,1-Trichloroethane	<4ug/kg dw	05/30/00		VM2900
	Carbon Tetrachloride	<4ug/kg dw	05/30/00		VM2900
	Bromodichloromethane	<4ug/kg dw	05/30/00		VM2900
	1,2-Dichloropropans	<4ug/kg dw	05/30/00		VM2900
	cis-1,3-Dichloropropene	<4ug/kg dw	05/30/00		VM2900
	Trichloroethene	<4ug/kg dw	05/30/00		VM2900
	Dibromochloromethane	<4ug/kg dw	05/30/00		VM2900
	1,1,2-Trichloroethane	<4ug/kg dw	05/30/00		VM2900
	Bonzene	<4ug/kg dw	05/30/00		VM2900
	trans-1,3-Dichloropropene	<4ug/kg dw	05/30/00		VM2900
	Bromoform	<4ug/kg dw	05/30/00		VM2900
	4-Methyl-2-pentanone	<13ug/kg dw	05/30/00		VM2900
	2-Hexanone	<13ug/kg dw	05/30/00		VM2900
	Tetrachloroethene	<4ug/kg dw	05/30/00		VM2900
	1,1,2,2-Tetrachloroethane	<4ug/kg dw	05/30/00		VM2900
	Toluene	<4ug/kg dw	05/30/00		VM2900
	Chlorobenzene	<4ug/kg dw	05/30/00		VM2900

Upstate Laboratories, Inc.

Analysis Results

Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ \_ - -QC: 1 \_ \_ Lab I.D.: 10170

Sampled by: Client

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILR#
Ethylbenzene	<4ug/kg dw	05/30/00		VM2900
Styrene	<4ug/kg dw	05/30/00		VM2900
m-Xylene and p-Xylene	<4ug/kg dw	05/30/00		VM2900
o-Xylene	<4ug/kg dw	05/30/00		VH2900
TCL Semivolatiles by EPA Method 8	<b>₽</b> 70			
		- 4 4 4 .		
Phenol	<390ug/kg dw	06/01/00		SA2428
bis(2-Chloroethyl)ather	<390ug/kg dw	05/01/00		9A2428
2-Chlorophenol	<390ug/kg dw	06/01/00		SA2428
1.3-Dichlorobenzene	<390ug/kg dw	05/01/00		SA2428
1,4-Dichlorobensene	<390ug/kg dw	06/01/00		SA2428
1,2-Dichlorobenzene	<390ug/kg dw	06/01/00		SA2428
2-Methylpheno1	<390ug/kg dw	06/01/00		SA2428
2,2'-Oxybis(1-Chloropromane)	<390ug/kg dw	06/01/00		SA2428
4-Mothylphenol	<390ug/kg dw	06/01/00		SA2428
n-Nitrosodi-n-propylamime	<390ug/kg dw	06/01/00		6A2428
Hexachloxoethane	<390ug/kg dw	06/01/00		SA2428
Nitrobenieno	<390ug/kg dw	06/01/00		SA2428
Isophorone	<390ug/kg du	06/01/00		SA2428
2-Nitrophenol	<390ug/kg dw	06/01/00		SA2428
2,4-Dimethylphenol	<390ug/kg dw	06/01/00		SA2428
bis (2-Chloroethoxy) methane	<390ug/kg dw	06/01/00		9A2428
2,4-Dichlorophenol	`<390ug/kg dw	06/01/00		SA2428
1,2,4-Trichlorobenzene	<390ug/kg dw	06/01/00		SA2428
Maphthalene	<390ug/kg <b>d</b> w	05/01/00		SA2428
4-Chloroaniline	<390ug/kg dw	06/01/00		SA2428
Hexachlorobutadiens	<390ug/kg dw	06/01/00		SA2428
4-Chloro-3-methylphenol	e390ug/kg dw	06/01/00		SA2428
2-Methylnaphthalene	<390ug/kg dw	06/01/00		SA2428
Hexachlorocyclopentadieno	<390ug/kg dw	06/01/00		5A2426
2,4,6-Trichlorophenol	<390ug/kg dw	06/01/00		SA2428
2,4,5-Trichlorophenol	<390ug/kg dw	06/01/00		922428
2-Chloronaphthalene	<390ug/kg dw	06/01/00		SA2428
2-Nitroaniline	<3900ug/kg dw	06/01/00		SA2428
Dimethylphthalate	<390ug/kg dw	06/01/00		SA2428
Acenaphthylene	<390ug/kg de	06/01/00		SA2428
2,6-Dinitrotoluene	<390ug/kg dw	06/01/00		SA2428
3-Nitroaniline	<3900ug/kg dw	06/01/00		SA2428
Acenaphthene	<390ug/kg dw	06/01/00		SA2428
2,4-Dinitrophenol	<3900ug/kg dw	06/01/00		6A2428
4-Nitrophenol	<3900ug/kg dw	06/01/00		BA2428
Dibenzofuran	<390ug/kg dw	06/01/00		SA2428
2,4-Dinitrotoluene	<390ug/kg dw	06/01/00		5A2428
Diethylphthalate	<390ug/kg dw	06/01/00		5A2426

tate Laboratories, Inc. Analysis Results

Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_\_\_\_

QC: 1 - Lab I.D.: 10170

Sampled by: Client

ID:14000082 Mat:Soil 29-00-0002 MCKENNA LANDFILL GRID D21 1700H 05/16/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	22000 //	05/03/00		<b>4</b> 2.4.4.0
bis (2-Chloroethyl) ether	<390ug/kg dw	06/01/00		SA2428
2-Chlorophenol	<390ug/kg dw	05/01/00		SA2428
1,3-Dichlorobenzene	<390ug/kg dw	06/01/00		SA2428
1,4-Dichlorobenzene	<390ug/kg dw	06/01/00		SA2426
1,2-Dichlorobenzene	<390ug/kg dw	06/01/00		SA2428
2-Methylphenol	<390ug/kg dw	06/01/00		SA2428
2,2'-Oxybis(1-Chloropropane)	<390ug/kg dw	06/01/00		SA2428
4-Mathylphenol	<390ug/kg dw	06/01/00		SA2428
n-Nitrosodi-n-propylamine	<390ug/kg dw	06/01/00		SA2428
Hexachloroethane	<390ug/kg dw	06/01/00		SA2428
Nitrobenzene	<390ug/kg dw	06/01/00		SA2428
Isophorone	<390ug/kg dw	06/01/00		SA2428
2-Nitrophenol	<390ug/kg dw	06/01/00		5A2428
2,4-Dimethylphenol	<390ug/kg dw	06/01/00		SA2428
bis(2-Chloroethoxy)methane	<390ug/kg dw	06/01/00		SA2428
2,4-Dichlorophenol	<390ug/kg dw	06/01/00		SA2428
1,2,4-Trichlorobenzene	<390ug/kg dw	05/01/00		SA2428
Naphthalene	<390ug/kg dw	06/01/00		SA2428
4-Chloroaniline	<390ug/kg dw	06/01/00		SA2428
Hexachlorobutadiene	<390ug/kg <b>dw</b>	06/01/00		3 <b>2428</b>
4-Chloro-3-methylphenol	<390ug/kg dw	05/01/00		SA2428
2-Methylnaphthalene	<390ug/kg dw	06/01/00		SA2428
Hexachlorocyclopentadiene	<390ug/kg dw	06/01/00		8 <b>242</b> 8
2,4,6-Trichlorophenol	<390ug/kg dw	06/01/00		SA2428
2,4,5-Trichlorophenol	<390ug/kg dw	06/01/00		SA2428
2-Chloronaphthalene	<390ug/kg dw	06/01/00		SA2428
2-Nitroaniline	<3900ug/kg dw	05/01/00		SA2428
Dimethylphthalate	<390ug/kg dw	06/01/00		SA2428
Acemaphthylene	<390ug/kg dw	06/01/00		SA2428
2,6-Dinitrotoluene	<390ug/kg dw	06/01/00		SA2428
3-Nitroaniline	<3900ug/kg dw	06/01/00		SA2428
Acenaphthene	<390ug/kg dw	06/01/00		SA2428
2,4-Dinitrophenol	<3900ug/kg dw	06/01/00		SA2428
4-Nitrophenol	<3900ug/kg dw	05/01/00		SA2428
Dibenzofuran	<390ug/kg dw	06/01/00		SA2428
2,4-Dinitrotoluene	<390ug/kg dw	06/01/00		5A2428
Diethylphthalate	<390ug/kg dw	06/01/00		SA2428
4-Chlorophanylphenylather	<390ug/kg dw	06/01/00		SA2428
Fluorene	<390ug/kg dw	06/01/00		SA2428
4-Nitroaniline	<3900ug/kg dw	06/01/00		SA2428
2-Methyl-4,6-dinitrophenol	<3900ug/kg dw	06/01/00		5A2428
n-Nitrosodiphenylamine	<390ug/kg dw	06/01/00		SA2428
4-Bromophenylphonylether	<390ug/kg dw	06/01/00		SA2428
Hexachlorobenzens	<390ug/kg dw	06/01/00		SA2428

Opstate Laboratories, Inc. Analysis Results Report Number: 14000079

Client I.D.; CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_\_\_\_

QC: 7 - Lab I.D.: 10170

Sampled by: Client

ID:14000082 Nat:Soil 29-00-0002 MCKENNA	ANDFILL GRID D21 170	он 05716/00 G		·
PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Pentachlorophenol	<780ug/kg dw	06/01/00		SA2428
Phenanthrone	<390ug/kg dw	06/01/00		SA2428
Anthracene	<390ug/kg dw	06/01/00		SA2428
Carbaxole	<390ug/kg dw	06/01/00		SA2428
di-n-butylphthalate	<390ug/kg dw	06/01/00		SA2428
Fluoranthone	<390ug/kg dw	06/01/00		SA2428
Pyrene	<390ug/kg dw	06/01/00		SA2428
Butylbenzylphthalate	<390ug/kg dw	06/01/00		SA2428
3,3'-Pichlorobenzidine	<390ug/kg dw	06/01/00		SA2428
Benzo (a) anthracene	<390ug/kg dw	06/01/00		SA2428
Chrysene	<390ug/kg dw	06/01/00		SA2428
bis(2-Ethylhexyl)phthalate	<390ug/kg dw	06/01/00		SA2428
di-n-octylphthalate	<390ug/kg dw	06/01/00		SA2428
Benzo (b) fluoranthene	<390ug/kg dw	06/01/00		SA2428
Benzo (k) fluoranthene	<390ug/kg d <b>w</b>	06/01/00		SA2428
Benzo (a) pyrene	<390ug/kg dw	06/01/00		SA2428
Indeno(1,2,3-cd)pyrene	<390ug/kg dw	06/01/00		SA2428
Dibenzo (a, h) anthracene	<390ug/kg dw	06/01/00		SA2428
Benzo (ghi) perylene	<390ug/kg dw	06/01/00		SA2428
EPA Method 8150				
2,4-D	`<3.9ug/kg dw	06/01/00		GA0107
2,4,5-T	<3.9ug/kg dw	06/01/00		GA0107
2,4,5-TP (Silvex)	<3.9ug/kg dw	06/01/00		GA0107
Dinoseb	<3.9ug/kg dw	06/01/00		GA0107
TCL Pesticides/Aroclors by EPA 8080				
BHC (a-isomer)	<2.0ug/kg dw	06/03/00		GA0111
BHC (b-isomer)	<2.0ug/kg dw	06/03/00		GX0111
BHC (d-1somer)	<2.0ug/kg dw	06/03/00		GA0111
BHC (g-isomer)	<2.0ug/kg dw	06/03/00		GA0111
Heptachlor	<2.0ug/kg dw	05/03/00		CAQ111
Aldrin	<2.0ug/kg dw	06/03/00		GA0111
Heptachlor Epoxide	<2.0ug/kg dw	06/03/00		GA0111
Endosulfan I	<2.0ug/kg dw	06/03/00		GA0111
Dieldrin	<3.9ug/kg dw	06/03/00		GA0111
4,4'-DDE	8.0ug/kg dw	06/03/00		GA0111
Endrin	<3.9ug/kg dw	06/03/00		GA0111
Endosulfan II	<3.9ug/kg dw	05/03/00		GA0111
4,4'-DDD	<3.9ug/kg dw	06/03/00		GA0111
Endosulfan Sulfate	<3.9ug/kg dw	06/03/00		GA0111
4,4'-DDT	<3.9ug/kg dw	06/03/00		GA0111
Methoxychlor	c20ug/kg dw	06/03/00		GA0111
Endrin Retone	<3.9ug/kg dw	06/03/00		GA0111

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Frate Laboratories, Inc. Analysic Results

Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

Sampled by: Client

ID:14000082 Mat:Soil	29-00-0002 MCKENNA	LANDFILL GRID D21	1/00H 03/16/00 G	
0.000000000		71 E 6177 D.O	A144 3355	

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
******				
Endrin Aldehyds	<3.9ug/kg dw	06/03/00		GA0111
alpha-Chlordane	<2.0ug/kg dw	06/03/00		GA0111
gamma-Chlordane	<2.0ug/kg dw	06/03/00		GA0111
Toxaphene	<200ug/kg dw	06/03/00		GA0111
Aroclor 1016	<2.0ug/kg dw	06/03/00		GA0111
Aroclor 1221	<2.0ug/kg dw	06/03/00		GA0111
Aroclor 1232	<2.0ug/kg dw	06/03/00		GA0111
Aroclor 1242	<2.0ug/kg dw	06/03/00		GA0111
Aroclor 1248	<2.0ug/kg dw	06/03/00		GA0111
Aroclor 1254	<2.0ug/kg dw	06/03/00		GA0111
Aroclor 1260	<2.Dug/kg dw	06/03/00		GA0111

ID:14000083 Mat:Soil 29-00-0002 MCKENNA LANDFILL GRID G25 1700H 05/16/00 G

PA	rameters	RESULTS	DATE ANAL.	KEY	FILE#
				~	
	Percent Solida	94%	05/19/00		WWD031
	Total Cyanide	<1.0mg/kg dw	DE/0E/00		WD0423
Total	Aluminum	6100mg/kg dw	06/09/00		MB2436
Total	Ancimony	<32mg/kg dw	05/09/00		MB2436
Total	Arsenic by furnace method	4.1mg/kg dw	05/30/00		MB2390
Total	Barium	45mg/kg dw	06/09/00		MB2436
Total	Beryllium	<0.53mg/kg dw	06/09/00		MD2436
Total	Cadmium	1.6mg/kg dw	06/09/00		MB2436
Total	Calcium	3300mg/kg dw	06/09/00		MB2436
Total	Chromium	10mg/kg dw	06/09/00		MB2436
<b>Total</b>	Cobalt	29mg/kg dw	06/09/00		MB2436
Total	Copper	9.lmg/kg dw	06/09/00		MB2436
Total	Iron	8800mg/kg dw	06/09/00		MB2436
Total	Lead	12mg/kg dw	06/09/00		MB2436
Total	Magnesium	1700mg/kg aw	06/09/00		MB2436
Tota1	Manganese	290mg/kg dw	06/09/00		MB2436
Total	Mercury	<0.3mg/kg dw	05/26/00		MB2384
Total	Nickel	14mg/kg dw	06/09/00		MB2436
Total	Potassium	750mg/kg dw	06/12/00		MB2443
Total	Selenium by furnace method	<0.2mg/kg dw	05/30/00		WD2391
Total	Silver	<5.3mg/kg dw	06/09/00		MB2436
Total	Sodium	320mg/kg dw	06/12/00		MB2443
Total	Thallium by furnace method	<0.4mg/kg dw	06/09/00		ME2863
Total	Vanadium	< 32mg/kg dw	06/09/00		MB2436
Total	Zinc	30mg/kg dw	06/09/00		MB2436
7	CL Volatiles by RPA Method 8260				

<3ug/kg dw 05/30/00 Chloromethane VM2900

Upstate Laboratories, Inc.

Analysis Results

Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_\_\_\_\_ QC: 1 - Lab I.D.: 10170

Sampled by: Client

ID:14000083 Mat:Soil 29-00-0002 MCKENNA LANDFILL GRID G25 1700H 05/16/00 G

os macigota aproductional		0011 03/10/00 0		
PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	**	05/00/00		
Bromomathane	<3ug/kg dw	05/30/00		VM2900
Vinyl Chloride	<2ug/kg dw	05/30/00		VM2900
Chloroethane	<3ug/kg dw	05/30/00	4.4	VM2 9 0 0
Methylene Chloride	12ug/kg dw	05/30/00	44	VM2900
Acetone	<1lug/kg dw	05/30/00		VM2900
Carbon Disulfide	<3ug/kg dw	05/30/00		VM2900
1,1-Dichloroethene	<3ug/kg dw	05/30/00		VM2900
1,1-Dichloroethane	<3ug/kg dw	05/30/00		VM2900
trans-1,2-Dichloroethone	<3ug/kg dw	05/30/00		VM2900
cis-1,2-Dichloroethens	<3ug/kg dw	05/30/00		VM2900
Chloroform	<3ug/kg dw	05/30/00		VM2900
1,2-Dichloroethane	<3ug/kg dw	05/30/00		VM2900
Z-Butanone	<li><li><li><li></li></li></li></li>	05/30/00		VM2900
1,1,1-Trichloroethane	<3ug/kg dw	05/30/00		VM2900
Carbon Tetrachloride	<3ug/kg dw	05/30/00		VM2900
Bromodichloromethane	<3ug/kg dw	05/30/00		VM2900
1,2-Dichloropropane	<3ug/kg dw	05/30/00		VM2900
cis-1,3-Dichloropropene	<3ug/kg dw	05/30/00		VM2900
Trichloresthene	<3ug/kg dw	05/30/00		VM2900
Dibromochloromethane	<3ug/kg dw	05/30/00		VM2900
1,1,2-Trichloroethane	<3ug/kg dw	05/30/00		VM2900
Benzene	<3ug/kg dw	05/30/00		VM2900
trans-1,3-Dichloropropens	`<3ug/kg dw	05/30/00		VM2900
Bromoform	<3ug/kg dw	05/30/00		VM2900
4-Methyl-2-pentanone	<1lug/kg dw	05/30/00		VM2900
2-Hexanone	<li>&lt;1lug/kg dw</li>	05/30/00		VM2900
Tetrachloroethene	<3ug/kg dw	05/30/00		VM2900
1,1,2,2-Tetrachloroethane	<3ug/kg dw	05/30/00		VM2900
Toluene	<3ug/kg dw	05/30/00		VM2900
Chlorobenzene	<3ug/kg dw	05/30/00		VX(2900
Ethylbenzene	<3ug/kg dw	05/30/00		VM2900
Styrene	<3ug/kg dw	05/30/00		VM2900 VM2900
m-Xylene and p-Xylene	<a href="#">Aug/kg dw</a>	05/30/00		VM2900 VM2900
o-Xylene	<3ug/kg dw	05/30/00		VM2500
TCL Semivolatiles by EPA Method 8	270			
Phenol	<350ug/kg dw	06/01/00		SA2428
bis(2-Chloroethyl)ether	<350ug/kg dw	06/01/00		SA2428
2-Chlorophenol	<350ug/kg &w	06/01/00		SA2428
1,3-Dichlorobenzene	<350ug/kg dw	06/01/00		SA2428
1.4-Dichlorobenzene	<350ug/kg dw	06/01/00		SAZ428
1,2-Dichlorobenzene	<350ug/kg dw	06/01/00		5A2428
2-Methylphenol	<350ug/kg dw	06/01/00		SA2428
2,2'-Oxybis(1-Chloropropane)	<350ug/kg dw	06/01/00		SA2428

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state Laboratories, Inc. Analysis Results Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL: \_ \_ \_ \_ QC: Tab I.D.: 10170
Sampled by: Client

ID:14000083 Mat:Soil 29-00-0002 MCKENNA LANDFILL GRID G25 1700H 05/16/00 G

AMETERS	RESULTS	DATE ANAL.	KEY	file#
	and the state of t	06/01/00		653438
4-Mothylphenol	<350ug/kg dw	06/01/00		5A2428
n-Nitrosodi-n-propylamine	<350ug/kg dw	06/01/00		SA2428
Hexachloroethane	<350ug/kg dw	06/01/00		SA2428
Nitrobenzene	<350ug/kg dw	06/01/00		SA2428
Isophorone	<350ug/kg dw	06/01/00		SA2428
2-Nitrophenol	<350ug/kg dw	06/01/00		SA2428
2,4-Dimethylphenol	<350ug/kg dw	06/01/00		SA2428
bic (2-Chloroethoxy) methane	<350ug/kg dw	06/01/00		SA2428
2,4-Dichlorophenol	<350ug/kg dw	06/01/00		SA2428
1,2,4-Trichlorobenzena	<350ug/kg dw	06/01/00		5 <b>A2428</b>
Naphthalene	<350ug/ <b>kg đ</b>	06/01/00		SA2428
4-Chloroaniline	<350ug/kg dw	06/01/00		SA2428
Mexachlorobutadiene	<350ug/kg dw	06/01/00		SA2428
4-Chloro-3-methylphenol	<350ug/kg dw	06/01/00		SA2428
2-Methylnaphthalene	<350ug/kg dw	06/01/00		5A2428
Hexachlorocyclopentadiene	<350ug/kg dw	06/01/00		SA2428
2,4,6-Trichlorophenol	<350ug/kg dw	06/01/00		<b>SA2428</b>
2,4,5-Trichlorophenol	<350ug/kg dw	06/01/00		SA2428
2-Chloronaphthalene	<350ug/kg dw	06/01/00		SA2428
2-Nitroaniline	<3500ug/kg dw	06/01/00		SA2428
Dimethylphthalate	<350ug/kg dw	06/01/00		SA2428
Acenaphthylene	<350ng/kg dw	06/01/00		SA2428
2,6-Dinitrotoluene	<350ug/kg dw	06/01/00		SA2428
3-Nitroaniline	<3500ug/kg dw	06/01/00		SA2428
Acenaphthene	<350ug/kg dw	06/01/00		SA2428
2.4-Dinitrophenol	<3500ug/kg dw	06/01/00		5A2428
• • • • • • • • • • • • • • • • • • • •	<3500ug/kg dw	06/01/00		SA2428
4-Nitrophenol	<350ug/kg dw	06/01/00		SA2428
Dibenzofuran	<b>-</b>			SA2428
2,4-Dinitrotoluene	<350ug/kg dw	06/01/00		SA2428
Diethylphthalate	<350ug/kg dw	06/01/00		
4-Chlorophenylphenylether	<350ug/kg dw	06/01/00		SA2428
Fluorena	<350ug/kg dw	06/01/00		\$A2428
4-Nitroaniline	<3500ug/kg dw	06/01/00		SA2428
2-Methyl-4,6-dimitrophenol	<3500ug/kg dw	06/01/00		SA2428
n-Nitrosodiphenylamine	<350ug/kg dw	06/01/00		SA2426
4-Bromophenylphenylether	<350ug/kg dw	06/01/00		SA2428
Hexachlorobenzene	<350ug/kg dw	06/01/00		SA2428
Pentachlorophenol	<700ug/k <b>g &amp;w</b>	06/01/00		SA2428
Phenanthrene	<350ug/kg dw	06/01/00		SA2428
Anthracene	<350ug/kg dw	05/01/00		SA2428
Carbazole	<350ug/kg dw	06/01/00		SA2428
di-n-butylphthalata	<350ug/kg <b>dw</b>	06/01/00		SA2428
Fluoranthene	<350ug/kg dw	06/01/00		SA2428
Pyrene	<350ug/kg dw	06/01/00		SA2428

Upstate Laboratories, Inc.

Analysis Results

Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ \_ \_ ~ QC: 12 - Lab I.D.; 10170 Sampled by: Client

ID:14000083 Mat:Soil 29-00-0002 MCKENNA LANDFILL GRID G25 1700H 05/16/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	PILE#
Total homest which - 1 - ha	-74	05/01/00	,***	
Butylbensylphthalate	<350ug/kg dw	06/01/00		SA2428
3,3'-Dichlorobenzidine	<350ug/kg dw	06/01/00		SA2428
Benzo (a) anthracene	<350ug/kg dw	06/01/00		SA2428
Chrysene	<350ug/kg dw	06/01/00		SA2428
bis(2-Ethylhexyl)phthalate	<350ug/kg dw	06/01/00		SA2428
di-n-octylphthalate	<350ug/kg dw	06/01/00		SA2428
Benzo(b) fluoranthene	<350ug/kg dw	06/01/00		SA2428
Benzo (k) fluoranthene	c350ug/kg dw	06/01/00		SA2428
Benzo(a)pyrene	<350ug/kg dw	06/01/00		SA2428
Indeno (1,2,3-cd) pyrene	<350ug/kg dw	05/01/00		SA2428
Dibenzo(a,h)anthrecene	<350ug/kg dw	06/01/00		SA2428
Benzo(ghi)perylene	<350ug/kg dw	06/01/00		\$ <b>A24</b> 28
EPA Method 8150				
2,4-D	<3.5ug/kg dw	06/01/00		GA0107
2,4,5-T	<3.5ug/kg dw	06/01/00		GA0107
2,4,5-TP (Silvex)	<3.5ug/kg dw	06/01/00		GA0107
Dinoseb	<3.5ug/kg dw	06/01/00		GA0107
TCL Pesticides/Aroclors by EPA 808	0			
BHC (a-isomer)	<1.8ug/kg dw	06/03/00		GA0111
BHC (b-isomer)	<1.8ug/kg dw	06/03/00		GA0111
BHC (d-isomer)	<1.8ug/kg dw	06/03/00		GA0111
BEC (g-isomer)	<1.8ug/kg dw	06/03/00		GA0111
Heptachlor	<1.8ug/kg dw	06/03/00		GA0111
Aldrin	<1.8ug/kg dw	06/03/00		
Heptachlor Epoxide				GA0111 GA0111
Endosulfan I	<1.8ug/kg dw <1.8ug/kg dw	06/03/00 06/03/00		
Dieldrin	<1.oug/kg dw	06/03/00		GAO111
4,4'-DDE		• • • • • • • • • • • • • • • • • • • •		GA0111
Endrin	<3.6ug/kg dw <3.6ug/kg dw	06/03/00		GA0111
Endosulfan II	2. 2	06/03/00		GA0111
	<3.6ug/kg dw	06/03/00		GA0111
4,4'-DDD	<3.6ug/kg dw	06/03/00		GA0111
Endosulfan Sulfate	<3.6ug/kg dw	06/03/00		GA0111
4,4'~DDT	<3.6ug/kg dw	00/E0/30		GA0111
Methoxychlor	<18ug/kg dw	06/03/00		GA0111
Andrin Ketone	<3.6ug/kg dw	06/03/00		GA0111
Endrin Aldehyde	<3.6ug/kg dw	06/03/00		GA0111
alpha-Chlordane	<1.8ug/kg dw	06/03/00		GA0111
gamma-Chlordana	<1.8ug/kg dw	06/03/00		GA0111
Toxaphene	<180ug/kg dw	06/03/00		GA0111
Aroclor 1016	<1.8ug/kg dw	06/03/00		GA0111
Aroclor 1221	<1.8ug/kg dw	06/03/00		GA0111
Aroclor 1232	<1.8ug/kg d~	06/03/00		GA0111

tate Laboratories, Inc. inalysis Results Report Number: 14000079
Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_\_\_\_ QC;\_{T - Lab I.D.: 10170 Sampled by: Client

ID:14000083 Mat:Soil 29-00-0002 MCKENNA LANDFILL GRID G25 1700H 05/16/00 G

Parameters	RESULTS	DATE ANAL.	KEY	FILE#
Aroclor 1242	<1.8ug/kg dw	06/03/00		GA0111
Aroclor 1248	<1.8ug/kg dw	06/03/00		GA0111
Aroclor 1254	<1.8ug/kg dw	06/03/00		GA0111
Aroclor 1260	<1.8ug/kg dw	06/03/00		GA0111

Upstate Laboratories, Inc. Analysis Results Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_\_\_\_ 

Sampled by: Client

ID:14000081 Mat:Sol1 29-00-0002 NCKENNA	LANDFILL GRID H12 170	oH 05/16/00 G	<b></b>	
PARAMETERS	RESULTS	DATE ANAL.	KEY	PILE#
95 15 15 15 15 15 15 15 15 15 15 15 15 15		45/01/05		
4-Chlorophenylphenylether	wb gx\gunges	06/01/00		5A2428
Fluorene	<390ug/kg dw	06/01/00		5A2428
4-Nitroaniline	<3900ug/kg dw	06/01/00		SA2428
2-Methyl-4,6-dinitrophenol	<3900ug/kg dw	06/01/00		SA2428
n-Nitrosodiphenylamine	<390ug/kg dw	06/01/00		SA2428
4-Bromophenylphenylether	<390ug/kg dw	06/01/00		SA2428
Rexachlorobenzene	<390ug/kg dw	06/01/00		SA2428
Pentachlorophenol	<780ug/kg dw	06/01/00		SA2428
Phenanthrana	<390ug/kg dw	05/01/00		SA2428 SA2428
Anthracene	<390ug/kg dw	06/01/00		
Carbarole	<390ug/kg dw	06/01/00		SA2428 SA2428
di-n-butylphthalate	<390ug/kg dw	06/01/00		
Fluoranthene	<390ug/kg dw	06/01/00		SA2428
Pyrene	<390ug/kg dw	06/01/00		SA2428
Butylbenzylphthalate	<390ug/kg dw	06/01/00		SA2428
3,3'-Dichlorobenzidine	<390ug/kg dw	06/01/00		SA2428
Benzo (a) anthracene	<390ug/kg dw	06/01/00		SA2428
Chrysene	<390ug/kg dw	06/01/00		SA2428
bis (2-Ethylhexyl) phthalate	<390ug/kg dw	06/01/00		\$A2428
di-n-octylphthalate	<390ug/kg dw	06/01/00		SA2428
Benzo (b) fluoranthene	<390ug/kg dw	06/01/00		5A2478
Benzo(k) fluoranthene	<390ug/kg dw	06/01/00		SA2428 \
Benzo(a) pyrene	<390ug/kg dw	06/01/00		SA2428
Indeno (1,2,3-cd) pyrene	<390ug/kg dw	06/01/00		SA2428
Dibenzo(a,h)anthracene	<390ug/kg dw	06/01/00		SA2428
Benzo(ghi)perylene	<390ug/kg dw	06/01/00		SA2428
EPA Method 8150				
7.4.5	2 2/>- 4	06/01/00		CN 07 07
2,4-D	7.3ug/kg dw <3.9ug/kg dw	06/01/00		GA0107 GA0107
2,4,5-T	<3.9ug/kg dw	06/01/00		GA0107
2,4,5-TP (Silvex) Dinoseb	<3.9ug/kg dw	06/01/00		GA0107
Dinosen	<3.30g/xg dw	08/01/00		GAULU!
TCL Penticides/Aroclors by EPA 848	30			
BHC (a-isomer)	<2.0ug/kg dw	06/03/00		GA0111
BHC (b-isomer)	<2.0ug/kg dw	06/03/00		GA0111
BHC (d-isomer)	<2.0ug/kg dw	06/03/00		GA0111
BHC (q-isomer)	<2.0ug/kg dw	06/03/00		GA0111
Reptachlor	<2.0ug/kg dw	06/03/00		GA0111
Aldrin	<2.0ug/kg dw	06/03/00		GA0111
	<2.0ug/kg dw	06/03/00		GA0111
Hoptachlor Epoxide Endosulfan I	<2.0ug/kg dw	06/03/00		GA0111
	<3.9ug/kg dw	06/03/00		GA0111
Dieldrin		06/03/00		GA0111
4,4'-DDE	<3.9ug/kg dw	00/03/00		AUGITY

dw = Dry weight

rate: / /

state Laboratories, Inc.

Analysis Results

Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ \_ \_ -

QC: 12 - Lab I.D.: 10170

Sampled by: Client

ID:14000081 Mat:soil 29-00-0002 MCKENNA LANDFILL GRID H12 1700H 05/16/00 G

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
		••••		
Endrin	<3.9ug/kg <b>d</b> w	06/03/00		GA0111
Endosulfan II	<3.9ug/kg dw	06/03/00		GA0111
4,4'-DDD	<3.9ug/kg dw	06/03/00		GA0111
Endosulfan Sulfate	<3.9ug/kg dw	06/03/00		GA0111
4,4'-DDT	<3.9ug/kg dw	06/03/00		GA0111
Mathoxychlor	<20ug/kg dw	06/03/00		GA0111
Endrin Ketone	<3.9ug/kg dw	06/03/00		GA0111
Endrin Aldehyde	<3.9ug/kg dw	06/03/00		GA0111
alpha-Chlordane	<2.0ug/kg dw	06/03/00		GA0111
gamms-Chlordane	<2.0ug/kg dw	06/03/00		GAOLLL
Toxaphene	<200ug/kg dw	06/03/00		GA0111
Aroclor 1016	<2.0ug/kg dw	06/03/00		GA0111
Aroclor 1221	<2.0ug/kg dw	06/03/00		GA0111
Aroclor 1232	<2.0ug/kg dw	06/03/00		GA0111
Aroclor 1242	<2.0ug/kg dw	05/03/00		GA0111
Arcclor 1248	<2.0ug/kg dw	06/03/00		GA0111
Aroclor 1254	<2.0ug/kg dw	06/03/00		GA0111
Aroclor 1260	<2.0ug/kg dw	06/03/00		GA0111

ID:14000082 Mat: 5011 29-00-0002 MCKENNA LANDFILL GRID D21 1700H 05/16/00 G

PA	RAMETERS	RESULTS .	DATE ANAL.	KEY	FILE#
			••		
	Fercent Solids	85%	05/19/00		WD0313
	Total Cyanide	<1.0mg/kg dw	06/06/00		WDQ423
Total	Aluminum	5400mg/kg dw	06/09/00		MB2436
Total	Antimony	<35mg/kg dw	06/09/00		MB2436
Total	Arsenic by furnace method	1.5mg/kg dw	05/30/00		MB2390
Total	Barium	<35mg/kg dw	06/09/00		MB2436
Total	Beryllium	0.63mg/kg dw	06/09/00		MB2436
Total	Cadmium	1.9mg/kg dw	06/09/00		MB2436
Total	Calcium	110000mg/kg dw	06/09/00		MB2436
Total	Chromium	12mg/kg dw	05/09/00		MB2436
Total	Cobalt	41mg/kg dw	06/09/00		MB2436
Total	Copper	15mg/kg dw	06/09/00		MB2436
Total	Iron	12000mg/kg dw	06/09/00		MB2436
Total	Lead	15mg/kg dw	06/09/00		MB2436
Total	Magnesium	14000mg/kg dw	06/09/00	,	MB2436
Tota1	Manganese	360mg/kg dw	06/09/00		MB2436
Total	Mercury	<0.3mg/kg dw	05/26/00		MB2384
Total	Nickel	23mg/kg dw	06/09/00		MB2436
Total	Potassium	1700mg/kg dw	06/12/00		MB2443
Total	Selenium by furnace method	0.16mg/kg dw	05/30/00		WD2391
Total	Silver	<5.8mg/kg dw	06/09/00		MB2436

Jpstate Laboratories, Inc.

analysis Results

Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_\_\_\_\_ QC: 12 \_ Lab I.D.: 10170

Sampled by: Client

ID: 14000082 F	Mat:Soil 29-00-0002 MCKENNA	LANDFILL GRID D21 170	OH 05/16/00 G		
	RAMETERS	RESULIS	DATE ANAL.	KEY	PILE#
	,	740	06/27/00	<del>-</del>	~~~~
Total	Sodium	340mg/kg dw	06/12/00		NB2443
Total	Thallium by furnace method	<0.4mg/kg dw	06/09/00		ME2863
Total	Vanadium	<35mg/kg dw	06/09/00		MB2436
Total	Zinc	36mg/kg dw	06/09/00		MB2436
	CCL Volatiles by EPA Method 8260				
	Ohlamanahana	Anatha da	05/30/00		37X2000
	Chloromethane	<4ug/kg dw <4ug/kg dw	05/30/00		VM2900 VM2900
	Bromomethane	<2ug/kg dw	05/30/00		VM2900
	Vinyl Chloride	<2ug/kg dw	05/30/00		VM2900
	Chloroethane		•	44	VM2900
	Methylene Chloride	12ug/kg đw <13ug/kg dw	05/30/00 05/30/00	77	VM2900
	Acatone Carbon Disulfide	<4ug/kg dw	05/30/00		VM2900
		<4ug/kg dw	05/30/00		VM2900
	1,1-Dichloroethene	<b>-</b>	05/30/00		VM2900
	1,1-Dichloroethane	<4ug/kg dw	*. *		VM2900
	trans-1,2-Dichloroethene	<4ug/kg dw	05/30/00		
	cis-1,2-Dichlorcethene	<4ug/kg dw	05/30/00		VM2900
	Chloroform	<4ug/kg dw	05/30/00		VM2900
	1,2-Dichloroethane	<4ug/kg dw	05/30/00		VM2900
	2-Butanone	<13ug/kg dw	05/30/00		VM2900
	1,1,1-Trichloroethane	<4ug/kg dw	05/30/00		VM2900
	Carbon Tetrechloride	<4ug/kg dw	05/30/00		VM2900
	Bromodichloromethane	<4ug/kg dv	05/30/00		VM2900
	1,2-Dichloropropane	<4ug/kg dw	05/30/00		VM2900
	cis-1,3-Dichloropropens	<4ug/kg dw	05/30/00		VM2900
	Trichloroethene	<4ug/kg dw	05/30/00		VM2900
	Dibromochloromethane	<4ug/kg dw	05/30/00		VM2900
	1,1,2-Trichloroethane	<4ug/kg dw	05/30/00		VM2900
	Benzene	<4ug/kg &w	05/30/00		VM2900
	trans-1,3-bichloropropewe	<4ug/kg dw	05/30/00		VM2900
	Bromoform	<4ug/kg dw	05/30/00		VM2900
	4-Methyl-2-pentanone	<13ug/kg dw	05/30/00		VM2900
	2-Hexanone	<13ug/kg dw	05/30/00		VM2900
	Tetrachloroethene	<4ug/kg dw	05/30/00		VM2900
	1,1,2,2-Tetrachloroethame	<4ug/kg dw	05/30/00		VM2900
	Toluene	<4ug/kg dw	05/30/00		VM2900
	Chlorobenzene	<4ug/kg dw	05/30/00		VM2900
	Ethylbenzene	<4ug/kg dw	<b>0</b> 5/30/00		VM2900
	Styrene	<4ug/kg dw	05/30/00		VM2900
	m-Xylene and p-Xylene	<4ug/kg d₩	05/30/00		VM2900
	o-Xylene	<4ug/kg dw	05/30/00		VM2900
	CL Semivolatiles by EFA Nethod 6,2	70			
	Phenol	<390ug/kg dw	06/01/00		SA2428

pstate Laboratories, Inc. Report Number: 14000079 Client I.D.: CIMINELLI SERVICES GROUP CORP. APPROVAL: QC1\_ 2> \_ Lab I.D.: 10170 Sampled by: Client

ID:15200015 Mat: Soil 29-00-0002 MCKENNA LANDFILL GRID A-27 TOPSOIL 0700H 05/30/00 G

PA	rameters	results	DATE ANAL.	KEY	Pile#
~ •	Percent Solids	714	06/01/00		WD0453
	Total Cyanide	<1.4mg/kg dw	05/13/00		WD0458
Total	Aluminum	6900mg/kg dw	06/09/00		MB2436
Total	Antimony	<42mg/kg dw	06/09/00		MB2436
Total	Argenic by furnace method	2,3mg/kg dw	06/09/00		MB2438
Total	Barium	59mg/kg dw	06/09/00		MB2436
Total	Beryllium	<0.70mg/kg dw	06/03/00		MB2436
Total	Cadmium	1.9mg/kg dw	06/09/00		MB2436
Total	Calcium	22000mg/kg dw	06/09/00		MB2436
Total	Chromium	lang/kg dw	06/09/00		MB2436
Total	Cobalt	39mg/kg dw	06/09/00		MB2436
Total	Copper	15mg/kg dw	06/09/00		MB2416
Total	Iron	12000mg/kg dw	06/09/00		MB2436
Total	Lead	<14mg/kg dw	06/09/00		MB2436
Total	Magnesium	3900mg/kg dw	06/09/00		M32436
Total	Manganese	340mg/kg dw	06/09/00		MB2436
Total	Mercury	<0.4mg/kg dw	06/06/00		MB2420
Total	Nickel	21mg/kg dw	06/09/00		MB2435
Total	Potassium	1300mg/kg dw	06/12/00		MB2443
Total	selenium by furnace method	0.59mg/kg dw	06/09/00		MB2439
Total	Silver	<7.0mg/kg dw	06/09/00		MB2436
Total	sodium .	420mg/kg dw	06/12/00		MB2443
Total	Thallium by furnace method	1. Smg/kg dw	06/14/00		ME2870
Total	Vanadium	<42mg/kg dw	05/09/00		MB2436
Total	Zinc	46mg/kg dw	06/09/00		MB2436
	TCL Volatiles by EPA Method 8260				
	Chloromathane	<8ug/kg dw	06/09/00	05	VM2913
	Eromomethana	< Bug/kg aw	06/09/00	05	VM2913
	Vinyl Chloride	< Gug/kg dw	06/09/00	05	VH2913
	Chloroethane	<8ug/kg dw	06/09/00	05	VM2913
	Mathylens Chloride	16ug/kg dw	06/09/00	44	VM2913
	Adetone	370 pg/kg dw	06/09/00	44	VM2913
	Carbon Disulfide	<bug dw<="" kg="" td=""><td>D6/09/0p</td><td><b>Q</b>5</td><td>VM2913</td></bug>	D6/09/0p	<b>Q</b> 5	VM2913
	1.1-Dichloroethene	<8ug/kg dw	06/09/00	05	VM2913
	1,1-Dichloroethans	<8µg/kg dw	06/09/00	<b>Q</b> 5	VM2913
	trans-1,2-Dichloroethene	<bug dw<="" kg="" td=""><td>06/09/00</td><td>05</td><td>VM2913</td></bug>	06/09/00	05	VM2913
	cis-1,2-Dichloroethene	<8ug/kg dw	06/09/00	0.5	VM2913
	Chloreform	<8ug/kg dw	06/09/00	05	VM2913
	1,2-Dichloroathane	<8ug/kg dw	06/09/00	<b>Q</b> 5	VM2913
	2-Butanone	<28 vg/kg dw	06/09/00	<b>Q</b> 5	VM2913
	1,1,1-Trichloroathane	<8ug/kg dw	06/09/00	05	VM2913
	Carbon Tetrachloride	<8ug/kg dw	06/09/00	05	VM2913
	Bromodichloromethane	<8ug/kg dw	06/09/00	05	VM2913

Upstate Laboratories, Inc.

Analysis Results

Report Number: 14000079

Client I.D.; CININELLY SERVICES GROUP CORP.

APPROVAL:\_\_\_\_\_

QC: TI - Lab I.D.: 10170

Sampled by: Client

	·	·	
ID:15200015 Mat   Soil	29-00-0000 Makiring	TANDETEL CETO 1-27	TOPSOIL 0700H 05/30/00 G
TD: T34000T3 NGF (887+		TO STATE OF THE PROPERTY AND AND AND AND AND AND AND AND AND AND	# # # # # # # # # # # # # # # # # # #

Parameters	resul <b>t</b> s	DATE ANAL.	KEY	bile#
	****		455	,-,-,-
1,2-Dichloropropane	< 8ug/kg dw	06/09/00	05	VM2913
cis-1,3-Dichloropropene	< gna / ka qw	06/09/00	05	VM2913
Trichloroethene	<gra>gra/ka qw</gra>	06/09/00	05	VM2913
Dibromochloromethane	<8ug/kg dw	06/09/00	05	VM2913
1,1,2-Trichlorosthane	<gnd\ka qa<="" td=""><td>06/09/00</td><td>05</td><td>VM2913</td></gnd\ka>	06/09/00	05	VM2913
Benzene	<grafixa gw<="" td=""><td>06/09/00</td><td>05</td><td>VM2913</td></grafixa>	06/09/00	05	VM2913
trans-1,3-Dichloropropens	<8ug/kg dw	06/09/00	05	VM2913
Bromoform	<8ug/kg dw	06/09/00	05	VM2913
4-Methyl-2-pentanone	<28ug/kg dw	06/09/00	05	VH2913
2-Hexanone	<28ug/kg dw	06/09/00	05	VM2913
Tetrachloroethene	<8ug/kg dw	06/09/00	05	VM2913
1,1,2,2-Tetrachloroethane	<8ug/kg dw	06/09/00	0.5	VM2913
Toluene Chlorobenzene	< dug/kg dw	06/09/00	05 05	VM2913
	<8ug/kg dw	06/09/00	05	VM2913
Sthylbenzene	<8ug/kg dw	05/09/00	05	VM2913
Styrene	<8ug/kg dw	06/09/00	05	VM2913
m-Nylene and p-Nylene	llug/kg dw	06/09/00		VM2913
o-Xylane	< flug/kg đư	06/09/00	05	VM2913
TCL Semivolatiles by RPA Method 8270				
				~
Pheno1	<470ug/kg dw	06/07/00		<i>5</i> <b>A</b> 2 <b>4</b> 32
bis (2-Chlorosthyl) ether	<410ha/ka dw	06/07/00		8A2432
2-Chlorophenol	<470ug/kg dw	06/07/00		82432
1,3-Dichlorobenzene	<47 pug/kg dw	06/07/00		BA2432
1, 6-Dichlorobensene	c470ug/kg dw	06/07/00		SA2432
1,2-Dichlorobenzeno	<470ug/kg dw	06/07/00		SA2432
2-Methylphenol	<470ug/kg dw	06/07/00		SA2432
2,2'-Oxybis (1-Chloropropane)	<470 ug/kg dw	05/07/00		9 <b>A2432</b>
4-Methylphenol	<470ug/kg dw	06/07/00		SA2432
n-Nitrosodi-n-propylamine	<470ug/kg dw	06/07/00		5A2432
Hexachlorouthane	<470ug/kg dw	06/07/00		8A2432
Nitrobenzene	<470ug/kg dw	06/07/00		BA2432
Inophorone	<470ug/kg dw	06/07/00		<b>9A24</b> 32
2-Nitrophanol	<470ug/kg dw	06/07/00		SA2432
2,4-Dimethylphenol	<470ug/kg dw	06/07/00		SA2432
bis (2~Chloroathoxy) mathane	<470ug/kg dw	06/07/00		SA2432
2,4-Dichlorophenol	<670ug/kg dw	06/07/00		SA2432
1,2,4-Trichlorobenzene	<470ug/kg dw	06/07/00		SA2432
Naphthelene	<470ug/kg dw	Q6/Q7/QQ		SA2432
4-Chloroaniline	<470ug/kg dw	06/07/00		SA2432
Hexachlorobutadiene	<470ug/kg dw	06/07/00		SA2432
4-Chloro-3-methylphenol	<470ug/kg dw	06/07/00		SAZ432
2-Methylnaphthalene	<470ug/kg dw	06/07/00		942432
Hexachlorocyclopentadione	<470ug/kg dw	06/07/00		SA2432

Upstate Laboratories, Inc. Analysis Results Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ \_ \_ \_

Sampled by: Client

ID: 15200015 Mat: 5011 29-00-0002 MCKENNA LANDFILL GRID A-27 TOPSOIL 0700H 05/30/00 G

<pre>&lt;470ug/kg dw &lt;470ug/kg dw</pre>	06/07/00 06/07/00 06/07/00 06/07/00 06/07/00 06/07/00 06/07/00 06/07/00 06/07/00	•••	SA2432 SA2432 SA2432 SA2432 SA2432 SA2432 SA2432 SA2432 SA2432
<pre>&lt;470ug/kg dw &lt;470ug/kg dw</pre>	06/07/p0 06/07/00 06/07/00 06/07/00 06/07/00 06/07/00 06/07/00 06/07/00 06/07/00 06/07/00		SAZ432 6A2432 SA2432 SA2432 SA2432 SA2432 SA2432 SA2432
<470ug/kg dw <470ug/kg dw <470ug/kg dw <470ug/kg dw <470ug/kg dw <470ug/kg dw <4700ug/kg dw <4700ug/kg dw <4700ug/kg dw <4700ug/kg dw <4700ug/kg dw <4700ug/kg dw <470ug/kg dw <470ug/kg dw <470ug/kg dw <470ug/kg dw <470ug/kg dw <470ug/kg dw	06/07/00 06/07/00 06/07/00 06/07/00 06/07/00 06/07/00 06/07/00 06/07/00 06/07/00		6x2432 Sx2432 Sx2432 Sx2432 Sx2432 Sx2432 Sx2432
<pre>&lt;4700ug/kg dw &lt;470ug/kg dw &lt;470ug/kg dw &lt;470ug/kg dw &lt;4700ug/kg dw &lt;4700ug/kg dw &lt;4700ug/kg dw &lt;4700ug/kg dw &lt;4700ug/kg dw &lt;4700ug/kg dw &lt;470ug/kg dw &lt;470ug/kg dw &lt;470ug/kg dw &lt;470ug/kg dw &lt;470ug/kg dw &lt;470ug/kg dw</pre>	06/07/00 06/07/00 06/07/00 06/07/00 06/07/00 06/07/00 06/07/00 06/07/00 06/07/00		SA2432 SA2432 SA2432 SA2432 SA2432 SA2432
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<470ug/kg dw	AC /AM /AA		SA2432
	06/07/00		EA2432
-470	96/07/00		SA2432
<470ug/kg dw	06/07/00		SA2432
<4700ug/kg dw	06/07/05		SA2432
<4700ug/kg dw	06/07/00		SA2432
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<470ug/lig dw	06/07/00		SA2432
c4.6ug/kg dw	06/13/00		GA0130
	06/13/00		GA0130
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Upstate Laboratories, Inc.

Analysis Results

Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:

QC: 17 Lab I.D.; 10170

Sampled by: Client

		- ~ ~	
ID: 15200019 Mat: 5011	29-00-0002 MCKENN	A TANDFILL GRID D-9	TOPSOIL 0700H 05/30/00 G
TO: POWORDED WEEL OUTE	The Reserved wednesday	in morning distant measure in &	

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	####### 4. 4		~ ~ ~	
Browomethane	<4ug/kg dw	05/06/00		VM2909
Vinyl Chloride	<3 ng/kg dw	06/06/00		VM2909
Chioroethane	<4ug/kg dw	06/08/00		VM2909
Methylene Chloride	12ug/kg dw	06/06/00	44	VM2909
Acetone	<13µg/kg dw	06/06/00		VM2909
Carbon Disulfide	<4ug/kg dw	06/06/00		VM2909
1,1-Dichloroethene	<4ug/kg dw	04/06/00		VM2909
1,1-Dichloroethane	< 4ug/kg dw	06/06/00		VM2909
trans-1,2-Dichlorosthens	<4ug/kg dw	06/06/00		VM2909
cis-1,2-Dichloroethene	c4ug/kg dw	06/06/00		VM2909
Chloroform	<4ug/kg dw	06/06/00		VM2909
1,2-Dichloroethane	< tug/kg dw	06/06/00		VM2909
2-Butanone	<13ug/kg dw	06/06/00		6068MA
1,1,1-Trichlorosthane	<4ug/kg dw	06/06/00		VM2909
Carbon Tetrachloride	<4ug/kg dw	06/06/00		VM2909
Bromodichloromethane	<4ug/kg dw	06/06/00		VM2909
1,2-Dichloropropana	<4ug/kg dw	06/05/00		VM290 <i>9</i>
cis-1,3-Dichleropropeme	<4ug/kg dw	06/06/00		VM2909
Trichlorosthene	<4ug/kg dw	06/06/00		VM2909
Dibromochloromothane	<4ug/kg dw	06/06/00		VM290
1,1,2-Trichloroethane	<4ug/kg dw	06/06/00		VM2909
Benzena	<4ug/kg dw	06/06/00		VM2909
trans-1,3-Dichloropropens	<4 ug/kg dw	06/06/00		VM2909
Bromoform	<4ug/kg dw	06/06/00		<b>VM2909</b>
4-Methyl-2-pentenone	<13ug/kg dw	06/06/00		VX2909
2-Hexanone	<13ug/kg dw	06/06/00		VM2909
Tetrachlorosthene	<4ug/kg dw	06/06/00		VM2909
1,1,2,2-Tetrachloroathane	<4ug/kg dw	06/06/00		VM2909
Toluene	<4ug/kg dw	06/06/00		VM2909
Chlorobonzene	<44g/kg dw	06/06/00		VM2909
Kthylbenzene	<4ug/kg dw	06/06/00		VM2909
Styrene	< fug/kg dw	06/06/00		VM2909
m-Xylene and p-Xylene	< fug/kg dw	06/06/00		VM2909
c-Xylene	<4ug/kg dw	06/06/00		VM2909
TCL Semivolatiles by EPA Method, 8270				
	4-			
Phenol	<440ug/kg dw	06/07/00		SA2432
bis (2-Chloroethyl) ather	<440ug/kg dw	06/07/00		SA2432
1-Chlorophenol	<440ug/kg dw	06/07/00		SA2432
1,3-Dichlorobenzone	<440µg/kg dw	06/07/00		SA2432
1,4-Dicklorobenzene	<440ug/kg dw	06/07/00		SA2432
1,2-Dichlorobenzene	<440ug/kg dw	06/07/00		8A2432
2-Methylphenol	<440 ug/kg dw	06/07/00		SA2432
2,2'=Oxybis(1-Chloroprepane)	<440ug/kg dw	06/07/00		5 <b>24</b> 32

P.20/25 P, 19

DATE: / /

metato Laboratories, Inc. Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_\_ \_ .. QCI\_{T = Lab I.D.: 10170

Sampled by: Client

ID:15200019 Mat:8011 29-00-0002 MCKENNA LANDFILL GRID D-9 TOPSOIL 0700H 05/30/00 G

PARAMETERS	results	DATE ANAL.	XEA	FILE#
4-Methylphenol	<440ug/kg dw	06/07/00		SA2432
n-Mitrosodi-n-propylamine	<440ug/kg dw	06/07/00		SA2432
Hexachloroethana	<410ug/kg dw	06/07/00		SA2432
Nitrobenzena	<440ug/kg dw	06/07/00		SA2432
Isophorone	<440ug/kg dw	05/07/00		SA2432
2-Nitrophenol	<440ug/kg dw	06/07/00		SA2432
2,4-Dimethylphenol	<440ug/kg dw	06/07/00		SA2432
bis (2-Chloroathoxy) methans	<440ug/kg dw	06/07/00		SA2432
2.4-Dichlorophenol	<440ug/kg dw	06/07/00		SA2432
1,2,4-Trichlorobenzene	<440ug/kg dw	06/07/00		8A2432
Naphthalene	<440ug/kg dw	06/07/00		BA2432
4-Chloroaniline	<440 ug/kg dw	96/07/00		5A2432
Hexachlorobutadiene	<440ug/kg dw	06/07/00		5 <b>A24</b> 32
4-Chloro-3-methylphenol	<440ug/kg dw	06/07/00		SA2432
2-Mathylnaphthalene	<440ug/kg dw	06/07/00		SA2432
Hoxachlorocyclopentadiene	<440ug/kg dw	06/07/00		5A2492
2,4,6-Trichlorophenol	<440ug/kg dw	06/07/00		SA2432
2,4,5-Trichlorophenol	<440ug/kg dw	06/07/00		582432
2-Chloronaphthalene	<440ug/kg dw	06/07/00		8A2432
2-Nitroaniline	<4400ug/kg dw	06/07/00		SA2432
Dimethylphthalate	<440ug/kg dw	06/07/00		SA2432
Acenaphthylene	<440ug/kg dw	06/07/00		SA2432
2,6-Dinitrotoluene	<440ug/kg dw	06/07/00		SA2432
3-Nitroaniline	<4400ug/kg dw	05/07/00		SA2432
Acenaphthene	<440ug/kg dw	06/07/00		SA2432
2,4-Dinitrophenol	<4400µg/kg dw	05/07/00		9A2432
4-Nitrophenol	<4400ug/kg dw	06/07/00		SA2432
Dibenzofuran	<440ug/kg dw	06/07/00		SA2432
2,4-Dinitrotoluene	<440ug/kg dw	06/07/00		SA2432
Diethylphthalate	<440ug/kg dw	06/07/00		5A2432
4-Chlorophonylphonylether	<440ug/kg dw	06/07/00		SA2432
Fluorene	<440ug/kg dw	PF/07/00		SA2432
4-Nitrosniline	<4400ug/kg dw	05/07/00		SA2432
2-Methyl-4,6-dinitrophenol	<4400ug/kg dw	96/97/00		<b>SA2432</b>
n-Mitrosodiphenylamine	<440ug/kg dw	06/07/00		SA2432
4-Bromophenylphenylether	<440ug/kg dw	06/07/00		982432
Hexachlozobensene	<440ug/kg dw	06/07/00		SA2432
Pentachlorophenol	<bbdug dw<="" kg="" td=""><td>06/07/00</td><td></td><td>SA2432</td></bbdug>	06/07/00		SA2432
Phenanthrane	<440ug/kg dw	06/p7/00		982432
Anthracene	<440ug/kg dw	06/07/00		SA2432
Carbazole	<440ug/kg dw	96/97/99		9A2432
di-n-butylphthalate	<440ug/kg dw	06/07/00		SA2432
Fluoranthene	<440ug/kg dw	06/07/00		SA2432
Pyrene	<440ug/kg <b>4w</b>	06/07/00		SA2432

Upstate Laboratories, Inc. Analysis Results Report Number: 14000079 Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL: \_\_ \_ \_ oc: 1 - rep 1.p.: 10140 Sampled by: Client

ID:15200019 Mat:Soil 29-00-0002 MCKENMA LANDFILL GRID D-9 TOPSOIL 0700H 05/30/00 G

ARAMETERS	results	DATE ANAL.	KEY	FILE#
		7 M 3 - 5 T T W W		7 <b>- 4</b>
Butylbenzylphthalate	<440ug/kg dw	06/07/00		<b>SA24</b> 32
3,3'-Dichlorobenzidine	<440ug/kg dw	06/07/00		8 <b>A243</b> 2
Benzo (a) anthracens	<440ug/kg dw	06/07/00		SA2432
Chrysene	<440ug/kg dw	06/07/00		5 <b>A</b> 2432
bis(2-Ethylhexyl)phthalare	<440 ug/kg dw	05/07/00		SA2432
di-n-oorylphthalace	<440ug/kg dw	06/07/00		SA2432
Benzo (b) fluoranthene	<440ug/kg dw	06/07/00		9 <b>A243</b> 2
Benzo (k) Iluoranthene	<440ug/kg dw	06/07/00		8A2432
Benzo (a) pyrene	<440ug/kg dw	06/07/00		SA2432
Indeno(1,2,3-cd)pyrana	<440ug/kg dw	06/07/00		5A2432
Dibenso (a, h) anthracens	<440ug/kg dw	06/07/00		SA2432
Benzo (ghi) perylene	<440ug/kg dw	06/07/00		<b>SA24</b> 32
EPA Method 8150				
· Bertuum mass				
2,4-D	<4.4ug/kg dw	06/13/00		GA0130
2,4,5-T	<4.4ug/kg dw	06/13/00		GA0130
2,4,5-TP (Silvex)	<4.6ug/kg dw	06/13/00		GA0130
Dinoseb	<4.4ug/kg dw	06/13/00		GA0130
TCL Pesticides/Aroclors by EPA 30	80			•
	. D. D	AC (55 (50		
BHC (a-isomer)	<2.3ug/kg dw	06/13/00		QA0129
BHC (b-isomer)	<2.3ug/kg dw	06/13/00		GA0129
BHC (d-isomer)	<2-3ug/kg dw	06/13/00		<b>GY015</b> 8
BHC (g-isomer)	<2.3 ug/kg dw	06/13/00		GA0129
Heptachlor	<2,3ug/kg dw	06/13/00		GA0129
Aldrin	<2.3ug/kg dw	06/13/00		GA0129
Heptachlor Epoxide	<2.3ug/kg dw	06/13/00		GA0129
Endosulfan I	<2.3ug/kg dw	06/13/00		GA0129
Dieldrin	<4.4ug/kg dw	06/13/00		GA0129
. 4,4'-DDE	<4,4ug/kg dw	06/13/00		GA0129
Endrin	<4.4ug/kg dw	06/13/00		<b>GA0129</b>
Endosulfan II	<4.4ug/kg dw	06/13/00		GA0129
4, 4'-DDD	<4.4ug/kg dw	06/13/00		GAD129
Endosulfan Sulfate	<4.4ug/kg dw	06/13/00		GAQ129
4,4'-DDT	<4.4ug/kg dw	06/13/00		GA0129
Methoxychlor	<23ug/kg dv	06/13/00		GA0129
Endrin Ketone	< f. 4ug/kg dw	06/13/00		GNOIZS
Rndrin Aldebyde	<4.4ug/kg dw	06/13/00		GA0129
alpha-Chlordane	<2.3µg/kg dw	06/13/00		GA0129
gamma-Chlordana	<2.3ug/kg dw	06/13/00		GA0129
Toxaphene	<225ug/kg dw	06/13/00		GY0139
Aroclor 1016	<2.3ug/kg dw	06/13/00		GA0129
Aroclor 1221	<2.lug/kg dw	06/13/00		GA0129

**VM2909** 

VM2909

06/06/00

DATE:

Upstate Laboratories, Inc. Analysis Results Report Number: 14000079 Client I.D.: CIMINELLI SERVICES GROUP CORP. APPROVAL:\_\_\_\_

QC: 41 - Lab I, b.: 10170

NO.001

Sampled by: Client

TD 15200019 Mat: Soll 29-00-0002 MCKENNA LANDFILL GRID D-9 TOFSOLL 0700H 05/30/00 G

PARAMETERS		results	DATE ANAL.	XEY	PILE#
PF			<b>电影有电热的电影器</b>		
Aroclor Aroclor Aroclor	1248 1254	<2.3ug/kg dw <2.3ug/kg dw <2.3ug/kg dw <2.3ug/kg dw	06/13/00 06/13/00 06/13/00 06/13/00		GA0129 GA0129 GA0129 GA0129

ID: 15200020 Mat: Solid 29-00-0002 MCKENNA LANDFILL WALCH CLAY 1430R 05/30/00 G

P.2	ARAMETERS	RESULTS	DATE ANAL.	Key	FILE#
	Parcent Solids Total Cyanide Aluminum Antimony Arsenic by furnace method Barium Baryllium Cadmium Cadmium Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury Nickel Fotassium Selenium by furnace method Silver Sodium Thallium by furnace method Vanadium Zinc Lead Volatiles by EPA Method 8260 Chloromethane	93% <1.lmg/kg dw 21000mg/kg dw 48mg/kg dw 48mg/kg dw 1.5mg/kg dw 1.9omg/kg dw 4.3mg/kg dw 4.3mg/kg dw 31mg/kg dw 26mg/kg dw 26mg/kg dw 400mg/kg dw 400mg/kg dw 400mg/kg dw 400mg/kg dw 40mg/kg dw 43mg/kg dw 43mg/kg dw 43mg/kg dw 43mg/kg dw 65.3mg/kg dw 340mg/kg dw 36mg/kg dw 36mg/kg dw	06/01/00 06/03/00 06/03/00 06/03/00 06/03/00 06/03/00 06/03/00 06/03/00 06/03/00 06/03/00 06/03/00 06/03/00 06/03/00 06/03/00 06/03/00 06/03/00 06/03/00 06/03/00 06/03/00		WD0453 WD0468 MB2436

TCL Volatiles by EPA Hethod 8260	64mg/kg dw	06/03/00		MB2436 MB2436
Chloromethane Bromomethane Vinyl Chloride Chloroethane Methylene Chloride Acetone Carbon Disulfide 1,1-Dichloroethene	<pre>&lt;3ug/kg dw &lt;3ug/kg dw &lt;3ug/kg dw &lt;3ug/kg dw 12ug/kg dw 24ug/kg dw &lt;3ug/kg dw</pre>	06/Q6/00 Q6/Q6/QQ Q6/Q6/QQ Q6/Q6/QQ Q6/Q6/QQ Q6/Q6/QQ	<del>44</del> 44	VM2909 VM2909 VM2909 VM2909 VM2909

## 2. BROCKPORT SITE TOPSOIL

## Geotechnical Testing Suramary

GZA estimates that less than 5,000 cubic yards of topsoil from the Brockport site was used for topsoil construction. Test frequencies are summarized below. Table D15 summarizes the geotechnical laboratory test results.

### BROCKPORT SITE TOPSOIL GEOTECHNICAL LAB TESTING SUMMARY

Test Designation	Required Frequency	Number of Tests Done	Estimated Quantity of Fill Placed	Estimated Test Frequency
Natural Moisture	Ea. 5,000 Cubic	1	<5,000 Cubic	> Ea. 5,000
Content (ASTM	Yards		Yards	Cubic Yards
D2216)				Placed
Grain Size	Ea. 5,000 Cubic	1	<5,000 Cubic	> Ea. 5,000
Analysis (ASTM	Yards		Yards	Cubic Yards
D422)				Placed
Organic Content	Ea. 5,000 Cubic	1	<5,000 Cubic	> Ea. 5,000
(ASTM D2974)	Yards		Yards	Cubic Yards
				Placed
pH (ASTM	Ea. 5,000 Cubic	1	<5,000 Cubic	> Ea. 5,000
D4972)	Yards		Yards	Cubic Yards
				Placed

# Chemical Testing Summary

Pre-construction chemical characterization testing was done for the Brockport site topsoil. Chemical characterization testing was required for every 5,000 cubic yards of soil used. Two samples were tested for a test frequency of greater than 1 test per 2,500 cubic yards. The samples were tested for the following parameters.

Parameter	Extraction/Preparation (1)	Analysis (1)				
TCL <sup>(2)</sup> Volatile Organic	5050	8260 (95-1)				
Compounds						
TCL Semi-Volatile Organic	TCL Semi-Volatile Organic 3540/3550 8270 (95-2)					
Compounds						
Pesticides/PCB's	3540/3550	8080				
Herbicides	picides 3580					
TAL <sup>(3)</sup> Metals	(3) Metals 3050					
Cyanide		9012				

<sup>&</sup>lt;sup>1</sup> EPA SW-846.

GZA reviewed the laboratory test results submitted by CSC's analytical laboratory, Upstate, and tabulated the compounds detected for each sample. A table of the compounds detected for each material type is included herein as Table D16, along with the laboratory data. GZA compared the reported chemical concentrations versus recommended soil cleanup objective values and eastern United States background values shown in the tables.

Based on GZA's review, the chemical characterization test results for this material was acceptable. Therefore, the Brockport site topsoil was considered acceptable for topsoil.

<sup>&</sup>lt;sup>2</sup> TCL – Target Compound List.

<sup>&</sup>lt;sup>3</sup> TAL – Target Analyte List.

# Table D15

# SUMMARY OF BULK SAMPLE LABORATORY TESTING BRUCKPORT TOPSOIL

# MCKENNA HANDFILL REWEDIAL CLOSURE PROJECT ALBION, NY

SAMPLE NUMBER	NATURAL MOISTURE CONTENT	ORGANIC CONTENT (%)	ASH (%)	% FINER THAN #200 SEIVE	pH in H₂O	pH in 0.01M CaCl <sub>2</sub>	BORROW SOURCE
09271-2	12.8	1.4	98.6	58	6.8	7.0	Brockport

#### Chemical Characterization Results for Brockport Topsoil Samples Brockport-1, Brockport-2 Taken From Brockport Source

#### McKenna Landfill Remedial Closure Project Albion, New York

Parameter	Recommended Soil Cleanup Objective ppm	Eastern USA Background ppm	Brockport-1 ppm	Brockport-2 ppm
VOC - EPA Method 8260 (	(ррш)			
Methylene Chloride	0.1	N/A	0.004	N/D
Acetone	0.2	N/A	N/D	N/D
2-Butanone	0.3	N/A	N/D	N/D
Toluene	1.5	N/A	0.009	N/D
SVOC - EPA Method 8270	(ppm)			
No Compounds Detected		N/A	N/D	N/D
HERBICIDES - EPA Meth	od 8150 (ppm)			
2,4 -D	0.5	N/A	N/D	N/D
	PA Method 8082 (ppm)			
Endosulfan Sulfate	l l	N/A	0.0042	0.0062
Priority Pollutant Metals (p	ipm)			00127 PAGE 3007 (APOCA7)
Aluminum	SB	33,000	8100	13,000
Antimony	SB	N/A	180	40
Arsenic	7.5 or SB	3-12	4.6	N/D
Barium	300 or SB	15-600	59	98
Beryllium	0.16 or SB	0-1.75	N/D	0.8
Cadmium	1 or SB	0.1-1	2.3	3.2
Calcium	SB	130-35,000	12,000	5,200
Chromium	1 10 or SB	1.5-40	14	19
Cobalt	30 or SB	2.5-60	32	43
Copper	25 or SB	1-50	11	18
Iron	2000 or SB	2000-550,000	12,000	16,000
Lead	SB	See Note 5	31	N/D
Magnesium	SB	100-5000	2,300	2,200
Manganese	SB	50-5000	350	880
Mercury	0.1	0.001-0.2	0.24	0.17
Nickel	13 or SB	0.5-25	21	27
Potassium	SB	8500-43,000	1700	2300
Selenium	2 or SB	0.1-3.9	0.22	0.25
Silver	SB	N/A	N/D	N/D
Sodium	SB	6000-8000	440	470
Thallium	SB	N/A	N/D	N/D
Vanadium	150 or SB	1-300	N/D	N/D
Zinc	20 or SB	9-50	37	54

#### Notes:

- 1. Only compounds detected in one or more samples are presented on this table. Refer to original data sheets for list of all compounds included in analysis.
- 2. Analytical testing completed by Upstate Laboratories, Inc.
- 3. Recommended soil cleanup objectives are based on the Division Technical and Administrative Guidance Memorandum

(TAGM) 4046 on Determination of Soil Cleanup Objectives and Cleanup Levels in its final form.

- 4. ND = not detected, NA = not available
- 5. Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4-61 ppm. Average background levels in metropolitan or suburban areas or near highways are much higher and typically range from 200-500 ppm.
- 6. mg/kg = ppm

Upstate Laboratories, Inc.

Analysis Results

Report Number: 26201039

Client I.D.: CIMINELLI SERVICES GROUP CORP. MACKENNA LANDFILL

Sampled by: Client TOP SOIL/BROCKPORT 09/18/01

ULI I.D.: 26201039 Matrix: Soil

	RAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	Parant Calida	01%			
	Percent Solids	81%	09/20/01		WD6375
m - + - 1	Total Cyanide	12mg/kg dw	09/20/01		WD6267
Total	Aluminum	8100mg/kg dw	09/20/01		MB3846
Total	Antimony	180mg/kg dw	09/26/01		MB3862
Total	Arsenic by furnace method	4.6mg/kg dw	09/25/01		MB3857
Total	Barium	59mg/kg dw	09/20/01		MB3846
Total	Beryllium	<0.62mg/kg dw	09/20/01		MB3846
Total	Cadmium	2.3mg/kg dw	09/20/01		MB3846
Total	Calcium	12,000mg/kg dw	09/20/01		MB3846
Total	Chromium	14mg/kg dw	09/20/01		MB3846
Total	Cobalt	32mg/kg dw	09/20/01		MB3846
Total	Copper	11mg/kg dw	09/20/01		MB3846
Total	Iron	12,000mg/kg dw	09/20/01		MB3846
Total	Lead	31mg/kg dw	09/20/01		MB3846
Total	Magnesium	2300mg/kg dw	09/20/01		MB3846
Total	Manganese	350mg/kg dw	09/20/01		MB3846
Total	Mercury	0.24mg/kg dw	09/20/01		MB3847
Total	Nickel	21mg/kg dw	09/20/01		MB3846
Total	Potassium	1700mg/kg dw	09/25/01		MB3858
Total	Selenium by furnace method	0.22 mg/kg dw	09/24/01		MF 5
Total	Silver	<6.2mg/kg dw	09/20/01		ML6
Total	Sodium	440mg/kg dw	09/25/01		MB3858
Total	Thallium by furnace method	<0.38mg/kg dw	09/25/01		MB3857
Total	Vanadium	<37mg/kg dw	09/20/01		MB3846
Total	Zinc	37mg/kg dw	09/20/01		MB3846
7	TCL Volatiles by EPA Method 8260				
	Chloromethane	<4ug/kg dw	09/24/01		VM3640
	Bromomethane	<4ug/kg dw	09/24/01		VM3640
	Vinyl Chloride	<2ug/kg dw	09/24/01		VM3640
	Chloroethane	<4ug/kg dw	09/24/01		VM3640
	Methylene Chloride	4ug/kg dw	09/24/01	44	VM3640
	Acetone	<12ug/kg dw	09/24/01		VM3640
	Carbon Disulfide	<4ug/kg dw	09/24/01		VM3640
	1,1-Dichloroethene	<4ug/kg dw	09/24/01		VM3640
	1,1-Dichloroethane	<4ug/kg dw	09/24/01		VM3640
	trans-1,2-Dichloroethene	<4ug/kg dw	09/24/01		VM3640
	cis-1,2-Dichloroethene	<4ug/kg dw	09/24/01		VM3640
	Chloroform	<4ug/kg dw	09/24/01		VM3640
	1,2-Dichloroethane	<4ug/kg dw	09/24/01		VM3640

APPROVAL:

Upstate Laboratories, Inc.

alysis Results

port Number: 26201039

APPROVAL:
QC: PS\_\_\_\_

Client I.D.: CIMINELLI SERVICES GROUP CORP. MACKENNA LANDFILL

TOP SOIL/BROCKPORT 09/18/01 Sampled by: Client

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
2-Butanone	<12ug/kg dw	09/24/01		VM3640
1,1,1-Trichloroethane	<4ug/kg dw	09/24/01		VM3640
Carbon Tetrachloride	<4ug/kg dw	09/24/01		VM3640
Bromodichloromethane	<4ug/kg dw	09/24/01		VM3640
1,2-Dichloropropane	<4ug/kg dw	09/24/01		VM3640
cis-1,3-Dichloropropene	<4ug/kg dw	09/24/01		VM3640
Trichloroethene	<4ug/kg dw	09/24/01		VM3640
Dibromochloromethane	<4ug/kg dw	09/24/01		VM3640
1,1,2-Trichloroethane	<4ug/kg dw	09/24/01		VM3640
Benzene	<4ug/kg dw	09/24/01		VM3640
trans-1,3-Dichloropropene	<4ug/kg dw	09/24/01		VM3640
Bromoform	<4ug/kg dw	09/24/01		VM3640
4-Methyl-2-pentanone	<12ug/kg dw	09/24/01		VM3640
2-Hexanone	<12ug/kg dw	09/24/01		VM3640
Tetrachloroethene	<4ug/kg dw	09/24/01		VM3640
1,1,2,2-Tetrachloroethane	<4ug/kg dw	09/24/01		VM3640
Toluene	9ug/kg dw	09/24/01		VM3640
Chlorobenzene	<4ug/kg dw	09/24/01		VM3640
Ethylbenzene	<4ug/kg dw	09/24/01		VM3640
Styrene	<4ug/kg dw	09/24/01		VM3640
m,p-xylene	<4ug/kg dw	09/24/01		VM3640
o-Xylene	<4ug/kg dw	09/24/01		VM3640

ULI I.D.: 26201039 Matrix: Soil

TCL	Semivo:	latiles	bу	EPA	Method	8270

Phenol	<380ug/kg dw	09/26/01	SA3036
bis(2-Chloroethyl)ether	<380ug/kg dw	09/26/01	SA3036
2-Chlorophenol	<380ug/kg dw	09/26/01	SA3036
1,3-Dichlorobenzene	<380ug/kg dw	09/26/01	SA3036
1,4-Dichlorobenzene	<380ug/kg dw	09/26/01	SA3036
1,2-Dichlorobenzene	<380ug/kg dw	09/26/01	SA3036
2-Methylphenol	<380ug/kg dw	09/26/01	SA3036
2,2'-Oxybis(1-Chloropropane)	<380ug/kg dw	09/26/01	SA3036
4-Methylphenol	<380 ug/kg dw	09/26/01	SA3036
n-Nitrosodinpropylamine	<380ug/kg dw	09/26/01	SA3036
Hexachloroethane	<380ug/kg dw	09/26/01	SA3036
Nitrobenzene	<380ug/kg dw	09/26/01	SA3036
Isophorone	<380ug/kg dw	09/26/01	SA3036
2-Nitrophenol	<380ug/kg dw	09/26/01	SA3036
2,4-Dimethylphenol	<380ug/kg dw	09/26/01	SA3036
bis(2-Chloroethoxy)methane	<380ug/kg dw	09/26/01	SA3036

Upstate Laboratories, Inc.

Analysis Results

Report Number: 26201039

Client I.D.: CIMINELLI SERVICES GROUP CORP. MACKENNA LANDFILL

Sampled by: Client TOP SOIL/BROCKPORT 09/18/01

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	200 //			
2,4-Dichlorophenol	<380ug/kg dw	09/26/01		SA3036
1,2,4-Trichlorobenzene	<380ug/kg dw	09/26/01		SA3036
Naphthalene	<380ug/kg dw	09/26/01		SA3036
4-Chloroaniline	<380ug/kg dw	09/26/01		SA3036
Hexachlorobutadiene	<380ug/kg dw	09/26/01		SA3036
4-Chloro-3-methylphengl	<380ug/kg dw	09/26/01		SA3036
2-Methylnaphthalene	<380ug/kg dw	09/26/01		SA3036
${ t Hexachlorocyclopentad}$ ene	<380ug/kg dw	09/26/01		SA3036
2,4,6-Trichlorophenol	<380ug/kg dw	09/26/01		SA3036
2,4,5-Trichlorophenol	<380ug/kg dw	09/26/01		SA3036
2-Chloronaphthalene	<380ug/kg dw	09/26/01		SA3036
2-Nitroaniline	<3800ug/kg dw	09/26/01		SA3036
Dimethylphthalate	<380ug/kg dw	09/26/01		SA3036
Acenaphthylene	<380ug/kg dw	09/26/01		SA3036
2,6-Dinitrotoluene	<380ug/kg dw	09/26/01		SA3036
3-Nitroaniline	<3800ug/kg dw	09/26/01		SA3036
Acenaphthene	<380ug/kg dw	09/26/01		SA3036
2,4-Dinitrophenol	<3800ug/kg dw	09/26/01		SA3036
4-Nitrophenol	<3800ug/kg dw	09/26/01		SA3036
Dibenzofuran	<380 ug/kg dw	09/26/01		SA3 ^ 3 6
2,4-Dinitrotoluene	<380 ug/kg dw	09/26/01		S1 _5
Diethylphthalate	$\sim <380 \text{ ug/kg}$ dw	09/26/01		SA3 6
4-Chlorophenylphenylether	<380 ug/kg dw	09/26/01		SA3036
Fluorene	<380 ug/kg dw	09/26/01		SA3036
4-Nitroaniline	<3800ug/kg dw	09/26/01		SA3036
2-Methyl-4,6-dinitrophenol	<3800ug/kg dw	09/26/01		SA3036
n-Nitrosodiphenylamine	<380ug/kg dw	09/26/01		SA3036
4-Bromophenylphenylether	<380ug/kg dw	09/26/01		SA3036
Hexachlorobenzene	<380ug/kg dw	09/26/01		SA3036
Pentachlorophenol	<770ug/kg dw	09/26/01		SA3036
Phenanthrene	<380ug/kg dw	09/25/01		SA3036
Anthracene	<380ug/kg dw	09/26/01		SA3036
Carbazole	<380ug/kg dw	09/26/01		SA3036
di-n-butylphthalate	<380ug/kg dw	09/26/01		SA3036
Fluoranthene	<380ug/kg dw	09/26/01		SA3036
Pyrene	<380ug/kg dw	09/26/01		SA3036
Butylbenzylphthalate	<380ug/kg dw	09/26/01		SA3036
3,3'-Dichlorobenzidine	<380ug/kg dw	09/26/01		SA3036
Benzo(a) anthracene	<380ug/kg dw	09/26/01		SA3036
Chrysene	<380ug/kg dw	09/26/01		SA3036
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Upstate Laboratories, Inc.

nalysis Results

eport Number: 26201039

Client I.D.: CIMINELLI SERVICES GROUP CORP. MACKENNA LANDFILL

Sampled by: Client TOP SOIL/BROCKPORT 09/18/01

ULI I.D.: 26201039 Matrix: Soil

LI I.D.: 26201039	Macrix. Borr			
ARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
bis(2-Ethylhexyl)phthalate	 <380ug/kg dw	09/26/01		SA3036
di-n-octylphthalate	<380ug/kg dw	09/26/01		SA3036
Benzo(b) fluoranthene	<380ug/kg dw	09/26/01		SA3036
Benzo (k) fluoranthene	<380ug/kg dw	09/26/01		SA3036
Benzo (a) pyrene	<380ug/kg dw	09/26/01		SA3036
Indeno(1,2,3-cd)pyrene	<380ug/kg dw	09/26/01		SA3036
Dibenzo (a, h) anthracene	<380ug/kg dw	09/26/01		SA3036
Benzo(ghi)perylene	<380ug/kg dw	09/26/01		SA3036
EPA Method 8150				
2,4-D	<41ug/kg dw	09/25/01		GA0995
2,4,5-T	<41ug/kg dw	09/25/01		GA0995
2,4,5-TP (Silvex)	<41ug/kg dw	09/25/01		GA0995
Dinoseb	<41ug/kg dw	09/25/01		GA0995
TCL Pesticides/Aroclors by EPA 80		09/24/01		G20994
BHC (a-isomer)	<2.lug/kg dw	09/24/01		GA0994
BHC (b-isomer)	<2.1ug/kg dw	09/24/01		GA0994
BHC (d-isomer)	<2.lug/kg dw	09/24/01		GA0994
BHC (g-isomer)	<2.lug/kg dw	09/24/01		GA0994
Heptachlor	<2.lug/kg dw	09/24/01		GA0994
Aldrin	<2.lug/kg dw	09/24/01		GA0994
Heptachlor Epoxide	<2.lug/kg dw	09/24/01		GA0994
Endosulfan I	<2.lug/kg dw	09/24/01		GA0994
Dieldrin	<4.lug/kg dw	09/24/01		GA0994
4,4'-DDE	<4.1ug/kg dw	09/24/01		GA0994
Endrin	<4.lug/kg dw	09/24/01		GA0994
Endosulfan II	<4.1ug/kg dw	09/24/01		GA0994
4,4'-DDD	<4.lug/kg dw	09/24/01		GA0994
Endosulfan Sulfate	4.2ug/kg dw	09/24/01		GA0994
4,4'-DDT	<4.lug/kg dw	09/24/01		GA0994
Methoxychlor	<21ug/kg dw	09/24/01		GA0994
Endrin Ketone	<4.1ug/kg dw	09/24/01		GA0994
Endrin Aldehyde	<4.1ug/kg dw	09/24/01		GA0994
alpha-Chlordane	<2.1ug/kg dw	09/24/01		GA0994 GA0994
gamma-Chlordane	<2.1ug/kg dw	09/24/01		
Toxaphene	<210ug/kg dw	09/24/01		GA0994
Aroclor 1016	<2.1ug/kg dw	09/24/01		GA0994
Aroclor 1221	<2.1ug/kg dw	09/24/01		GA0994 GA0994
Aroclor 1232	<2.1ug/kg dw	09/24/01		GAU994

Upstate Laboratories, Inc.

Analysis Results

Report Number: 26201039

Client I.D.: CIMINELLI SERVICES GROUP CORP. MACKENNA LANDFILL

Sampled by: Client TOP SOIL/BROCKPORT 09/18/01

ULI I.D.: 26201039 Matrix: Soil

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Aroclor 1242	<2.lug/kg dw	09/24/01		GA0994
Aroclor 1248	<2.lug/kg dw	09/24/01		GA0994
Aroclor 1254	<2.lug/kg dw	09/24/01		GA0994
Aroclor 1260	<2.lug/kg dw	09/24/01		GA0994

Upstate Laboratories, Inc.

alysis Results

port Number: 26201039

APPROVAL:
QC:\_\_\_\_\_\_
Lab I.D.: 10170

Client I.D.: CIMINELLI SERVICES GROUP CORP. MACKENNA LANDFILL

Sampled by: Client TOP SOIL/BROCKPORT 09/18/01

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PA	RAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	Percent Solids	87%	09/20/01		WD6375
	Total Cyanide	<1.3mg/kg dw	09/20/01		WD6267
Total	Aluminum	13,000mg/kg dw	09/20/01		MB3846
Total	Antimony	40mg/kg dw	09/26/01		MB3862
Total	Arsenic by furnace method	<1.2mg/kg dw	09/25/01		MB3857
Total	Barium	98mg/kg dw	09/20/01		MB3846
Total	Beryllium	0.80mg/kg dw	09/20/01		MB3846
Total	Cadmium	3.2mg/kg dw	09/20/01		MB3846
Total	Calcium	5200mg/kg dw	09/20/01		MB3846
Total	Chromium	19mg/kg dw	09/20/01		MB3846
Total	Cobalt	43mg/kg dw	09/20/01		MB3846
Total	Copper	18mg/kg dw	09/20/01		MB3846
Total	Iron	16,000mg/kg dw	09/20/01		MB3846
Total	Lead	<11mg/kg dw	09/20/01		MB3846
Total	Magnesium	2200mg/kg dw	09/20/01		MB3846
Total	Manganese	880mg/kg dw	09/20/01		MB3846
Total	Mercury	0.17mg/kg dw	09/20/01		MB3847
Total	Nickel	27mg/kg dw	09/20/01		MB3846
Total	Potassium	2300mg/kg dw	09/25/01		MB3858
Total	Selenium by furnace method	0.25mg/kg dw	09/24/01		MB3855
Total	Silver	<5.7mg/kg dw	09/20/01		MB3846
Total	Sodium	470mg/kg dw	09/25/01		MB3858
Total	Thallium by furnace method	<0.35mg/kg dw	09/25/01		MB3857
Total	Vanadium	<34mg/kg dw	09/20/01		MB3846
Total	Zinc	54mg/kg dw	09/20/01		MB3846
2	TCL Volatiles by EPA Method 8260				
	Chloromethane	<3ug/kg dw	09/24/01		VM3640
	Bromomethane	<3ug/kg dw	09/24/01		VM3640
	Vinyl Chloride	<2ug/kg dw	09/24/01		VM3640
	Chloroethane	<3ug/kg dw	09/24/01		VM3640
	Methylene Chloride	<3ug/kg dw	09/24/01		VM3640
	Acetone	<11ug/kg dw	09/24/01		VM3640
	Carbon Disulfide	<3ug/kg dw	09/24/01		VM3640
	1,1-Dichloroethene	<3ug/kg dw	09/24/01		VM3640
	1,1-Dichloroethane	<3ug/kg dw	09/24/01		VM3640
	trans-1,2-Dichloroethene	<3ug/kg dw	09/24/01		VM3640
	cis-1,2-Dichloroethene	<3ug/kg dw	09/24/01		VM3640
	Chloroform	<3ug/kg dw	09/24/01		VM3640
	1,2-Dichloroethane	<3ug/kg dw	09/24/01		VM3640

Upstate Laboratories, Inc.

Analysis Results

Report Number: 26201039

APPROVAL: OS QC: S-Lab I.D.: 10170

Client I.D.: CIMINELLI SERVICES GROUP CORP. MACKENNA LANDFILL

Sampled by: Client TOP SOIL/BROCKPORT 09/18/01

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DLI 1.D.: 20201040	Macrix. Borr			
ARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
2-Butanone	 <11ug/kg dw	09/24/01		1712 (40
1,1,1-Trichloroethane	<3ug/kg dw	09/24/01		VM3640
Carbon Tetrachloride	<3ug/kg dw	09/24/01		VM3640
Bromodichloromethane	<3ug/kg dw	09/24/01		VM3640
1,2-Dichloropropane	<3ug/kg dw	09/24/01		VM3640
cis-1,3-Dichloropropens	<3ug/kg dw	09/24/01		VM3640
Trichloroethene	<3ug/kg dw	09/24/01		VM3640
Dibromochloromethane	<3ug/kg dw	09/24/01		VM3640
1,1,2-Trichloroethane	<3ug/kg dw	09/24/01		VM3640
Benzene	<3ug/kg dw	09/24/01		VM3640
	<3ug/kg dw			VM3640
trans-1,3-Dichloropropene Bromoform	<3ug/kg dw	09/24/01		VM3640
	<u> </u>	09/24/01		VM3640
4-Methyl-2-pentanone	<11ug/kg dw	09/24/01		VM3640
2-Hexanone	<11ug/kg dw	09/24/01		VM3640
Tetrachloroethene	<3ug/kg dw	09/24/01		VM3640
1,1,2,2-Tetrachloroethane	<3ug/kg dw	09/24/01		VM3640
Toluene	<3ug/kg dw	09/24/01		VM3640
Chlorobenzene	<3ug/kg dw	09/24/01		VM3640
Ethylbenzene	<3ug/kg dw	09/24/01		VM3640
Styrene	<3ug/kg dw	09/24/01		VM?
m,p-xylene	<3ug/kg dw	09/24/01		VM
o-Xylene	<3ug/kg dw	09/24/01		VM3640
TCL Semivolatiles by EPA Method 827	0			
Phenol				
bis(2-Chloroethyl)ether	<380ug/kg dw	09/26/01		SA3036
	<380ug/kg dw <380ug/kg dw	09/26/01 09/26/01		
2-Chlorophenol				SA3036
	<380ug/kg dw	09/26/01		SA3036
2-Chlorophenol	<380ug/kg dw <380ug/kg dw	09/26/01 09/26/01		SA3036 SA3036 SA3036
2-Chlorophenol 1,3-Dichlorobenzene	<380ug/kg dw <380ug/kg dw <380ug/kg dw	09/26/01 09/26/01 09/26/01		SA3036 SA3036 SA3036 SA3036
2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene	<380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw	09/26/01 09/26/01 09/26/01 09/26/01		SA3036 SA3036 SA3036 SA3036
2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene	<380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw	09/26/01 09/26/01 09/26/01 09/26/01 09/26/01		SA3036 SA3036 SA3036 SA3036 SA3036
2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol	<380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw	09/26/01 09/26/01 09/26/01 09/26/01 09/26/01 09/26/01		SA3036 SA3036 SA3036 SA3036 SA3036 SA3036
2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol 2,2'-Oxybis(1-Chloropropane)	<380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw	09/26/01 09/26/01 09/26/01 09/26/01 09/26/01 09/26/01 09/26/01		SA3036 SA3036 SA3036 SA3036 SA3036 SA3036
2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol 2,2'-Oxybis(1-Chloropropane) 4-Methylphenol	<380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw	09/26/01 09/26/01 09/26/01 09/26/01 09/26/01 09/26/01 09/26/01		SA3036 SA3036 SA3036 SA3036 SA3036 SA3036 SA3036
2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol 2,2'-Oxybis(1-Chloropropane) 4-Methylphenol n-Nitrosodinpropylamire	<380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw	09/26/01 09/26/01 09/26/01 09/26/01 09/26/01 09/26/01 09/26/01 09/26/01		SA3036 SA3036 SA3036 SA3036 SA3036 SA3036 SA3036 SA3036
2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol 2,2'-Oxybis(1-Chloropropane) 4-Methylphenol n-Nitrosodinpropylamire Hexachloroethane	<380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw	09/26/01 09/26/01 09/26/01 09/26/01 09/26/01 09/26/01 09/26/01 09/26/01 09/26/01		SA3036 SA3036 SA3036 SA3036 SA3036 SA3036 SA3036 SA3036
2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol 2,2'-Oxybis(1-Chloropropane) 4-Methylphenol n-Nitrosodinpropylamire Hexachloroethane Nitrobenzene Isophorone	<380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw	09/26/01 09/26/01 09/26/01 09/26/01 09/26/01 09/26/01 09/26/01 09/26/01 09/26/01 09/26/01		SA3036 SA3036 SA3036 SA3036 SA3036 SA3036 SA3036 SA3036 SA3036
2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol 2,2'-Oxybis(1-Chloropropane) 4-Methylphenol n-Nitrosodinpropylamire Hexachloroethane Nitrobenzene	<380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw <380ug/kg dw	09/26/01 09/26/01 09/26/01 09/26/01 09/26/01 09/26/01 09/26/01 09/26/01 09/26/01 09/26/01 09/26/01		SA3036 SA3036 SA3036 SA3036 SA3036 SA3036 SA3036 SA3036 SA3036 SA3036 SA3036

Upstate Laboratories, Inc.

alysis Results

port Number: 26201039

APPROVAL: OS QC: S 10170

Client I.D.: CIMINELLI SERVICES GROUP CORP. MACKENNA LANDFILL

TOP SOIL/BROCKPORT 09/18/01 Sampled by: Client

-	_	_	_		~	$\overline{}$	$\overline{}$	$\overline{}$	_	_	_	 _	_	_	_	_	 _	_	_		_	_	_	_	_	_
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PARAMETERS	RESULTS	DATE ANAL. KEY	FILE#
2,4-Dichlorophenol	<380ug/kg dw	09/26/01	SA3036
1,2,4-Trichlorobenzene	<380ug/kg dw	09/26/01	SA3036
Naphthalene	<380ug/kg dw	09/26/01	SA3036
4-Chloroaniline	<380ug/kg dw	09/26/01	SA3036
Hexachlorobutadiene	<380ug/kg dw	09/26/01	SA3036
4-Chloro-3-methylphenol	<380ug/kg dw	09/26/01	SA3036
2-Methylnaphthalene	<380ug/kg dw	09/26/01	SA3036
Hexachlorocyclopentadiene	<380ug/kg dw	09/26/01	SA3036
2,4,6-Trichlorophenol	<380ug/kg dw	09/26/01	SA3036
2,4,5-Trichlorophenol	<380ug/kg dw	09/26/01	SA3036
2-Chloronaphthalene	<380ug/kg dw	09/26/01	SA3036
2-Nitroaniline	<3800ug/kg dw	09/26/01	SA3036
Dimethylphthalate	<380ug/kg dw	09/26/01	SA3036
Acenaphthylene	<380ug/kg dw	09/26/01	SA3036
2,6-Dinitrotoluene	<380ug/kg dw	09/26/01	SA3036
3-Nitroaniline	<3800ug/kg dw	09/26/01	SA3036
Acenaphthene	<380ug/kg dw	09/26/01	SA3036
2,4-Dinitrophenol	<3800ug/kg dw	09/26/01	SA3036
4-Nitrophenol	<3800ug/kg dw	09/26/01	SA3036
Dibenzofuran	<380ug/kg dw	09/26/01	SA3036
2,4-Dinitrotoluene	, <380ug/kg dw	09/26/01	SA3036
Diethylphthalate	<380ug/kg dw	09/26/01	SA3036
4-Chlorophenylphenylether	<380ug/kg dw	09/26/01	SA3036
Fluorene	<380ug/kg dw	09/26/01	SA3036
4-Nitroaniline	<3800ug/kg dw	09/26/01	SA3036
2-Methyl-4,6-dinitrophenol	<3800ug/kg dw	09/26/01	SA3036
n-Nitrosodiphenylamine	<380ug/kg dw	09/26/01	SA3036
4-Bromophenylphenylether	<380ug/kg dw	09/26/01	SA3036
Hexachlorobenzene	<380ug/kg dw	09/26/01	SA3036
Pentachlorophenol	<770ug/kg dw	09/26/01	SA3036
Phenanthrene	<380ug/kg dw	09/26/01	SA3036
Anthracene	<380ug/kg dw	09/26/01	SA3036
Carbazole	<380ug/kg dw	09/26/01	SA3036
di-n-butylphthalate	<380ug/kg dw	09/26/01	SA3036
Fluoranthene	<380ug/kg dw	09/26/01	SA3036
Pyrene	<380ug/kg dw	09/26/01	SA3036
Butylbenzylphthalate	<380ug/kg dw	09/26/01	<b>SA3</b> 036
3,3'-Dichlorobenzidine	<380ug/kg dw	09/26/01	SA3036
Benzo(a) anthracene	<380ug/kg dw	09/26/01	SA3036
Chrysene	<380ug/kg dw	09/26/01	SA3036

Upstate Laboratories, Inc.

Analysis Results

Report Number: 26201039

Client I.D.: CIMINELLI SERVICES GROUP CORF. MACKENNA LANDFILL

Sampled by: Client TOP SOIL/BROCKPORT 09/18/01

ULI I.D.: 26201040 Matrix: Soil

LI I.D.: 26201040	Matrix: Soil			
ARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
bis(2-Ethylhexyl)phthalate	<380ug/kg dw	09/26/01		SA303
di-n-octylphthalate	<380ug/kg dw	09/26/01		SA303
Benzo(b) fluoranthene	<380ug/kg dw	09/26/01		SA303
Benzo(k) fluoranthene	<380ug/kg dw	09/26/01		SA303
Benzo (a) pyrene	<380ug/kg dw	09/26/01		SA303
Indeno(1,2,3-cd)pyrene	<380ug/kg dw	09/26/01		SA303
Dibenzo (a, h) anthracene	<380ug/kg dw	09/26/01		SA303
Benzo(ghi)perylene	<380ug/kg dw	09/26/01		SA303
EPA Method 8150				
	<38ug/kg dw	00/25/01		G3.000
2,4-D	<38ug/kg dw	09/25/01		GA099
2,4,5-T		09/25/01		GA099
2,4,5-TP (Silvex) Dinoseb	<38ug/kg dw <38ug/kg dw	09/25/01 09/25/01		GA09
TCL Pesticides/Aroclors by EPA:808	12			
BHC (a-isomer)	<2.0ug/kg dw	09/24/01		GA099
BHC (b-isomer)	<2.0ug/kg dw	09/24/01		GA 🗥
BHC (d-isomer)	<2.0ug/kg dw	09/24/01		G.F.
BHC (g-isomer)	<2.0ug/kg dw	09/24/01		GA09
Heptachlor	<2.0ug/kg dw	09/24/01		GA09
Aldrin	<2.0ug/kg dw	09/24/01		GA09
Heptachlor Epoxide	<2.0ug/kg dw	09/24/01		GA099
Endosulfan I	<2.0ug/kg dw	09/24/01		GA099
Dieldrin	< 3.8 ug/kg dw	09/24/01		GA09
4,4'-DDE	<3.8ug/kg dw	09/24/01		GA099
Endrin	<3.8ug/kg dw	09/24/01		GA099
Endosulfan II	<3.8ug/kg dw	09/24/01		GA09
4,4'-DDD	<3.8ug/kg dw	09/24/01 s		GA099
Endosulfan Sulfate	6.2ug/kg dw	09/24/01		GA099
4,4'-DDT	<3.8ug/kg dw	09/24/01		GA099
Methoxychlor	<20ug/kg dw	09/24/01		GA099
Endrin Ketone	<3.8ug/kg dw	09/24/01		GA099
Endrin Aldehyde	<3.8ug/kg dw	09/24/01		GA099
alpha-Chlordane	<2.0ug/kg dw	09/24/01		GA099
gamma-Chlordane	<2.0ug/kg dw	09/24/01		GA099
Toxaphene	<200ug/kg dw	09/24/01		GA099
Aroclor 1016	<2.0ug/kg dw	09/24/01		GA099
ALOCIOI 1010	\2.04g/mg \an	,, - <del>-</del>		
Aroclor 1221	<2.0ug/kg dw	09/24/01		GA099

APPROVAL:

Mostate Laboratories, Inc.

alysis Results

port Number: 26201039

Lab I.D.: 1

Client I.D.: CIMINELLI SERVICES GROUP CORP. MACKENNA LANDFILL

Sampled by: Client TOP SOIL/BROCKPORT 09/18/01

ULI I.D.: 26201040 Matrix: Soil

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
Aroclor 1242	<2.0ug/kg dw	09/24/01		GA0994
Aroclor 1248	<2.0ug/kg dw	09/24/01		GA0994
Aroclor 1254	<2.0ug/kg dw	09/24/01		GA0994
Aroclor 1260	<2.0ug/kg dw	09/24/01		GA0994

## 3. NEW GUINEA ROAD

# Geotechnical Testing Summary

GZA estimates that less than 5,000 cubic yards of the New Guinea Road topsoil was used for topsoil construction. Test frequencies are summarized below. Table D17 summarizes the geotechnical laboratory test results.

# NEW GUINEA ROAD TOPSOIL GEOTECHNICAL LAB TESTING SUMMARY

Test Designation	Required Frequency	Number of Tests Done	Estimated Quantity of Fill Placed	Estimated Test Frequency
Natural Moisture	Ea. 5,000 Cubic	4	<5,000 Cubic	> Ea. 1,250
Content (ASTM	Yards		Yards	Cubic Yards
D2216)				Placed
Grain Size	Ea. 5,000 Cubic	4	<5,000 Cubic	> Ea. 1,250
Analysis (ASTM	Yards		Yards	Cubic Yards
D422)				Placed
Organic Content	Ea. 5,000 Cubic	4	<5,000 Cubic	> Ea. 1,250
(ASTM D2974)	Yards		Yards	Cubic Yards
				Placed
pH (ASTM	Ea. 5,000 Cubic	4	<5,000 Cubic	> Ea. 1,250
D4972)	Yards		Yards	Cubic Yards
				Placed

# Chemical Testing Summary

Pre-construction chemical characterization testing was done for the New Guinea Road topsoil. Chemical characterization testing was required for every 5,000 cubic yards of soil used. One sample was tested for a test frequency of greater than 1 test per 5,000 cubic yards. The samples were tested for the following parameters.

Parameter	Extraction/Preparation (1)	Analysis (1)
TCL <sup>(2)</sup> Volatile Organic	5050	8260 (95-1)
Compounds		
TCL Semi-Volatile Organic	3540/3550	8270 (95-2)
Compounds		
Pesticides/PCB's	3540/3550	8080
Herbicides	3580	8150
TAL <sup>(3)</sup> Metals	3050	95-M
Cyanide		9012

<sup>&</sup>lt;sup>1</sup> EPA SW-846.

The chemical analysis of the New Guinea Road topsoil source was recently received (following placement of the topsoil at the McKenna Landfill). GZA reviewed the laboratory test results submitted by CSC's analytical laboratory, Upstate, and tabulated the compounds detected for each sample. A table of the compounds detected for each material type is included herein as Table D18, along with the laboratory data. We compared the reported chemical concentrations versus recommended soil cleanup objective values and eastern United States background values shown in the tables.

The data shows that a pesticide, Dieldrin, was detected at 0.18 parts per million (ppm), exceeding the TAGM 4046 recommended soil cleanup objective value of 0.044 ppm. Dieldrin has historically been used in farming as a pesticide from the 1950's until about 1970. The New Guinea Road source is a currently operating onion farm.

GZA reviewed the April 1993 Agency for Toxic Substances and Disease Registry, Public Health Statement for Aldrin and Dieldrin, which states the following concerning dieldrin:

"Dieldrin in soil or water breaks down slowly. Dieldrin sticks to soil very strongly and may stay there unchanged for many years. Water does not wash dieldrin off of soil easily. Dieldrin does not dissolve in water very well; thus, you can find very little dieldrin in water. Most dieldrin in the environment attaches to soil."

<sup>&</sup>lt;sup>2</sup> TCL - Target Compound List.

<sup>&</sup>lt;sup>3</sup> TAL – Target Analyte List.

## Table D17

## SUMMARY OF BU, K SAMPLE LABORATORY TESTING NEW GUINEA RD. TOPSOIL

## MCKENNA LANDFILL REMEDIAL CLOSURE PROJECT ALBION, NY

SAMPLE NUMBER	NATURAL MOISTURE CONTENT	ORGANIC CONTENT (%)	ASH (%)	% FINER THAN #200 SEIVE	pH in H₂O	pH in 0.01M CaCl <sub>2</sub>	BORROW SOURCE
10161-1	31.7	11.1	88.9	37	7.1	7.1	New Guinea Rd.
11071-1		8.4	91.6	36	7.0	7.1	New Guinea Rd.
11151-1		9.0	91.0	25	7.0	7.1	New Guinea Rd.
11191-1		9.0	91.0	35	7.0	7.1	New Guinea Rd.

## Chemical Characterization Results for New Guinea Rd. Topsoil Samples New Guinea Rd.-1 Taken From New Guinea Rd. Source

## McKenna Landfill Remedial Closure Project Albion, New York

Parameter	Recommended Soil Cleanup Objective ppm	Eastern USA Background ppm	New Guinea Rd 1 ppm
VOC - EPA Method 8260 (	(ppm)		
Methylene Chloride	0.1	N/A	ND
Acetone	0.2	N/A	ND
2-Butanone	0.3	N/A	ND
Toluene	1.5	N/A	ND
SVOC - EPA Method 8270	(ppm)		
No Compounds Detected		1 N/A	ND
HERBICIDES - EPA Meth	od 8150 (ppm)		A Marine Marine Sales
2,4 -D	0.5	N/A	ND
,	PA Method 8082 (ppm)	Eq. 2 street	A COMPANY OF
4,4' - DDE	2.1	N/A	0.078
Dieldrin	0.044	N/A	0.18
4,4' - DDD	2.9	N/A	0.19
4,4' - DDT	2.1	N/A	0.21
Priority Pollutant Metals (p	opm)		A · 分子文文·西蒙尔·苏
Aluminum	SB	33,000	6,300
Antimony	SB	N/A	ND
Arsenic	7.5 or SB	3-12	2.4
Barium	300 or SB	15-600	ND
Beryllium	0.16 or SB	0-1.75	ND
Cadmium	1 or SB	0.1-1	2
Calcium	SB	130-35,000	16,000
Chromium	10 or SB	1.5-40	12
Cobalt	30 or SB	2.5-60	33
Copper	25 or SB	1-50	41
Iron	2000 or SB	2000-550,000	9,600
Lead	SB	See Note 5	ND
Magnesium	SB	100-5000	3,600
Manganese	SB	50-5000	320
Mercury	0.1	0.001-0.2	ND
Nickel	13 or SB	0.5-25	19
Potassium	SB	8500-43,000	1100
Selenium	2 or SB	0.1-3.9	0.9
Silver	SB	N/A	ND
Sodium	SB	6000-8000	600
Thallium	SB	N/A	ND
Vanadium	150 or SB	1-300	ND
Zinc	20 or SB	9-50	190

## Notes:

- Only compounds detected in one or more samples are presented on this table. Refer to original data sheets for list of all compounds included in analysis.
- 2. Analytical testing completed by Upstate Laboratories, Inc.
- Recommended soil cleanup objectives are based on the Division Technical and Administrative Guidance Memorandum (TAGM) 4046 on Determination of Soil Cleanup Objectives and Cleanup Levels in its final form.
- 4. ND = not detected, NA = not available
- 5. Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from
- 4-61 ppm. Average background levels in metropolitan or suburban areas or near highways are much higher and typically range from 200-500 ppm.
- 6. mg/kg = ppm

DATE: / /

Upstate Laboratories, Inc. Analysis Results Report Number: 2850|1042 Client I.D.: CIMINELLI SERVIÇES GROUP CORP.

APPROVAL:\_\_\_\_\_ QC: Lab I.D.: 10170
Sampled by: Client

ID:28501042 Mat:Soil	MCKENNA LF 29-00-	0002 WARCO TOP SOLL 1000H 10/09/01 C	-
		L'and instant DV	

PAT	UNETERS	RESULTS	TIME	DATE ANAL. KEY	KEY	PILES
		******	•	•		***
	Percent Solids	734		10/16/01		ND6662
	Total Cynnidu	<1.3mg/kg dw		10/23/01		WD6716
Total	<u> Aluminum</u>	6100mg/kg dw		10/21/01		MD3923
Total	Antisony	<41mg/kg dw		10/21/01		MB3923
Total	Arsenic by fixnace method	2.4mg/kg dw		10/22/01		MB3930
Tocal	Becyllion	<0.68 mg/kg đư		10/21/01		MB3923
Total	Cadmium	2.0mg/kg dw		10/21/01		MB3923
Total	Calcium	16,000mg/kg dw		10/21/01		MB3923
Total	Chronium	12mg/kg dur		10/21/01		MB3923
Total	Cobalt	33mg/kg du		10/21/01		MB3973
Total	Coppor	41mg/kg du		10/21/01		M03523
Total	Iron	9600 mg/kg dw/		10/21/01		MB3928
Total	Load	<14mg/kg dar		10/21/01		MB3923
Total	Magnesium	3600 mg/kg d4		10/21/01		MB3923
Total	Manganose	120mg/kg dar		10/21/01		MB3923
Total	Mercury	c0.21mg/kg dw		10/16/01		MB3909
Total	Bickol	19mg/kg dw		10/21/01		MB3923
Total	Potaggium	1100mg/kg dw		10/21/01		MD3924
Total	selentum by furnace method	0.90 mg/kg du		10/24/01		MD3935
Total	Silver	<6.5mg/kg d≥		10/21/01		1083923
Total	Sodium	600 mg/kg dw		10/21/01		MB3924
Total	Thallium by furnace method	<0.003mg/kg dw		10/22/01		MB3930
Total	Vanadium	<41mg/kg dw		10/21/01		MB3923
Total	Zinc	190mg/kg dw		10/21/01		MB3923
		•				
	CL Volatiles, by EPA Method 8260					
	Chloromethaus	<4ug/kg dw		10/22/01		VMJ 682
	Eromomuthani	<4ug/kg dw		10/22/01		VM3 652
	Vinyl Chloride	<3ug/kg dw		10/32/01		VM3 682
	Chlorouthan	<4ug/kg dw		10/22/01		VM3 682
	Methylene Colorida	chug/kg dw		10/22/01		VM3682
	Acetons	<14ug/kg dw		10/22/01		VM3682
	Carbon Disulfide	<4ug/kg dw		10/22/01		VM3682
	1.1-Dichloppothone	<4ug/kg dv		10/22/01		ANCI 695
	1,1-Dichlospethane	<4ug/kg dw		10/22/01		VMG 682
	trang-1,2-Dichlorouthene	<4ug/kg dw		10/22/01		VM3682
	cis-1,2-Dichloroethens	<4ug/kg dw		10/22/01		VM3682
	Chloroform	<4ug/ky dw		10/22/01		VM3682
	1,2-Dichlogoethans	<4ug/kg de		10/22/01		VH3682
	2-Butanone	<14ug/kg dw		10/32/01		VIG 682
	1.1.1-Trichloroethane	<4ug/kg dw		10/22/01		VM2682
	Carbon Tatachlorida	<fug dw<="" kg="" td=""><td></td><td>10/22/01</td><td></td><td>VM3682</td></fug>		10/22/01		VM3682
	Browodichleromethane	caug/kg dw		10/22/01		VM3682
	1,2-Dichlosopropane	<4ug/kg du		10/22/01		VN3 682

dw = Dry weight

DATE: / /

Upstate Laboratories, Inc. Analysis Results Report Number: 28501042 Client I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_\_\_\_ QC: Lab I.D.: 10170 Sampled by: Client

ID:28501042 Mat:Soil MCKENNA LF 29-00- 0002 WARCO TOP SOIL 1000H 10/09/01 C

		(New Grines R.D.)	
PARAMETERS	RESULTS	TIME DATE ANAL, KEY KEY	FILES
	*****		
2.4.5-Trichlorophenol	<460ug/kg dw	10/25/01	SA3069
2-Chlorosaphthalens	<460ug/kg dw	10/25/01	SA1069
2-Ni traini line	<4600ug/kg dw	10/25/01	5A3 069
Disothylphthalate	<460ug/kg d=	10/25/01	SA1069
Acomaphthylane	<460ug/kg dw	10/25/01	5A3069
2,6-Dinitrotolunna	<460ug/kg du	10/25/01	333069
3-Witrosmiline	<4600ug/kg dw	10/25/01	SAZOSS
Aconaphthena	<460ag/kg dw	10/25/01	690E43
2.4-Dinitrophonol	<4600mg/kg dw	10/25/01	SA3069
4-Nitrophenal	<4600mg/kg dw	10/25/01	<b>231069</b>
Dibensofuzan	<460ug/kg dw	10/25/01	SA3069
2,4-Dimitrotolumne	<460mg/kg dw	10/25/01	SA3069
Diothylphthalace	c460ug/kg du	10/25/01	SAJOES
4-Chlorophenylphenylother	<460ug/kg dw	10/25/01	5A2069
Fluoreno	<460ag/kg du	10/25/01	SA1069
4-Mitroamilina	<4600ug/kg dw	10/25/01	5A3069
2-Methyl-4,6-dialtrophenol	<4600ag/kg dw	10/25/01	SA1069
n-Nicrosodiphenylamine	<460ug/kg du	10/25/01	\$33069
4-Bromophonylphonylother	<460ag/kg dw	10/25/01	521069
Rexachlorobunzene	<460ug/kg dw	10/25/01	SA3069
rentachlorophenol	<910ug/kg du	10/25/01	SAJO69
Phopanthrone	c160ug/kg du	10/25/01	SA3069
Anthrocong	<460ug/kg der	10/25/01	9306A
Carbarole	<460ug/kg dw	10/25/01	5A3069
di-n-butylphthalata	c460ug/kg dw	10/25/01	\$23069
Fluoranthema	<460ug/kg dw	10/25/01	SA3069
Pyrone	<460ug/kg d-r	10/25/01	8A3069
Butylbensylphthalate	c460ug/kg dw	10/25/01	SA3069
3,3'-Dichlorobenzidino	<160mg/kg dw	10/25/01	23069
Bonzo (a) anthraceno	c460ug/kg dw	10/25/01	SA1069
СрхАлово	<460ug/kg dw	10/25/01	SA3069
bis(2-Ethylboxyl)phthalate	<460ug/kg dw	10/25/01	EA3069
di-n-octylphthalate	<46 pug/kg dw	10/25/01	\$3069
Bonzo (b) fluoranthene	<460ug/kg dw	10/25/01	SA3 069
Benzo(k) fluoranthene	<460ug/kg dw	10/25/01	5A3 069
Bonzo(a)pyrono	<4600g/kg dw	10/25/01	EA3 069
Induso (1, 2, 3-cd) pyrane	<460mg/kg dar	10/25/01	SA3069
Dibonzo(1,h) anthracene	<460ug/kg dw	10/25/01	5 <b>A3069</b>
Benzo (ghi) perylene	<460ug/kg dw	10/25/01	5A3069
2PA Mothod 8150			
*********			
2,4-D	<45ug/kg dw	10/20/01	GA1050
2,4,5-T	<45ug/kg d+	10/20/01	GA1050
2,4.5-TF (Silvex)	<4Sug/kg d₩	10/20/01	GX1050

dw = Dry weight

## 4. KENYON ROAD TOPSOIL

## Geotechnical Testing Sunmary

GZA estimates that less than 5,000 cubic yards of the Kenyon Road topsoil was used for topsoil construction. Test frequencies are summarized below. Table D19 summarizes the geotechnical laboratory test results.

## KENYON ROAD TOPSOIL GEOTECHNICAL LAB TESTING SUMMARY

Test Designation	Required Frequency	Number of Tests Done	Estimated Quantity of Fill Placed	Estimated Test Frequency
Natural Moisture	Ea. 5,000 Cubic	1	<5,000 Cubic	> Ea. 5,000
Content (ASTM D2216)	Yards		Yards	Cubic Yards Placed
Grain Size Analysis (ASTM D422)	Ea. 5,000 Cubic Yards	1	<5,000 Cubic Yards	> Ea. 5,000 Cubic Yards Placed
Organic Content (ASTM D2974)	Ea. 5,000 Cubic Yards	1	<5,000 Cubic Yards	> Ea. 5,000 Cubic Yards Placed
pH (ASTM D4972)	Ea. 5,000 Cubic Yards	1.	<5,000 Cubic Yards	> Ea. 5,000 Cubic Yards Placed

## Table D18A

Chemical Characterization Results for New Guinea Rd. Topsoil
Sample No. New Guinea Rd.-2 Taken From Composite Sample of New Guinea Rd.
Topsoil Placed on McKenna Landfill

## McKenna Landfill Remedial Closure Project Albion, New York

Parameter	Recommended Soil Cleanup Objective	Eastern USA Background	New Guinea Rd 2		
	ppm	ppm	<b>ppm</b>		
TCL Pesticides/Aroclors EPA Method 8082 (ppm) A Lasting 8					
4,4' - DDE	2.1	N/A	0.314		
Dieldrin	0.044	N/A	0.042		
4,4' - DDD	2.9	N/A	0.333		
4,4' - DDT	2.1	N/A	0.045		

## Notes:

- 1. Only compounds detected in one or more samples are presented on this table. Refer to original data sheets for list of all compounds included in analysis.
- 2. Analytical testing completed by Paradigm Environmental Services, Inc.
- Recommended soil cleanup objectives are based on the Division Technical and Administrative Guidance Memorandum (TAGM) 4046 on Determination of Soil Cleanup Objectives and Cleanup Levels in its final form.
- 4. ND = not detected, NA = not available
- 5. ppm = parts per million



## 179 Lake Avenue Rochester, New York 14608 716-647-2530 FAX 716- 647-3311

## Polychlorinated Biphenyls Laboratory Analysis Report For Soil/Sludge/Oil

Client:

**GZA GeoEnvironmental** 

Remedial Closure Project

Lab Project No.:

02-0131

Client Job Site:

Lab Sample No.:

1075

McKenna Landfill

Sample Type:

Soil

Client Job No.:

55024

Date Sampled:

01/03/02

Field Location:

New Guinea Rd.

01/07/02

Field ID No:

N/A

**Date Received:** Date Analyzed:

01/09/02

Polychlorinated Biphenyl	Result (mg/Kg)	Reporting Limit (mg/Kg)
PCB 1016	ND	0.69
PCB 1221	ND .	0.69
PCB 1232	ND	0.69
PCB 1242	ND	0.69
PCB 1248	ND	0.69
PCB 1254	ND	0.69
PCB 1260	ND	0.69

Analytical Method: EPA 8082

**ELAP ID No.: 10958** 

Comments:

ND denotes Not Detected.

Approved By:

Laboratory Director

File ID: 020131P1.XLS



179 Lake Avenue Rochester, New York 14608 716-647-2530 FAX 716- 647-3311

## Chlorinated Hydrocarbon Pesticides in Soil/Solid Waste

Client:	GZA GeoEnvironmental	Lab Project No:	02-0131
		Lab Sample No:	1075
Client Job Site:	McKenna Landfill Remedial Closure Project	Sample Type:	Soil
Client Job No:	55024	Date Sampled:	1/3/02
Field Location:	New Guinea Rd.	Date Received:	1/7/02
Field ID No:	N/A	Date Analyzed:	1/10/02

Parameter	(u	esult g/Kg)
alpha-BHC	ND<	4.1
gamma-BHC	ND<	4.1
beta-BHC	ND<	4.1
Heptachlor	ND<	4.1
delta-BHC	ND<	4.1
Aldrin	ND<	4.1
Heptachlor Epoxide	ND<	4.1
Chlordane	ND<	41
Endosulfan I	ND<	4.1
4,4'-DDE		31.4
Dieldrin		41.9
Endrin	ND<	4.1
Endosulfan II	ND<	4.1
4,4'-DDD		33.3
Methoxychior	ND<	4.1
4,4'-DDT		44.8
Endrin Aldehyde	ND<	4.1
Endosulfan Sulfate	ND<	4.1
Toxaphene	ND<	204

Analytical Method: EPA 8081

ELAP ID: 10958

Comments:

ND denotes not detected

Approved By:

Laboratory Director

## Chemical Testing Summary

Pre-construction chemical characterization testing was done for the Kenyon Road topsoil. Chemical characterization testing was required for every 5,000 cubic yards of soil used. One sample was tested for a test frequency of greater than 1 test per 5,000 cubic yards. The samples were tested for the following parameters.

Parameter	Extraction/Preparation (1)	Analysis <sup>(1)</sup>
TCL <sup>(2)</sup> Volatile Organic	5050	8260 (95-1)
Compounds		
TCL Semi-Volatile Organic	3540/3550	8270 (95-2)
Compounds		
Pesticides/PCB's	3540/3550	8080
Herbicides	3580	8150
TAL <sup>(3)</sup> Metals	3050	95-M
Cyanide		9012

<sup>&</sup>lt;sup>1</sup> EPA SW-846.

GZA reviewed the laboratory test results submitted by CSC's analytical laboratory, Upstate, and tabulated the compounds detected for each sample. A table of the compounds detected for each material type is included herein as Table D20, along with the laboratory data. GZA compared the reported chemical concentrations versus recommended soil cleanup objective values and eastern United States background values shown in the tables.

Based on GZA's review, the chemical characterization test results for this material was acceptable. Therefore, the Kenyon Road topsoil was considered acceptable for topsoil.

<sup>&</sup>lt;sup>2</sup> TCL – Target Compound List.

<sup>&</sup>lt;sup>3</sup> TAL – Target Analyte List.

## Table D19

# SUMMARY OF BUI.K SAMPLE LABORATORY TESTING KEINYON RD. TOPSOIL

## MCKENNA LANDFILL REMEDIAL CLOSURE PROJECT ALBION, NY

SAMPLE NUMBER	NATURAL MOISTURE CONTENT	ORGANIC CONTENT (%)	1	% FINER THAN #200 SEIVE	pH in H₂O	pH in 0.01M CaCl <sub>2</sub>	BORROW SOURCE
12111-1	18.8	3.4	96.6	44	7.4	7.5	Kenyon Rd.

## Chemical Characterization Results for Kenyon Rd. Topsoil Samples Kenyon-1 Taken From Kenyon Rd. Source

## McKenna Landfill Remedial Closure Project Albion, New York

Parameter	Recommended Soil Cleanup Objective ppm	Eastern USA Background ppm	Kenyon-1 ppm
VOC - EPA Method 8260 (	(ppm)	STATE OF STA	Service Services
Methylene Chloride	0.1	N/A	N/D
Acetone	0.2	N/A	N/D
2-Butanone	0.3	N/A	N/D
Toluene	1.5	N/A	N/D
SVOC - EPA Method 8270	(ppm)		. 9 (N. C. C. C. C. C. C. C. C. C. C. C. C. C.
No Compounds Detected		N/A	N/D
HERBICIDES - EPA Meth	ed 8150 (ppm)		2567 47 W. S. 30
2,4 -D	0.5	N/A	N/D
TCL Pesticides/Aroclors El	PA Method 8082 (ppm)	ANGLE CONTRACTOR	A DECK TONE BASIS
4,4' - DDE	2.1	N/A	0.078
Priority Pollutant Metals (p	opm)		10万字,上于20万字。据书学
Aluminum	SB	33,000	11,000
Antimony	SB	N/A	38
Arsenic	7.5 or SB	3-12	5.1
Barium	300 or SB	15-600	83
Beryllium	0.16 or SB	0-1.75	N/D
Cadmium	1 or SB	0.1-1	2.3
Calcium	SB	130-35,000	9,500
Chromium	10 or SB	1.5-40	16
Cobalt	30 or SB	2.5-60	46
Copper	25 or SB	1-50	12
Iron	2000 or SB	2000-550,000	14,000
Lead	SB	See Note 5	23
Magnesium	SB	100-5000	3,300
Manganese	SB	50-5000	410
Mercury	0.1	0.001-0.2	N/D
Nickel	13 or SB	0.5-25	18
Potassium	SB	8500-43,000	1300
Selenium	2 or SB	0.1-3.9	1.2
Silver	SB	N/A	N/D
Sodium	SB	6000-8000	340
Thallium	SB	N/A	N/D
Vanadium	150 or SB	1-300	N/D
Zinc	20 or SB	9-50	81

## Notes:

- Only compounds detected in one or more samples are presented on this table. Refer to original data sheets for list of all compounds included in analysis.
- 2. Analytical testing completed by Upstate Laboratories, Inc.
- Recommended soil cleanup objectives are based on the Division Technical and Administrative
  Guidance Memorandum (TAGM) 4046 on Determination of Soil Cleanup Objectives and Cleanup
  Levels in its final form.
- 4. ND = not detected, NA = not available
- 5. Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from
- 4-61 ppm. Average background levels in metropolitan or suburban areas or near highways are much higher and typically range from 200-500 ppm.
- 6. mg/kg = ppm

## SOIL-BENTONITE BARRIER WALL BORROW MATERIAL

The soil-bentonite barrier wall was required to have in-place permeability less than  $1 \times 10^{-7}$  cm/sec. Undisturbed tube samples were required to be tested for every 200 cubic yards of soil-bentonity mix. Slightly less than 2,000 cubic yards of soil-bentonite mix was placed for the barrier construction. Ten (10) tube samples were collected following barrier wall construction. The permeability test results for the undisturbed tube samples were measured to be less than  $1 \times 10^{-7}$  cm/sec meeting the project permeability criteria.

Borrow material for the construction of the soil-bentonite barrier wall for the McKenna Landfill Remedial Closure Project was obtained from the Barre Stone Products borrow pit located in Barre, New York. Pre-construction and laboratory testing consisted of natural moisture content (ASTM D2216), grain size analysis (ASTM D422), Atterberg limits (ASTM D4318) and chemical characterization testing. Included herein are the test results by GZA and CSC's laboratories for pre-construction and post-construction testing of the barrier wall. Based on the laboratory test results, GZA considered the Barre Stone borrow source acceptable for use as soil-bentonite barrier wall borrow material and that the barrier wall was constructed according to the project specifications. Table D21 summarizes GZA's geotechnical test results.

Chemical characterization analyses were done on the Barre Stone borrow material for the following parameters.

Parameter	Extraction/Preparation (1)	Analysis (1)
TCL <sup>(2)</sup> Volatile Organic	5050	8260 (95-1)
Compounds		
TCL Semi-Volatile Organic	3540/3550	8270 (95-2)
Compounds		
Pesticides/PCB's	3540/3550	8080
Herbicides	3580	8150
TAL <sup>(3)</sup> Metals	3050	95-M
Cyanide		9012

<sup>&</sup>lt;sup>1</sup> EPA SW-846.

GZA reviewed the laboratory test results submitted by CSC's analytical laboratory, Upstate, and tabulated the compounds detected for each sample. A table of the compounds detected for each material type is included herein as Table D22, along with the laboratory data. GZA compared the reported chemical concentrations versus recommended soil cleanup objective values and eastern United States background values shown in the tables.

<sup>&</sup>lt;sup>2</sup> TCL – Target Compound List.

<sup>&</sup>lt;sup>3</sup> TAL – Target Analyte List.

Based on GZA's review, the chemical characterization test results for this material was acceptable. Therefore, the Barre Stone borrow material was considered acceptable for soil-bentonite barrier wall construction.

Table D21

# SUMMARY OF BULK SAMPLE LABORATORY TESTING BARRE STONE PRODUCTS SLURRY WALL BORROW SOIL

WASTE MANAGEMENT OF NEW YORK MCKENNA LANDFILL REMEDIAL CLOSURE PROJECT

			_
TEST DRY DENSITY (PCF)			
CONFINING PRESSURE (PSF)			
PERMEABILITY (CM/SEC)			
OPTIMUM MOISTURE CONTENT (%)			
MAXIMUM DRY DENSITY (PCF)			
% FINER THAN 2 MICRONS	16	15	
% FINER THAN #200 SEIVE	72	74	
PLASTICITY INDEX	3	3	
PLASTIC LIMIT (%)	15	15	
LIQUID LIMIT (%)	18	18	
NATURAL MOISTURE CONTENT (%)	15.7	15.2	
MATERIAL TYPE	Slurry Wall Borrow Soil	Slurry Wall Borrow Soil	
SAMPLE NUMBER	06070-1	06070-2	
	LIQUID PLASTIC PLASTICITY	NATURAL MOISTURE CONTENT         LIQUID         PLASTICITY LIMIT         % FINER LIMIT         % FINER CONTENT         % FINER PROPERTY         % FINER PROPERTY         % FINER DRY PRESSURE CONTENT         % FINER PRAILITY CONTENT         CONTENT         CONFINING PRESSURE CONTENT         TEST DRY PRESSURE DENSITY (PSF)         PRESSURE DENSITY (PSF) <td>NATURAL MOISTURE LIMIT CONFINIT (%)         PLASTICITY LIMIT (%)         FINER MOISTURE LIMIT (%)         FINER MOISTURE LIMIT (%)         FINER MOISTURE LIMIT (%)         FINER MOISTURE LIMIT (%)         FINER MOISTURE LIMIT (%)         FERMEABILITY (MOISTURE (CM/SEC))         CONFINING PRESSURE (PCF)         TEST DRY (PCF)           15.7         18         15         3         72         16         15         15         16         15         16         15         16         <t< td=""></t<></td>	NATURAL MOISTURE LIMIT CONFINIT (%)         PLASTICITY LIMIT (%)         FINER MOISTURE LIMIT (%)         FINER MOISTURE LIMIT (%)         FINER MOISTURE LIMIT (%)         FINER MOISTURE LIMIT (%)         FINER MOISTURE LIMIT (%)         FERMEABILITY (MOISTURE (CM/SEC))         CONFINING PRESSURE (PCF)         TEST DRY (PCF)           15.7         18         15         3         72         16         15         15         16         15         16         15         16 <t< td=""></t<>

# Chemical Characterization Results for Sample of Soil Proposed for Soil-Bentonite Barrier Wall from tlee Barre Stone Quarry

# McKenna Landfill Remedial Closure Project Albion, New York

Parameter	Recommended Soil Cleanup Objective ppm	Eastern USA Background ppm	Soil-Bentonite Wall Barre Source ppm
VOC - EPA Method	8260 (ppm)		
Methylene Chloride	0.1	N/A	0.007
Acetone	0.2	N/A	N/D
2-Butanone	0.3	 N/A	N/D
SVOC - EPA Method	l 8270 (ppm)		
No Compounds Detected		N/A	N/D
HERBICIDES - EPA	Method 8150 (ppm)		
2.4 -D	0.5	N/A	N/D
TCL Pesticides/Aroc	lors EPA Method 8080	(ppg)	
4,4' - DDE	2.1	N/A	N/D
Priority Pollutant Me	etals (ppm)	1.00	
Aluminum	SB	33,000	5700
Antimony	SB	N/A	N/D
Arsenic	7.5 or SB	3-12	0.68
Barium	300 or SB	15-600	42
Beryllium	0.16 or SB	0-1.75	N/D
Cadmium	1 or SB	0.1-1	1.5
Calcium	SB	1,30-35,000	19,000
Chromium	10 or SB	1.5-40	9.6
Cobalt	30 or SB	2.5-60	22
Copper	25 or SB	1-50	9
Iron	2000 or SB	20,00-550,000	6,700
Lead	SB	Çee Note 5	N/D
Magnesium	SB	100-5000	6,400
Manganese	SB	50-5000	160
Mercury	0.1	1).001-0.2	N/D
Nickel	13 or SB	0.5-25	15
Potassium	SB	8400-43,000	850
Selenium	2 or SB	0.1-3.9	0.2
Silver	SB	N/A	
Sodium	SB	6,000-8000	310
Vanadium	150 or SB	1-300	N/D
Zinc	20 or SB	9-50	59

## Notes:

- 1. Only compounds detected in one or more samples are presanted on this table. Refer to original data sheets for list of all compounds included in analysis.
- 2. Analytical testing completed by Upstate Laboratories, Inc.
- 3. Recommended soil cleanup objectives are based on the Division Technical and Administrative Guidance Memorandum (TAGM) 4046 on Determination of Soil Cleanup Objectives and Cleanup Levels in its final form.
- 4. ND = not detected, NA = not available
- 5. Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4-61 ppm. Average background levels in metropolitan or suburban areas or near lightly leading are much higher and typically range from 200-500 ppm.
- 6. mg/kg = ppm

Ipstate Laboratories, Inc. nalysis Results eport Number: 14000079

:lient I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ - - -QC: 1 - Lab I.D.: 10170 Sampled by: Client

.T.t.e	me 1.b. r	CIMINEDLI SERVICES GROOF CORP.	sambled by	: Client		
îD.1	4000079	Mat: 5011 29-00-0002 MCKENNA	LANDFILL BORROW MATER	RIALS FOR 1700	ŭ 05/1	5/00 G
	PA	rameters	RESULTS	DATE ANAL.	KEY	FILE#
		Percent Solids	90%	05/19/00		WD0313
		Total Cyanide	<1.0mg/kg dw	06/06/00		WD0423
	Total	Aluminum	5700mg/kg dw	06/09/00		MB2436
	Total	Ancimony	<33mg/kg dw	06/09/00	*	MB2436
	Total	Arsonic by furnace method	0.68mg/kg dw	05/30/00		MB2390
	Total	Barium	42mg/kg dw	06/09/00		MB2436
	Total	Beryllium	<0.55mg/kg dw	06/09/00		MB2436
	Total	Cadmium	1.5mg/kg dw	06/03/00		MB2436
	Total	Calcium	19000mg/kg dw	06/09/00		MB2436
	Total	Chromium	9.6mg/kg dw	06/09/00		MB2436
	Total	Cobalt	22mg/kg dw	06/09/00		MB2436
	Total	Copper	9.0mg/kg dw	06/09/00		MB2436
	Total	Iron .	6700mg/kg dw	06/09/00		MB2436
	Total	Lead	<li><li><li><li><li></li></li></li></li></li>	06/09/00		MB2436
	Total	Magnesium	6400mg/kg dw	06/09/00		MB2436
	Total	Manganese	160mg/kg dw	06/09/00		ME2436
**	Total	Mercury	<0.3mg/kg dw	05/25/00		MB2384
,	Total	Nickel	1Smg/kg dw	06/09/00		MB2436
	Total	Potaesium	850mg/kg dw	05/12/00		MB2443
	Total	Selenium by furnace method	0.20mg/kg dw	05/30/00		WD2391
Ć.	Total	\$ilver	<5.5mg/kg dw	06/09/00		MB2436
7	Total	Sodium	310mg/kg dw	06/12/00		MB2443
~.	Total	Thallium by furnace method	<0.4mg/kg dw	06/09/00		ME2863
	Total	Vanadium	<33mg/kg dw	06/09/00		MB2436
	Total	Zinc	59mg/kg dw	06/09/00		MB2436
	7	CCL Volatiles by EPA Method 826	0			
		Chloromethane	<3ug/kg dw	05/30/00		VM2900
		Bromomethane	<3ug/kg dw	05/30/00		VM2900
		Vinyl Chloride	<2ug/kg dw	05/30/00		VM2900
		Chloroethane	<3ug/kg dw	05/30/00		VM2900
		Methylene Chloride	7ug/kg dw	05/30/00	44	
		Acetone	<11ug/kg dw	05/30/00	• •	VM2900
		Carbon Disulfide	<3ug/kg dw	05/30/00		VM2900 VM2900
		1,1-Dichloroethene	<3ug/kg dw	05/30/00		VM2900
		1,1-Dichlorosthane	<3ug/kg dw	05/30/00		VM2900
		trans-1,2-Dichloroethene	<3ug/kg dw	05/30/00		VM2900
		cis-1,2-Dichlorosthque	<3ug/kg dw	05/30/00		VM2900
		Chloroform	<3 ug/kg dw	05/30/00	4	VM2900
		1,2-Dichloroethane	<3ug/kg dw	05/30/00		VM2900
		2-Butanone	<11ug/kg dw	05/30/00		VM2900
		1,1,1-Trichloroethane	<3ug/kg dw	05/30/00		VM2900
		Carbon Tetrachloride	<3ug/kg dw	05/30/00		VM2900
		Bromodichloromethane	<3ug/kg dw	05/30/00		VM2900

DATE:

Upstate Laboratories, Inc. Analysis Results

Report Number: 14000079

Client I.D.: CIMINELLI SERVICES GROUE CORP.

APPROVAL:

Sampled by: Client

ID:14000079 Mat:Soil	29-00-0002 1	NCKENNA	LANDFILL	BORROW	MATERIALS	FOR	1700H	05/16/00	3 G
					RY WALL	_			_

PARAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
	~~~	~ ~	~~~	
1,2-Dichloropropane	<3ug/kg dw	05/30/00		VM2900
cis-1,3-Dichloropropene	<3ug/kg dw	05/30/00		VM2900
Trichloroethene	<3ug/kg dw	05/30/00		VM2900
Dibromochloromethane	<a href="#"><a href="#">ug/kg dw</a></a>	05/30/00		VM2900
1,1,2-Trichlorcethane	<3ug/kg dw	05/30/00		VM2900
Benzene	<3ug/kg dw	05/30/00		VM2900
trans-1,3-Dichloropropene	<3ug/kg dw	05/30/00		VM2900
Bromoform	<3ug/kg dw	05/30/00		VM2900
4-Methyl-2-pentanone	<11ug/kg dw	05/30/00		VM2900
Z-Hexanone	<li><li><li><li><li>dw</li></li></li></li></li>	05/30/00		VM2900
Tetrachloroethene	<3ug/kg dw	05/30/00		VM2900
1,1,2,2-Tetrachloroethane	<3ug/kg dw	05/30/00		VM2900
Toluene	<3ug/kg dw	05/30/00		VM2900
Chlorobenzene	<3ug/kg dw	05/30/00		VM2900
Ethylbenzene	<3ug/kg dw	05/30/00		VM2900
Styrene	<jug dw<="" kg="" td=""><td>05/30/00</td><td></td><td>VM2900</td></jug>	05/30/00		VM2900
m-Xylane and p-Xylana	<3ug/kg dw	05/30/00		VM2900
o-Xylene	<3ug/kg dw	05/30/00		VM2900
TCL Semivolatiles by EPA, Method; 8270				,
*********				
Phenol	<370ug/kg dw	06/01/00		SA2428
bis(2-Chloroethyl) ather	<370ug/kg dw	06/01/00		SA2428
2-Chlorophenol	<370ug/kg dw	06/01/00		SA2428
1,3-Dichlorobenzene	<370ug/kg dw	06/01/00		SA2428
1,4-Dichlorobenzene	<370ug/kg dw	05/01/00		SA2428
1,2-Dichlorobenzene	<370ug/kg dw	06/01/00		SA2428
2-Methylphenol	<370ug/kg dw	06/01/00		SA2428
2.2'-Oxybis(1-Chloropropane)	<370ug/kg dw	06/01/00		SA2428
4-Methylphenol	<370ug/kg dw	06/01/00		SA2428
n-Nitrosodi-n-propylamine	<370ug/kg dw	06/01/00		5A2428
Nexachloroethane	<370ug/kg dw	06/01/00		SA2428
Nitrobenzene	<370ug/kg dw	06/01/00		SA2428
Isophorone	<370ug/kg dw	06/01/00		SA2428
2-Nitrophenol	<370ug/kg dw	06/01/00		SA2428
2,4-Dimethylphenol	<370ug/kg dw	06/01/00		SA2428
bis(2-Chloroethoxy)methane	<370ug/kg dw	06/01/00		SA2428
2,4-Dichlorophenol	<370ug/kg dw	05/01/00		SA2426
1,3,4-Trichlorobenzene	<370ug/kg dw	06/01/00		SA2428
Naphthalene	<370ug/kg dw	06/01/00		SA2428
4-Chloroaniline	<370ug/kg dw	06/01/00		SA2428
Hexachlorobutadiene	<170ug/kg dw	06/01/00		SA2428
4-Chloro-3-methylphengl	<370ug/kg dw	06/01/00		SA2428
2-Methylnaphthalene	<370ug/kg dw	06/01/00		SA2428
Hexachlorocyclopentadteno	<370ug/kg dw	06/01/00		SA2428
-	· -			

ATE: / /

pstate Laboratories, Inc. nalysis Results eport Number: 14000079

lient I.D.: CIMINELLI SERVICES GROUP CORP.

Approval:\_ \_ \_ \_ QC: 1 - Lab I.D.: 10170

Sampled by: Client

ID:14000079 Mat:Soil 29-00-0007 MCKENNA LANDFILL BORROW MATERIALS FOR 1700H 05/16/00 G

	scorry was	-		
PARAMETERS	results	DATE ANAL.	KEY	<b>AITE</b> #
2,4,6-Trichlorophenol	<370ug/kg dw	06/01/00		5A2428
2,4,5-Trichlorophenol	<370ug/kg dw	06/01/00		SA2428
2-Chloronaphthalene	<370ug/kg dw	06/01/00		SA2428
2-Nitroaniline	<3700ug/kg dw	06/01/00		SA2428
Dimethylphthalate	<370ug/kg dw	06/01/00		SA2428
Aconaphthylene	<370ug/kg dw	06/01/00		\$A2428
2,6-Dinitrotoluene	<370ug/kg dw	06/01/00		SA2428
3-Nitroaniline	<3700ug/kg dw	06/01/00		SA2428
Acenaphthene	<370ug/kg dw	06/01/00		SA2428
2,4-Dinitrophenol	<3700ug/kg dw	06/01/00		SA2428
4-Nitrophenol	<3700ug/kg dw	06/01/00		SA2428
Dibenzofuran	<370ug/kg dw	06/01/00		SA2428
2,4-Dinitrotoluene	<370ug/kg dw	06/01/00		SA2428
Diethylphthalate	<370ug/kg dw	06/01/00		SA2428
4-Chlorophenylphonylether	<370ug/kg dw	06/01/00		5A2428
Linoled the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state	<370ug/kg dw	06/01/00		SA2428
4-Nitroaniline	<3700ug/kg dw	06/01/00		SA2428
2-Methyl-4,6-dinitrophenol	<3700ug/kg dw	06/01/00		SA2428
n-Nitrosodiphenylamine	<370ug/kg dw	06/01/00		5A2428
4-Bromophenylphenylether	<370ug/kg dw	06/01/00		SA2428
Hexachlorobenzene	<370ug/kg dw	06/01/00		SA2428
Pentachlorophenol	<740ug/kg dw	06/01/00		SA2428
Phenanthrene	<370ug/kg dw	06/01/00		SA2428
Anthradene	<370ug/kg dw	06/01/00		SA2428
Carbazole	<370ug/kg dw	06/01/00		SA2428
di-n-butylphthalate	<370ug/kg dw	06/01/00		SA2428
	<370ug/kg dw	06/01/00		SA2428
Fluoranthene	<370ug/kg dw	06/01/00		SA2428
Pyrene	<370ug/kg dw	06/01/00		SA2428
Butylbenzylphthalate	<370ug/kg dw	06/01/00		SA2428
3,3'-Dichlorobenzidine	<370ug/kg dw	06/01/00		SA2428
Benzo (a) anthracene	<370ug/kg dw	06/01/00		SA2426
Chrysene	<370ug/kg dw	05/01/00		5A2428
bis(2-Ethylhexyl)phthalate di-n-octylphthalate	<370ug/kg dw	06/01/00		SA2428
Benzo(b) fluoranthene	<370ug/kg dw	06/01/00		SA2428
	<370ug/kg dw	06/01/00		SA2428
Benzo (k) fluoranthene	<370ug/kg dw	06/01/00		5A2428
Benzo(a) pyrene	<370ug/kg dw	06/01/00		9A2428
Indeno(1,2,3-cd)pyrene	<370ug/kg dw	06/01/00		SA2428
Dibenzo(a,h)anthracene Benzo(ghi)perylene	<370ug/kg dw	06/01/00		5A2428
EPA Method 8150				,
2,4-D	<3.6ug/kg dw	06/01/00		GA0107
2,4,5-T	<3.6ug/kg dw	06/01/00		GA0107

state Laboratories, Inc. alysis Results

port Number: 14000079 1ent I.D.: CIMINELLI SERVICES GROUP CORP.

APPROVAL:\_ \_ \_ \_ QC: Lab I.D.: 10170 Sampled by: Client

):14000079 Mat: Soil 29-00-0002 MCKENNA LANDFILL BORROW MATERIALS FOR 1700H 05/16/00 G

PARAMETERS	RESULTS	DATE ANAL,	KEY	FILE#
2,4,5-T9 (Silvex)	<3.6ug/kg dw	06/01/00		GA0107
Dinoseb	<3.6ug/kg dw	06/01/00		GA0107
TCL Pesticides/Aroclars by EPA	8080			
	•			
BHC (a-isomer)	<1.9ug/kg dw	06/02/00		GA0111
BHC (b-isomer)	<1.9ug/kg dw	06/02/00		GA0111
BHC (d-isomer)	<1.9ug/kg dw	06/02/00		GA0111
BHC (g-isomer)	<1.9ug/kg dw	06/02/00		GA0111
Heptachlor	<1.9ug/kg dw	06/02/00		GA0111
Aldrin	<1.9ug/kg dw	06/02/00		GA0111
Heptachlor Epoxide	<1.9ug/kg dw	05/02/00		GA0111
Endosulfan I	<1.9ug/kg dw	06/02/00		GA0111
Dieldrìn	<3.7ug/kg dw	06/02/00		GAOLLI
4,4'-DDE	<3,7ug/kg dw	06/02/00		GA0111
Endrin	<3.7ug/kg dw	06/02/00		GA0111
Endosulfan II	<3.7ug/kg dw	06/02/00		GA0111
4,4'-DDD	<3.7ug/kg dw	05/02/00		GA0111
Endosulfan Sulfate	<3.7ug/kg dw	06/02/00		GA0111
4,4'-DDT	<3.7ug/kg dw	06/02/00		GA0111
Methoxychlor	<19ug/kg dw	06/02/00		GA0111
Endrin Ketone	<3.7ug/kg dw	06/02/00		GA0111
Endrin Aldehyde	<3.7ug/kg dw	06/02/00		GA0111
alpha-Chlordane	<1.9ug/kg dw	06/02/00		GA0111
gamma-Chlordane	<1.9ug/kg dw	06/02/00		GA0111
Toxaphene	<189ug/kg dw	06/02/00		GA0111
Aroclor 1016	<1.9ug/kg dw	06/02/00		GA0111
Aroclor 1221	<1.9ug/kg dw	06/02/00		GA0111
Arodlor 1232	<1.9ug/kg dw	06/02/00		GA0111
Aroclor 1242	<1.9ug/kg dw	06/02/00		GA0111
Aroclor 1248	<1.9ug/kg dw	06/02/00		GA0111
Aroclor 1254	<1.9ug/kg dw	06/02/00		GA0111
Aroclor 1260	<1.9ug/kg dw	06/02/00		GA0111

ID:14000080 Mat:Soil 29-00-0002 MCKENNA LANDFILL GRID R2 1700H 05/16/00 G

PAY	RAMETERS	RESULTS	DATE ANAL.	KEY	FILE#
~					
	Percent Solids	91%	05/19/00		MD0313
	Total Cyanide	<1.lmg/kg dw	06/06/00		WD0423
Tota1	Aluminum	5900mg/kg dw	06/09/00	, , ,	MB2436
Total	Antimony	<33mg/kg dw	/ 06/09/00	/	MB2436
Total	Arsenic by furnace method	2.lmg/kg dw	05/30/00		ME 2390
Total	Barium	51mg/kg đw ⋅	06/09/00	,	MB2436
Total	Beryllium	<0.54mg/kg dw	06/09/00		MB2436

dw = Dry weight

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## LEOTECHNICAL CONTRACTOR

je.kp/0084

November 27, 2000 McLean Office

110.000

Ciminelli Services Corp. 170 Cooper Avenue, Suite 112 Tonawanda, NY 14150-6680

Attn: Mr. Thomas C. Andrews

RE: McKenna Landfill Albion, NY

Dear Mr. Andrews:

Please find attached the results of the compatibility testing for the soil bentonite backfill. If I can provide additional information please contact me at 703-442-0143.

Best regards,

James C. Edwards

Vice President of Operations

1

November 7, 2000 2KS2551-02

Inquip Associates, Inc. P.O. Box 6277 McLean, VA 22106

Attn: Jim Edwards

RE: EPA 9100 COMPATIBILITY RESULTS McKENNA LANDFILL PROJECT

Dear Mr. Edwards:

J&L Testing Company, Inc. (JLT) is pleased to submit the compatibility test results of S-B Mix No. 1 for the above referenced project. Testing was performed in accordance with ASTM D-5084 (EPA 9100) and subject to JLT's internal QA/QC and data validation procedures.

We appreciate the opportunity to provide our services and look forward to working with you again. Should you have any questions, comments our require additional information, please call. Thank you.

Sincerely,

J&L TESTING COMPANY, INC.

John Boschuk, Jr., P.E., REP Technical Consultant

Enclosures /Ei/rdo |wg9\lener\415

## SUMMARY OF FLEX WALL COMPATIBILITY TEST RESULTS

ASTM D-5084 (Method A): EPA 9100



Client

Inquip Associates

Date

09-20-00

Project Location

McKenna Landfill Project

Job No.

2KS2551-02

Sample Number

S-B Mix No. 1

Tested By

MLB/DL

Description

Imported Borrow

Checked By

JB

Permeant Fluid

Leachate

Spec. Gravity

2.62 Assumed

## Physical Property Data

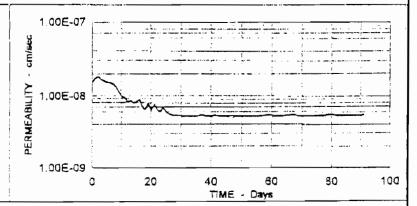
Initial Height (in)	:	1.51	Final Height (in)	:	1.51
Initial Diameter (in)	;	2.80	Final Diameter (in)	:	2.75
Initial Wet Weight (g)	:	320.10	Final Wet Weight (g)	:	299.20
Wet Density ( pcf )	:	131.04	Wet Density (pcf)	:	126.98
Moisture Content %	:	17.90	Moisture Content %	:	21.78
Dry Density ( pcf )	:	111.14	Dry Density (pcf)	:	104.27
Initial Void Ratio	:	0.4710	Final Void Ratio	:	0.5680
Saturation, %	:	99.6	Saturation, %	:	100.5
					ı

## Test Parameters

Fluid	:	Leachate	Effective		
Cell Pressure (p	si) :	60.00	Confining Pressure (psi)	:	10
Head Water (p	si) :	50.70	Gradient	:	25.59
Tail Water (p	si) :	49.30		,	

## Flow, Q 0.45 (cc) Length, L 1.51 ( in )

Area, A (sqin) 5.94 Head, h (psi) 1.40 1389.00 Time, t (min) Temo, T (Deg C) 21.0



## Computed Permeability

PERMEABILITY, K = AT 91 DAYS

Permeability Input Data

5.49E-09

(cm/sec) at 20 Degrees C

& L TESTING COMPANY, Inc.

## COMPATIBILITY TEST RESULTS

## McKanna Landfill Project

1% Bentonite by Dry Weight Conditioned with 40 sec Skurry to Achieve a 5-Inch Slump

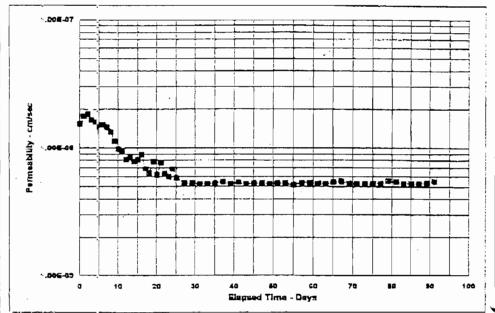
Oate	Elos'd	Comptd	Inflow	Inflow
	Time Daya	Permeability	C3	Pare Vo
02/20/00	0	1.54E-08	0.00	0.0%
06/21/00	1	1.77E-08	0.50	1.0%
06/22/00	2	1.83E-08	1.60	3.3%
06/23/00	3	1,65E-08	3.00	6.2%
06/24/00	4	1 59E-08	4,50	9.2%
06/25/00	5	1,51E-08	5, 25	10,8%
08/28/00	6	1.515-08	5.85	12.0%
06/27/00	7	1,45E-08	7.30	15.0%
05/28/00	8	1.33E-08	8.30	17.0%
06/29/00	9	1.13E-08	9.30	19.1%
06/30/00	10	9.78E-09	10,00	20.5%
07/01/00	11	9.48E-09	10.90	22.3%
07/02/00	12	B. 11E-09	11.60	23.8%
07/03/00	13	8.64E-09	12.30	25.2%
07/04/00	14	7 94E-09	13,00	26.7%
07/05/00	15	8,71€-09	13.70	28.1%
07/06/00	16	8.90E-09	14.50	29.7%
07/07/00	17	6.90E-09	15.10	31.0%
07/08/00	18	6.41E-09	15.90	32.8%
07/09/00	19	7.90E-09	16.60	34.0%
07/10/00	20	6.20E-09	17.00	34.9%
07/11/00	21	7.69E-09	17.80	38.5%
07/11/00	22	6.36E-09	18.30	37.5%
07/13/00	23	6.00E-08	18.85	38.7%
07/14/00	24	8.93E-09	19.40	39.8%
07/15/00	25		20.00	41.0%
		5.90E-09		
07/17/00	27	5.37E-09	20.80	42.6%
07/19/00	29	5.34E-09	22.40	45.9%
07/21/00	31	5.30E-09	23.30	47.8%
07/23/00	33	5.28E-09	24.20	49.5%
07/25/00	35	5.33E-09	25.1Q	51,5%
07/27/00	37	5.44E-08	26.00	53.3%
07/29/00	39	5.22E-09	27.00	55.4%
07/31/00	41	5.42E-08	27.90	57.2%
08/02/00	43	5.26E-09	28.70	58.8%
08/04/00	45	5.31E-09	29.50	60.7%
C8/06/00	47	5.36E-09	30,50	52.5%
08/08/00	49	5.27E-09	31.30	64.2%
08/10/00	51	5.33E-09	32.20	56.0%
08/12/00	53	5.32E-09	33,10	67.8%
08/14/00	55	5.21E-09	34.20	70.1%
08/16/00	57	5.37E-08	35.10	72.0%
08/18/00		5.385-09	36.00	73.8%
08/20/00		5.30E-09	36.90	75.7%
C8/22/00	83	5. 29E-09	37.80	77.5%
08/24/00	65	5,44E-09	38.9C	79,8%
08/25/00	67	5.49E-09	40.10	82.2%
08/28/00	69	5.33E-09	40.50	83.0%
08/30/00	71	5.29E-09	41.40	84.9%
08/01/00	73	5.24E-09	42.50	57.1%
09/03/00		5.30E-09	43,40	39.0%
08/05/00	77	5.33E-09	44.30	90.3%
09/07/00		5.55E-09	45.55	93.4%
09/09/00	-	5 4 4 5 3 5	46.65	95.7%
09/11/00			47 65	97 7%
		5.315-09		
09/13/00		5.29E-09	48.55	20.5%
09/15/00	97	5.30E-09	49.45	101.4%
09/17/00		5.34E-09	50.35	103.2%
09/19/00	91	5.49E-C9	51.45	105.5%
09/21/00	93		i	
	35	:		
08/23/00	34			
09/25/00				
	97	;		

2000

< Pond Water
< Transfer to Leachate
< First Full Day with Lauchate

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with Laychate Initial Perm, with Pond Water = 1,446-05 cm/sec Initial Sample Height = 1,51 inches Computed Pore Volume = 48,77 cc Pore Fluid = Leachate



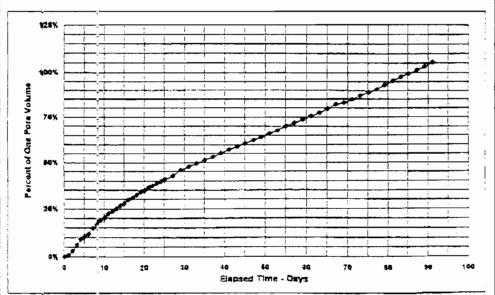


FIGURE 1

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186 Warwick Ave. • P.O. Box 732 • Buffalo, New York 14215-0732 (716) 836-0131 • Fax (716) 836-9608

# Soil Bentonite Field Test Work Sheet

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318 North Morrison Street Warren, Pennsylvania 16365 (814) 726-1988 • Fax (814) 726-7850

1322 Space Park, Suite A256 Houston, Texas 77058 (281) 335-7940 • Fax (281) 335-1931 **Sustaining Member** 

P.O. Box 597 Nyack, New York 1096( (914) 645-6463 2659 Edison Avenue Jacksonville, Florida 32204 (904) 387-5959 • Fax (904) 387-5912 6730 Myers Road East Syracuse, New York 1305 (315) 431-4291 • Fax (315) 431-4292

IN	QU	IP	C	Daily (	Const	ruction	Repo	rt			
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## Soul Bentonite Field Test Work Sheet

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Test   Time   Sta   Depth   Sta   Depth   Strength   CLIEN	VT: INQUI	Plus				W	ORK O	RDER #:	B63000	124	
Test   Sampled											
2 18:20 An PQND 105.3 40.0 — 10.5 9 — 65.5 3 18:55 An 31+30 75.5 49.5 — 17.1 8 — 79.6 4 18.65 PM POND 119.2 40.0 — 13.2 9 — 65.1 5 3:30 PM 30+60 77.8 45.5 — 16.3 8 — 79.4  Gradation Sample:  No. Location Time Sta. Slump Sta. Depth Sta. Depth Comments 1 9:15 Am 33:40 41/2 2 11:00 Am 33:20 45/2 Uw = 123.2 PCF	Test	Time	Location	Temp			Filtrate		Sand		· · · · · · · · · · · · · · · · · · ·
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# Soil Bentonite Field Test Work Sheet

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CONT	RACTOR:	Mai	<u>، ۱ مرد</u>	-		<del></del>	_ PR	OJECT	#: BT	-00-062	
Test No.	Time Sampled	La Sta.	Depth	Temp (°F)	Marsh Funnel	Gel Strength	Filtrate Loss	ÞĦ	Sand %	Density	Comments
1	7:55 An	Por	10	72.2	42.5		16.4	9	_	65.3	
2	10:40AA			78.1	53.0		16.4	8		80.5	
3	2:25 Pm	POL		81.6	43,0	_	15.1	9		65.4	
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Gradati	on Sample:	,	<del></del> .	Slump Te	est:	Backfill Sl	lope:		···		
No.	Location	,	Time	Sta.	Slamp	Sta.	Depth	Sta.	Depth	Con	uments
1	8:30 Am	+		32+50	41/4					UW = 12	3.5 PCF
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## Soil Bentonite

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1	9:00	29	+0	135	56		16.2	8.0		81.0	<del>                                     </del>	1
2	1:00	. 28	+50	73	56		16.4					]
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1322 Space Park, Suite A256 Houston, Texas 77058 (281) 335-7940 • Fax (281) 335-1931 P.O. Box 597 Nyack, New York 10960

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> PMB #309, 4 State Road Media, Pennsylvania 19063 (610) 745-7423

**Sustaining Member** 

IN	QU	IP	D	ally (	Constr	uction l	Repo	rt					
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Signed by							Signed by						



GRAM

# Quality Inspection Services, Inc.

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## Soil Bentonite Field Test Work Sheet

PROJECT MCKENNA LANDFILL							WORK ORDER #: KUDEOOSIZT						
CLIEN	17: 17001	PASSOC.	INC.	<del></del>		_ w	ORK O	RDER #:	KJDeox	5727	-		
CONT	RACTOR: L	Javil Asi	coc. 11	<u>sc.</u>		_ PR	OJECT	# 57	-00-06		i		
Test No.	Time Sampled	Location Sta. Depth	Temp (°F)	Marsh Funuci	Gel Strength	Filtrate Loss	рЮ	Sand %	Density	Comments			
1	9:00	A8+0	73	55		16.4	8,0		81.5		1		
2	11:00	27 450	73	Sho!	_	16.2	8.0	<u> </u>	82.0				
3	12:40	POND	78	41	_	15.0	4.0		6/20	Behlonite content se	mole		
4	1:00	27+0	73	56		16.2	8.0		1820	Ī.	<b>γ</b>		
5	1:45	POND	78	40		15.2			65.5	content			
Gradatio	on Sample:		Slump Fe	st.	Backfill Sl	ope:	L		<u> </u>				
No.	Location	Time	Sta. Slump		Sta. Depth		Sta. Depth		Comments				
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Test			Marsh		Filtrate							
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186 Warwick Ave. • P.O. Box 732 • Buffalo, New York 14215-0732 (716) 836-0131 • Fax (716) 836-9608

## Soi! Bentonite Field Test Work Sheet

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1322 Space Park, Suite A256 Houston, Texas 77058 (281) 335-7940 • Fax (281) 335-1931 Sustaining Member

P.O. Box 597 Nyack, New York 10960 (914) 643-6463 2659 Edison Avenue Jacksonville, Florida 32204 (904) 387-5959 • Fax (904) 387-5912 6730 Myers Road East Syracuse, New York 13057 (315) 431-4291 • Fax (315) 431-4292

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186 Warwick Ave. • P.O. Box 732 • Buffalo, New York 14215-0732 (716) 836-0131 • Fax (716) 836-9608

### Soil Bentonite

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1322 Space Park, Suite A256 Houston, Texas 77058 281) 335-7940 • Fax (281) 335-1931

P.O. Box 597 Nyack, New York †0960 (914) 645-6463

2659 Edison Avenue Jacksonville, Florida 32204 (904) 387-5959 - Fax (904) 387-5912

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#### Soi! Bentonite Field Test Work Sheet

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318 North Morrison Street Warren, Pennsylvania 16365 (814) 726-1988 • Fax (814) 726-7850

1322 Space Park, Suite A256 Houston, Texas 77058 (281) 335-7940 • Fax (281) 335-1931 **Sustaining Member** 

P.O. Box 597 Nyack, New York 10960 (914) 64§-6463 2659 Edison Avenue Jacksonville, Florida 32204 (904) 387-5959 • Fax (904) 387-5912 6730 Myers Road East Syracuse, New York 13057 (315) 431-4291 • Fax (315) 431-4292

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#### Sqil Bentonite Field Test Work Sheet

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1	8:15An		72.4	40.0		16.4	9		65.2	BEATEN ITE
2.	10:00 An	22.25	78.0	50.0		17.3	8		79.6	
3	12:00 PM	22+00	78.33	52.0		17.9	8		81.1	
4	1:00Pm	POND	74.0	40.c		16.6	q		65.3	B.C. SAMPLE
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318 North Morrison Street Warren, Pennsylvania 16365 (814) 726-1988 • Fax (814) 726-7850

1322 Space Park, Suite A256 Houston, Texas 77058 (281) 335-7940 • Fax (281) 335-1931 **Sustaining Member** 

P.O. Box 397 Nyack, New York 10960 (914) 645-3463 2659 Edison Avenue Jacksonville, Florida 32204 (904) 387-5959 • Fax (904) 387-5912 6730 Myers Road East Syracuse, New York 13057 (315) 431-4291 • Fax (315) 431-4292

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#### Sqil Bentonite Field Test Work Sheet

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3	12:20 00			71.5		_	16.9	9		65.0	B.C. SAMPLE
<u>-</u>	1:3000	21+		70.2	59.0		12.1	8		83.3	
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1322 Space Park, Suite A256 Houston, Texas 77058 (281) 335-7940 • Fax (281) 335-1931 Sustaining Member

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186 Warwick Ave. • P.O. Box 732 • Buffalo, New York 14215-0732 (7/16) 836-0131 • Fax (7/16) 836-9608

## Soil Bentonite Field Test Work Sheet

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2_	10:30An		75.1	40.0		168	9	_	45.1	BENTONITE CONTENT SA
3	1:00en	20+00		49.0		14.2	8		78.3	
4	1:3080	POND	73.0	41.5			9		65.0	B.C. SATAL
5_	32081	19.50	69.2	48.6		15.0	3.		78.1	
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318 North Morrison Street Warren, Pennsylvania 16365 (814) 726-1988 • Fax (814) 726-7850

1322 Space Park, Suite A256 Houston, Texas 77058 (281) 335-7940 • Fax (281) 335-1931 Sustaining Member

P.O. Box 597 Nyack, New York 1096) (914) 645-6463 2659 Edison Avenue Jacksonvitle, Florida 32204 (904) 387-5969 • Fax (904) 387-5912 6730 Myers Road East Syracuse, New York 1305 (315) 431-4291 - Fax (315) 431-4292

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## Soil Bentonite Field Test Work Sheet

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> PMB #309, 4 State Road Media, Pennsylvania 19063 (610) 745-7423

**Sustaining Member** 

#### SUMMARY OF FLEX WALL PERMEABILITY

#### TEST RESULTS

ASTM D-5084 (Method A)



#### COMPLIANCE TUBE SAMPLES

Client Project Location Inquip Associates

Date

08-28-00

Sample Number

McKenna Landfill Project SW-1 Station 35+00

Job No. Tested By

2KS2590-07

Elev 505 to 503

Checked By

MLB/DL JB

Description

De-Aired Water

Permeant Fluid Recovery

2 feet

Spec. Gravity

2.65 Assumed

#### Physical Property Data

Initial Height (in)	:	3.90	Final Height (in)	:	3.61
Initial Diameter (in)	:	2.80	Final Diameter (in)	:	2.78
Initial Wet Weight (g)	:	789.60	Final Wet Weight (g)	:	761.40
Wet Density (pcf)	:	125.15	Wet Density (pcf)	:	132.26
Moisture Content %	:	22.57	Moisture Content %	:	18,18
Dry Density (pcf)	:	102, 10	Dry Density (pcf)	:	111.91
Initial Void Ratio	:	0.6195	Final Void Ratio	:	0.4776
Saturation, %	:	96.5	Saturation.%	:	100.9

#### Test Parameters

Fluid De-Aired Water Effective

Cell Pressure (psi) 60.00 Head Water (psi) 51.80

Confining Pressure (psi)

10

Tail Water

(psi)

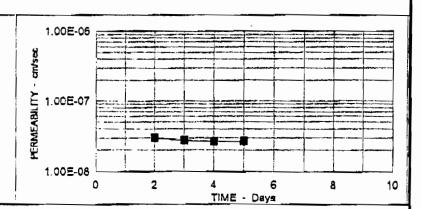
48,20

Gradient

27.52

#### Permeability Input Data

Flow, Q	( cc )	:	2.50
Length, L	( in )	;	3.61
Area, A	(sqin)	:	6.07
Head, h	(psi)	:	3.60
Time, t	(min)	:	1428.00
Temp, T	(Deg C)	:	21.0



#### Computed Permeability

PERMEABILITY, K = AT 5 DAYS

2.70E-08

(cm/sec) at 20 Degrees C

J& L TESTING COMPANY, Inc.

estaboetA qlupni

MCKSW-1,WK4\Dlsk mckcmp-1

ASTM D-508# (Method A)



#### COMPRIANCE TUBE SAMPLES

Client

Inquip Associates

Date

08-28-00

Project Location

McKenna Landfill Project

Job No.

2KS2590-07

Sample Number

SW-2 Station 33+25

Tested By

MLB/DL

Description

Elev 503 to 501

Checked By

Permeant Fluid

De-Aired Water

JB

Recovery

1.5 feet

Spec. Gravity

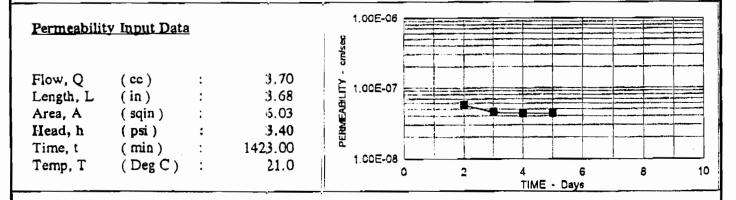
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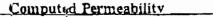
#### Physical Property Data

Initial Height (in)	:	3.83	Final Height (in)	:	3.68
Initial Diameter (in)	:	2,80	Final Diameter (in)	:	2.77
Initial Wet Weight (g)	:	808.80	Final Wet Weight (g)	:	779.30
Wet Density (pcf)	:	130.54	Wet Density (pcf)	:	133.75
Moisture Content %	:	19.25	Moisture Content %	:	16.91
Dry Density (pcf)	;	109.46	Dry Density (pcf)	:	114.41
Initial Void Ratio	:	0.5106	Final Void Ratio	:	0.4454
Saturation.%	:	99.9	Saturation, %	:	100.6

#### Test Farameters

Fluid		:	De-Aired Water	Effective		
Cell Pressure	(psi)	:	60.00	Confining Pressure (psl)	:	10
Head Water	(psi)	:	<b>5</b> 0. <b>7</b> 0	Gradient	:	25.50
Tail Water	(psi)	;	48.30			





PERMEABILITY, K = 4.35E-08 (cm/sec) at 20 Degrees C AT 5 DAYS

J & L TESTING COMPANY, Inc.

Inquip Associates

MCKSW-2.WK4\Diek mckcmp

2 14 Q8/210N



ASTM D-5084 (Method A)

#### COMPLIANCE TUBE SAMPLES

Client

Inquip Associates

Date

Project Location

McKenna Landfill Project

08-28-00 Job No.

Sample Number

SW-3 Station 31+50

2KS2590-07

Description

Elev 504 to 502

MLB/DL

Checked By

1B.

Permeant Fluid

De-Aired Water

2 feet Recovery

Spec. Gravity

Tested By

2.65 Assumed

#### Physical Property Data

Initial Height (in)	:	4.25	Final Height (in)	:	4.10
Initial Diameter (in)	:	2.80	Final Diameter (in)	:	2.79
Initial Wet Weight (g)	:	901.20	Final Wet Weight (g)	:	878.60
Wet Density (pcf)	:	131.07	Wet Density (pcf)	:	133.41
Moisture Content %	;	20.24	Moisture Content %	:	17,09
Dry Density (pcf)	:	109.01	Dry Density (pcf)	:	113.94
Initial Void Ratio	:	0.5169	Final Void Ratio	:	0,4513
Saturation, %	:	103.8	Saturation, %	:	100.4

#### Test Parameters

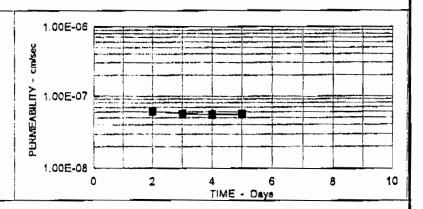
De-Aired Water Effective Fluid

Cell Pressure 60.00 (psi) 51.90 Head Water (psi) Tail Water 48.10 (psi)

Confining Pressure (psi) 10 25.58 Gradient

#### Permeability Input Data

Flow, Q Length, L Area, A Head, h Time, t	(cc) (in) (sqin) (psi) (min)	: : : : : : : : : : : : : : : : : : : :	4.90 4.10 6.11 <b>3.80</b> 1420.00
Temp, T	(Deg C)	;	21.0



#### Computed Permeability

PERMEABILITY, K = AT 5 DAYS

5.68E-08

(cm/sec) at 20 Degrees C

J & L TESTING COMPANY, Inc.

Inquip Associates

MCKSW-3,WK4\Disk mckcmp-1

### SUMMARY OF FLEX WALL PERMEABILITY



ASTM D-5084 (Method A)



#### COMPLIANCE TUBE SAMPLES

Client

Inquip Associates

Date

08-28-00

Project Location

McKenna Landfill Project

2KS2590-07

SW-4 Station 29+75

Job No.

MLB/DL

Sample Number

Tested By

Description

Elev 504 to 502

Checked By

JΒ

Permeant Fluid Recovery \_\_\_

De-Aired Waller

2 feet

Spec. Gravity

2.65 Assumed

#### Paysical Froperty Data

Initial Height (in)	:	4.15	Final Height (in)	:	4.03
Initial Diameter (in)	:	2.82	Final Diameter (in)	:	2.76
Initial Wet Weight (g)	:	863.10	Final Wet Weight (g)	:	827.00
Wet Density (pcf)	:	12 <del>6</del> .74	Wet Density (pcf)	:	130.55
Moisture Content %	:	24.60	Moisture Content %	:	19.39
Dry Density (pcf)	;	101.72	Dry Density (pcf)	:	109.35
Initial Void Ratio	:	0.6257	Final Void Ratio	:	0.5122
Saturation, %	:	104.2	Saturation, %	:	100.3
	-	·		:	

#### Test Farameters

Fluid : De-Aired Water Cell Pressure 60.00 · (psi)

Effective Confining Pressure (psi)

10

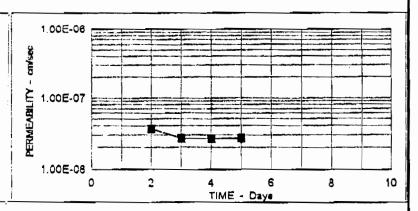
Head Water Tail Water

(psi) (psi) 51.90 43.10 Gradient

26.02

#### Permeability Input Data

Flow, Q Length, L	( cc ) ( in )	:	2.30 4.03
Area, A	(sqin)	:	5.98
Head, h	(psi)	:	3.80
Time, t	(min)	:	1411.00
Temp, T	(Deg C)	:	21.0



Computed Permeability

PERMEABILITY, K = AT 5 DAYS

2.69E-08

(cm/sec) at 20 Degrees C

J & L TESTING COMPANY, Inc.

inquip Associates

MCKSW-4,WK4\Disk mckcmp

2 . 4 26 2 . 2 . 2 . 1 / 1

Mudding - 5555 vgm/şhu

ASTM D-5084 (Method A)

#### COMPLIANCE TUBE SAMPLES

Client

Inquip Associates

Date

08-28-00

Project Location

McKenna Landfill Project

Job No.

2KS2590-07

Sample Number

SW-5 Station 28+00

Tested By

Checked By

MLB/DL

Description

. . . . . . . . . . . . .

Elev 503 to 501

JB

Permeant Fluid

De-Aired Water

2 feet Recovery

Spec, Gravity

2.65 Assumed

#### Physical Property Data

Initial Height (in)	:	4.20	Final Height (in)	:	4.04
Initial Diameter (in)	:	2.80	Final Diameter (in)	;	2.78
Initial Wet Weight (g)	:	874.00	Final Wet Weight (g)	:	857.20
Wet Density (pcf)	:	128.63	Wet Density (pcf)	:	133.05
Moisture Content %	:	19.6 <b>3</b>	Moisture Content %	:	17.33
Dry Density (pcf)	:	107.52	Dry Density (pcf)	;	113.40
Initial Void Ratio	:	0.5379	Final Void Ratio	:	0.4582
Saturation, %	:	96.7	Saturation, %	:	100.2
			·		

#### Test Parameters

Fluid		:	De-Aired Water	Lifective		1
Cell Pressure	(psi)	:	60.00	Confining Pressure (psi)	;	10
Head Water	(psi)	:	51.90	Gradient	:	25.96
Tail Water	(psi)	:	48.10			

Tail Water (psi)

#### 1.00E-06 Permeability Input Data - cm/sec Flow, Q (cc) 1.30 PERMEABILITY 1.00E-07 Length, L 4.04 (in) Area, A (sqin) 6.07 Head, h (psl) 3.80 Time, t (min) 1415.00 1.00E-08 (Deg C) Temp, T 21.0 10 TIME - Days

Computed Permeability

PERMEABILITY, K = 1.50E-08 (cm/sec) at 20 Degrees C

AT 5 DAYS

J& L TESTING COMPANY, Inc.

Inquip Associates

MCKSW-6.WK4\Disk mckcmp-1

0 14 02-0-04

**JLT** 

ASTM D-5084 (Method A)

#### COMPLIANCE TUBE SAMPLES

Client Project Location Inquip Associates McKenna Landfill Project Date

08-28-00

Sample Number

SW-6 Station 26+25

Job No. Tested By 2KS2590-07

Description

Elev 509 to 507

Final Height (in)

MLB/DL

Permeant Fluid

De-Aired Water

Checked By

ΊB

1.5 feet Recovery

Spec. Gravity

2.65 Assumed

#### Physical Property Data

Initial Height (in)	:	4,07
Initial Diameter (in)	:	2,80
Initial Wet Weight (g)	:	844,40
Wet Density (pcf)	:	128,24
Moisture Content %	:	21,11
Dry Density (pcf)	:	105,89
Initial Void Ratio	:	0.5616
Saturation, %	:	99.6

Final Diameter (in) Final Wet Weight (g) Wet Density (pcf) Moisture Content % Dry Density (pcf)

133.36 16.98 114.00

Final Void Ratio Saturation .%

0.4505 99.9

3.92

2.75

815.80

#### Test Parameters

Fluid De-Aired Water Cell Pressure 60.00 (psi) Head Water 51.80 (psi) Tail Water 48.20 (psi)

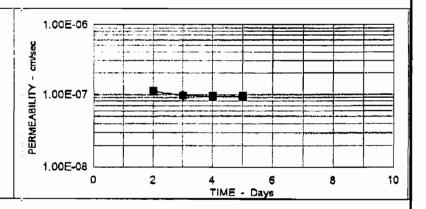
**Effective** 

Confining Pressure (psi) Gradient

10 25.35

Permeability Input Data

Flow, Q	( cc )	:	<b>7.3</b> 0
Length, L	(in)	:	3.92
Area, A	(sqin)	:	5.,94
Head, h	(psi)	:	3,60
Time, t	(min)	:	1313.00
Temp, T	(Deg C)	:	21.0



Computed Permeability

PERMEABILITY, K =AT 5 DAYS

9.50E~08

(cm/sec) at 20 Degrees C

J & L TESTING COMPANY, Inc.

Inquip Associates

MCKSW-8.WK4\Disk mckcmp-1

ASTM D-5084 (Method A)

#### **COMPLIANCE TUBE SAMPLES**

Client Project Location Inquip Associates

Date

08-28-00

JB

Sample Number

McKenna Landfill Project SW-7 Station 24+50

Job No. Tested By 2KS2590-07

Description

Elev 505 to 503

Checked By

MLB/DL

Permeant Fluid

De-Aired Water

Recovery

2 feet

Spec. Gravity

2.65 Assumed

#### Physical Property Data

Initial Height (in)	:	4.19	Final Height (in)	:	4.01
Initial Diameter (in)	:	2.82	Final Diameter (in)	:	2.74
Initial Wet Weight (g)	:	885.50	Final Wet Weight (g)	:	838. <b>5</b> 0
Wet Density (pcf)	:	128.79	Wet Density (pcf)	:	134.98
Moisture Content %	:	22.48	Moisture Content %	:	15.95
Dry Density (pcf)	;	105.15	Dry Density (pcf)	:	116.41
Initial Void Ratio	:	0.5726	Final Void Ratio	:	0.4205
Saturation .%	;	104.0	Saturation.%	:	100.5

#### Test Parameters

De-Aired Water **Effective** Fluid

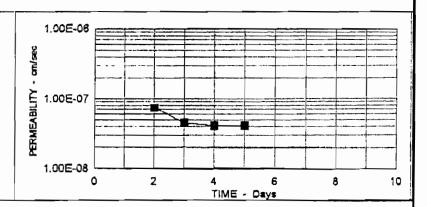
Cell Pressure 60.00 (psi) 51.90 Head Water (psi) Tail Water 48.10 (psi)

Confining Pressure (psi) Gradient

10 26.15

#### Permeability Input Data

Flow, Q	( cc )	:	3.60
Length, L	(in)	:	4.01
Area, A	(sqin)	:	<b>5</b> .90
IIead, h	(psi)	:	3.80
Time, t	(min)	:	1460.00
Temp, T	(Deg C)	:	21.0



#### Computed Permeability

PERMEABILITY, K = AT 5 DAYS

4.11E-08

(cm/sec) at 20 Degrees C

J& L TESTING COMPANY, Inc.

Inquip Associates

MCKSW-7.WK4\Disk mckcmp-1

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JLT

ASTM D-5084 (Method A)

#### COMPLIANCE TUBE SAMPLES

Client : Project Location :

Inquip Associates

Date

08-28-00

Project Location : Sample Number :

McKenna Landfill Project SW-8 Station 22+75 Job No. Tested By 2KS2590-07 MLB/DL

Description

Elev 503 to 501

Checked By :

MLB/DL

Permeant Fluid

Recovery

De-Aired Water 2 feet

Spec. Gravity

2.65 Assumed

Physical Property Data

Initial Height (in):
Initial Diameter (in):
Initial Wet Weight (g):
Wet Density (pcf):
Moisture Content %:
Dry Density (pcf):

2,82 895,30 127,48 23,27

4.28

: 103,41 : 0.5990 : 102,9 Final Height (in) :
Final Diameter (in) :

Final Wet Weight (g)
Wet Density (pcf)

843.90 131.91 18.04

Moisture Content %
Dry Density (pcf)
Final Void Ratio

111.75 0.4797

4.07

2.76

Saturation, %

99.7

#### Test Pacameters

Fluid
Cell Pressure
Head Water

Tail Water

Initial Void Ratio

Saturation.%

: De-Aired Water (psi) : 60.30 (psi) : 51.30 (psi) : 48.10 Effective

Confining Pressure (psi)
Gradient

10 25.77

Permeability Input Data

Flow, Q  $(\infty)$ 2.30 Length, L ( in ) 4.107 Area, A (sqin) 5.98 Head, h (psi) 3.30 Time, t (min) 1457.00 Temp, T (Deg C) 21.0 1.00E-08
1.00E-07
1.00E-08
0 2 4 6 8
TIME - Days

Computed Permeability

PERMEABILITY, K = AT 5 DAYS

2.64E-08

(cm/sec) at 20 Degrees C

J & L TESTING COMPANY, Inc.

Inquip Associates

MCKSW-8.WK4\Disk mckcmp-1

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#### SUMMARY OF FLEX WALL PERMEABILITY

#### TEST RESULTS

ASTM D-5084 (Method A)



#### COMPLIANCE TUBE SAMPLES

Client Project Location Inquip Associates

Date

08-28-00

Sample Number

McKenna Landfill Project SW-9 Station 20+75

Job No. Tested By

2KS2590-07

Description

Elev 508 to 506

Checked By

Spec. Gravity

MLB/DL

Permeant Fluid

De-Aired Water

JB

2.65 Assumed

0.9 feet Recovery

Physical Property Data

Final Height (in) Final Diameter (in) Final Wet Weight (g)

3.64 2.75 751.40

Initial Wet Weight (g) Wet Density (pcf) Moisture Content % Dry Density (pcf)

793.00 124.10 25.73 98.70

3.95

2.80

Wet Density (pcf) Moisture Content % Dry Density (pcf)

17.89 112.21

132.28

Initial Void Ratio Saturation, %

Initial Height (in)

Initial Diameter (in)

0.6754 101.0

Final Void Ratio Saturation.%

0.4737 100.1

Test Parameters

Fluid Cell Pressure

De-Aired Water 60.00 (psi)

Effective

Confining Pressure (psi) Gradient

10 27.30

Head Water Tail Water

(psi) (psi) 51.80 48.20

Permeability Input Data

Flow, O ( cc ) 3,40 Length, L ( in ) 3.64 Area, A 5.94 (sqin) Head, h (pst) 3.60 Time, t (min) 1441.00 Temp, T (Deg C) 21.0

1.00E-06 cm/sec PERMEABILITY 1.00E-07 1.00E-08

10 TIME - Days

ML22:3

Computed Permeability

PERMEABILITY, K = AT 5 DAYS

3.75E-08

(cm/sec) at 20 Degrees C

J & L TESTING COMPANY, Inc.

Inquip Associates

MCKSW-8.WK4\Disk mckcmp-1

31 12 32/3134

JLT

ASTM D-5084 (Method A)

#### COMPLIANCE TUBE SAMPLES

Client

Inquip Associates

Date

: 08-28-00

Project Location Sample Number

McKenna Landfill Project SW-10 Station 18+75

Job No.

2KS2590-07 MLB/DL

Description

Elev 511 to 509

Tested By Checked By JB

Permeant Fluid

De-Aired Water

1.5 feet Recovery

Spec. Gravity

2.65 Assumed

#### Physical Property Data

Initial Height (in)	:	3.95	Final Height (in)	:	3.81
Initial Diameter (in)	:	2, 82	Final Diameter (in)	:	2.78
Initial Wet Weight (g)	:	840,00	Final Wet Weight (g)	;	807.30
Wet Density (pcf)	:	129, 59	Wet Density ( pcf )	:	132.87
Moisture Content %	;	22, 10	Moisture Content %	:	17.33
Dry Density (pcf)	;	106, 14	Dry Density (pcf)	:	113.24
Initial Void Ratio	;	0.5580	Final Void Ratio	:	0.4602
Saturation, %	:	105.0	Saturation, %	:	99.8

#### Test Parameters

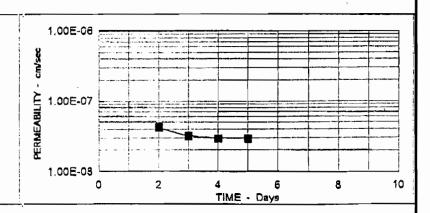
Fluid De-Aired Water Effective

60,00 Cell Pressure (psi) 51,80 Head Water (psi) Tail Water 48,20 (psi)

Confining Pressure (psi) 10 26.08 Gradient

#### Permeability Input Data

Flow, Q	( cc )	:	2,60
Length, L	(in)	:	31.81
Area, A	(sqin)	:	6,07
Head, h	(psi)	:	3,60
Time, t	(min)	:	1442,00
Temp, T	(Deg C)	:	21.0



#### Computed Permeability

PERMEABILITY, K = AT 5 DAYS

2.93E-08

(cm/sec) at 20 Degrees C

J & L TESTING COMPANY, Inc.

,inquip Associates

MCKSW-10,WK4\Disk mckcmp-1

#### **GEOCOMPOSITE**

The geocomposite leachate collection/gas venting layer is a heat bonded needle punched, non-woven, stable fiber polypropylene geotextile bonded to each side of a POLY-NET® high density polyethylene (HDPE) geonet core. The geocomposite is manufactured by Serrot International, Inc. (Serrot) Style TN3002/651. Certificates of compliance and quality control data provided by Serrot is included herein.

Also included are interface friction test results demonstrating that the following interfaces have a friction angle exceeding the required minimum of 27 degrees:

- Geocomposite vs. 60 mil LLDPE Textured Geomembrane; and
- Geocomposite vs. On-site Cover Soil

#### Tex-Net™ Certificate of Analysis

Customer: WMI of NY - Albion

Number of Rolls Shipped: 10

Project Name: McKenna Landfill

Product Code: SH3NTD1450651P

Project Number: 3176

Bill of Lading: 150500

I certify, the Tex-Net<sup>™</sup> for the above identified shipment was manufactured using first quality Poly-Net<sup>™</sup> geonet and a non-woven geotextile. The Poly-Net<sup>™</sup> meets all of Serrot International, Inc.'s specifications for geonet. The geotextile has been certified by the manufacturer to meet all of their specifications for non-woven geotextiles.

#### **TEX-NET**

Thickness was measured according to ASTM D 5199, SII modified. Ply adhesion strength was measured according to ASTM D 413 (F 904), SII modified. Percent adhesion was determined by visual inspection. Mass per unit area was determined according to ASTM D 5261. Transmissivity was determined according to ASTM D 4716, SII modified. Transmissivity is measured in the machine direction between two steel plates one hour after application of the confining pressure.

#### **POLY-NET**

Thickness was measured according to ASTM D 5199. Tensiles were determined according to ASTM D 5035, SII modified. Mass per unit area was determined according to ASTM D 5261. Carbon black content was determined according to ASTM D 4218. Der₁sity was determined according to ASTM D 1505. Transmissivity was determined according to ASTM D 4716, SII modified. Transmissivity is measured in the machine direction between two steel plates one hour after application of the confining pressure. The standard transmissivity testing parametens for Poly-Net™ are: PN2000 - 2,000 psf/1.0 gradient, PN3000 - 15,000 psf/1.0 gradient, PN3000CN - 4,000 psf/1.0 gradient, and PN 5000 - 15,000 psf/1.0 gradient.

Jane Allen

Quality Control Manager

9-13-00

Date

#### Resin Certificate of Analysis

Customer: WMI of NY - Albion

Resin Type: HDPE

Project Name: McKenna Landfill

Bills of Lading: 150500

Project Number: 3176

I certify, the polyethylene geomembrane for the above identified shipment meets or exceeds Serrot International, Inc.'s specifications. Testing was performed on each resin blend.

Melt flow index was determined according to ASTM D 1238. Density was determined according to ASTM D 1505. Where appropriate, carbon black was determined according to ASTM D 4218. The average test results are listed below.

#### **RESIN PROPERTIES**

	Melt Flow Index	Density	Carbon Black Cont.
Blend Number	(g/10 min)	(g/cm³)	(%)
4164	0.300	0.948	
4169	0.169	0.949	
4216	0.297	0.948	

Jane Allen

Quality Control Manager

9-13-00

Date

## Serrot International, Inc.

# Tex-Net™ Testing Results

Bill of Lading: 150500

											Base Net	Net		TexNet	
			Ply Adhesion	nesion	Percent	ent		Mass Per	Avg Net	MD Net	Mass Per	Carbon	Net	Trans	
	GeoTextile N	Numbers	(bbi)	<u>.</u>	Adhesion	sion	Thickness	Unit Area	Unit Area Thickness Tensile	Tensile	Unit Area	Black	Density (m <sup>2</sup> /sec	(m²/sec	
Roll Number	Тор	Bottom	Тор	Bot.	Тор	Bot.	(inches)	(lbs/ft²)	(inches)	(ppi)	(lbs/ft²)	(%)	(g/cm³)	x 10-³)	
4017681-4164	B858180A	B858297A	1.6	1.5	26	86	0.3104	0.2987	0.2270	49.5	0.1873	2.61	0.951	0.384	
4017691-4164	B858330A	B858193A	1.6	1.5	96	26	0.3104	0.2965	0.2270	49.5	0.1873	2.47	0.951	0.299	
4017694-4164	B858320A	B858279A	2.4	1.6	96	26	0.3172	0.2965	0.2287	45.9	0.1812	2.42	0.950	0.299	
4017695-4164	B858320A	B858279A	2.4	1.6	96	96	0.3127	0.2965	0.2287	45.9	0.1812	2.42	0.950	0.299	
4017705-4164	B858182A	B858255A	2.3	2.0	92	92	0.3103	0.2927	0.2287	45.9	0.1812	2.42	0.950	0.299	
4017707-4164	B858179A	B858310A	2.3	2.0	92	92	0.3103	0.2927	0.2287	45.9	0.1812	2.42	0.950	0.299	
4017802-4169	858183A	858216A	1.8	1.5	93	93	0.2785	0.2859	0.2235	52.1	0.1884	2.73	0.965	0.287	
4017804-4169	858183A	858216A	1.8	1.5	93	93	0.2883	0.2859	0.2283	52.1	0.1884	2.86	0.965	0.287	
4024610-4216	6127747A	6127738A	3.0	3.3	26	26	0.3355	0.3185	0.2441	9.02	0.2177	2.53	0.960	0.436	
4024618-4216	6127752A	6127001A	3.0	3.3	26	26	0.3355	0.3185	0.2441	2.69	0.2177	2.50	0.960	0.436	

9-13-00

Quality Control Manager Jane Allen

This Certification of Analysis shall not be reproduced except in full, without the written approval of the laboratory. Serrot International, Inc. 320 Innovation Way - Wellford, SC - 29385

#### SERROT INTERNATIONAL, INC.

Customer: WMI of NY-Albion

Project: McKenna Landfill Project Number: 3176

Bill of Ladings: 1911

Material Type: TN3002/651

We hereby certify that the Tex-Net for the above identified shipment was manufactured using first quality Poly-Net and Synthetic Industries non-woven geotextile. The Poly-Net meets all of Serrot International, Inc. specifications for geonet. The geotextile has been certified by Synthetic Industries to meet all of their specifications for non-woven geotextiles.

#### **TEX-NET**

Thickness was measured according to ASTM D 5199. Ply Adhesion strength was measured according to ASTM D 413 (F 904), NSC modified. Percent Adhesion was determined by visual inspection. Mass per unit area was determined according to ASTM D 5261.

#### **POLY-NET**

Thickness was measured according to ASTM D 5199. Tensiles were determined according to ASTM D 5035. Mass per unit area was determined according to ASTM D 5261. Carbon Black Content was determined according to ASTM D 4218. Density was determined according to ASTM D 1505. Transmissivity was determined according to ASTM D 4716. Transmissivity is measured between two steel plates one hour after application of the confining pressure in the machine direction. Transmissivity testing uses a gradient of one and the following confining pressures: PN3000 / 15,000 psf – PN3000CN / 4,000 psf – PN2000 / 2,000 psf.

A database listing of all test values follows.

SERROT INTERNATIONAL, INC.

Jane Allen

Quality Control Manager

6-16-00

Date

This certificate of Analysis shall not be reproduced except in full, without the written approval of the laboratory. Serrot International, Inc. – 320 Innovation Way – Wellford, SC 29385

#### Resin Certificate of Analysis

Customer: WMI of NY - Albion

Resin Type: HDPE

Project Name: McKenna Landfill

Bills of Lading: 1911

Project Number: 3176

I certify, the polyethylene geomembrane for the above identified shipment meets or exceeds Serrot International, Inc.'s specifications. Testing was performed on each resin blend.

Melt flow index was determined according to ASTM D 1238. Density was determined according to ASTM D 1505. Where appropriate, carbon black was determined according to ASTM D 4218. The average test results are listed below.

#### **RESIN PROPERTIES**

	Melt Flow Index	Density	Carbon Black Cont.
Blend Number	(g/ <b>1</b> 0 min)	(g/cm³)	(%)
4164	<b>0.300</b>	0.948	

Jane Allen

**Quality Control Manager** 

6-16-00

Date

# Tex-Net™ Testing Results

Bill of Lading: 1911

											Base Net	Net		TexNet
			Ply Ad	Ply Adhesion	Percent	ent		Mass Per	Avg Net	MD Net	Mass Per	Carbon	Net	Trans
	GeoTextile Numbers	Numbers	(idd)	pi)	Adhesion	slon	Thickness	Unit Area	Thickness	Tensile	Unit Area	Black	Density	(m²/sec
Roll Number	Тор	Bottom	Тор	Bot.	Top	Bot.	(inches)	(lbs/ft²)	(Inches)	(jdd)	(lbs/ft²)	(%)	(g/cm³)	x 10-3)
4017689-4164	B858330A	B858193A	1.6	1.5	96	26	0.3104	0.2965	0.2270	49.5	0.1873	2.47	0.951	0.299
4017690-4164	B858330A	B858193A	1.6	1.5	96	26	0.3104	0.2965	0.2270	49.5	0.1873	2.47	0.951	0.299
4017696-4164	B858320A	B858279A	2.4	1.6	96	96	0.3127	0.2965	0.2287	45.9	0.1812	2.42	0.950	0.299
4017697-4164	B858192A	B858279A	2.4	1.6	96	96	0.3127	0.2965	0.2287	45.9	0.1812	2.42	0.950	0.299
4017698-4164	B858192A	B858262A	2.4	1.6	96	96	0.3127	0.2965	0.2287	45.9	0.1812	2.42	0.950	0.299
4017699-4164	B858192A	B858262A	2.4	1.6	96	96	0.3127	0.2965	0.2287	45.9	0.1812	2.42	0.950	0.299
4017701-4164	B858192A	B858262A	2.4	1.6	96	96	0.3127	0.2965	0.2287	45.9	0.1812	2.42	0.950	0.299
4017703-4164	B858182A	B858255A	2.3	2.0	92	92	0.3103	0.2927	0.2287	45.9	0.1812	2.42	0.950	0.299
4017704-4164	B858182A	B858255A	2.3	2.0	92	92	0.3103	0.2927	0.2287	45.9	0.1812	2.42	0.950	0.299
4017706-4164	B858182A	B858255A	2.3	2.0	92	32	0.3103	0.2927	0.2287	45.9	0.1812	2.42	0.950	0.299
4017708-4164	B858179A	B858310A	2.3	2.0	92	92	0.3103	0.2927	0.2289 *	50.9	0.1865 *	2.55 *	0.950	0.299
4017709-4164	B858179A	B858310A	2.3	2.0	92	92	0.3103	0.2927	0.2289	50.9	0.1865	2.51	0.949	0.299
4017710-4164	B858179A	B858310A	2.3 *	2.1 *	<b>\$</b>	* 56	0.3103 *	0.2927 *	0.2289	50.9	0.1865	2.51	0.949	0.299 *
4017711-4164	858179A	858498A	1.9	2.1	92	92	0.2857	0.2893	0.2289	50.9	0.1865	2.51	0.949	0.272
4017712-4164	858238A	858498A	1.9	2.1	92	92	0.2857	0.2893	0.2289	50.9	0.1865	2.51	0.949	0.272
4017713-4164	858238A	858498A	1.9	2.1	92	92	0.2857	0.2893	0.2289	50.9	0.1865	2.51	0.949	0.272
4017714-4164	858238A	858498A	1.9	2.1	92	92	0.2857	0.2893	0.2289	50.9	0.1865	2.51	0.949	0.272
4017715-4164	858238A	858498A	1.9	2.1	92	92	0.2857	0.2893	0.2289	50.9	0.1865	2.51	0.949	0.272

NOTE: An astrisk indicates the test was performed on that roll.

Quality Control Manager Jane Allen

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#### Serrot International. Inc.

09/11/2000

#### Tex-Net™ Cartificate of Analysis

Customer: WMI of NY - Albion

Number of Rolls Shipped: 3

Project Name: McKenna Landfill

Product Code: SH3NTD1450651P

Project Number: 3176

Bill of Lading: 150465

I certify, the Tex-Net<sup>™</sup> for the above identified shipment was manufactured using first quality Poly-Net<sup>™</sup> geonet and a non-woven geotextile. The Poly-Net<sup>™</sup> meets all of Serrot International, Inc.'s specifications for geonet. The geotextile has been certified by the manufacturer to meet all of their specifications for non-woven geotextiles.

#### **TEX-NET**

Thickness was measured according to A\$TM D 5 199, SII modified. Ply adhesion strength was measured according to ASTM D 413 (F 904), SII mcdified. Fercent adhesion was determined by visual inspection. Mass per unit area was determined according to ASTM D 5261. Transmissivity was determined according to ASTM D 4716, SII modified. Transmissivity is measured in the machine direction between two steel plates one hour after application of the confining pressure.

#### **POLY-NET**

Thickness was measured according to ASTM D 5/199. Tensiles were determined according to ASTM D 5035, SII modified. Mass per unit area was determined according to ASTM D 5261. Carbon black content was determined according to ASTM D 4218. Density was determined according to ASTM D 1505. Transmissivity was determined according to ASTM D 4716, SII modified. Transmissivity is measured in the machine direction between two steel plates one hour after application of the confining pressure. The standard transmissivity testing parameters for Poly-Net™ are: PN2000 - 2,000 psf/1.0 gradient, PN3000 - 15,000 psf/1.0 gradient, PN3000CN - 4,000 psf/1.0 gradient, and PN 5000 - 15,000 psf/1.0 gradient.

Jane Alien

Quality Control Manager

9-12-00

Date

#### Resin Certificate of Analysis

Customer: WMI of NY - Albion

Resin Type: HDPE

Project Name: McKenna Landfill

Bills of Lading: 150465

Project Number: 3176

I certify, the polyethylene geomembrane for the above identified shipment meets or exceeds Serrot International, Inc.'s specifications. Testing was performed on each resin blend.

Melt flow index was determined according to ASTM D 1238. Density was determined according to ASTM D 1505. Where appropriate, carbon black was determined according to ASTM D 4218. The average test results are listed below.

#### **RESIN PROPERTIES**

	Melt Flow Index	Density	Carbon Black Cont.
Blend Number	(g/10 min)	(g/cm³)	(%)
4164	0.300	0.948	
4169	0.169	0.949	

Quality Control Manager

9-12-00 Date

# Tex-Net™ Testing Results

Bill of Lading: 150465

ly Adhesion Percent
(ppi) Adh
Top Bot. Top Bot.
1.6 1.5 96 97
1.8 1.5 93
4.4 1.5 93

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Jane Allen U Quality Control Manager

#### SERROT INTERNATIONAL, INC.

Customer: WMI of NY - Albion

Project: McKenna Landfill

Project Number: 3176

#10057

Bill of Ladings: 1888 & 1890

We hereby certify that the Tex-Net for the above identified shipment was manufactured using first quality Poly-Net geonet and Synthetic Industries non -woven geotextile. The Poly-Net meets all of Serrot International, Inc. specifications for geonet. The geotextile has been certified by Synthetic Industries to meet all of their specifications for non woven geotextiles.

#### **TEX-NET**

Thickness was measured according to ASTM D 5199. Ply Adhesion strength was measured according to ASTM D 413 (F 904), NSC modified. Percent Adhesion was determined by visual inspection. Mass per unit area was determined according to ASTM D 5261.

#### **POLY-NET**

Thickness was measured according to ASTM D 5199. Tensiles were determined according to ASTM D 5035. Mass per unit area was determined according to ASTM D 5261. Carbon Black Content was determined according to ASTM D 4218. Density was determined according to ASTM D 1505. Transmissivity was determined according to ASTM D 4716. Transmissivity is measured between two steel plates one hour after application of the confining pressure in the machine direction. Transmissivity testing uses a gradient of one and the following confining pressures: PN3000 / 15,000 psf -PN3000CN / 4,000 psf - PN2000 / 2,000 psf.

A database listing of all test values follows.

SERROT INTERNATIONAL, INC.

Jane Allen

Quality Control Manager

Material Type: TN3002/651

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#### Geomembrane Certificate of Analysis

Customer: WMI of NY - Albion

Resin Type: HDPE

Project Name: McKenna Landfill

Bills of Lading: 1888

Project Number: 3176

I certify, the polyethylene geomembrane for the above identified shipment meets or exceeds Serrot International, Inc.'s specifications. Testing was performed on each resin blend.

Melt flow index was determined according to AST'M D 1238. Density was determined according to ASTM D 1505. Where appropriate, carbon black was determined according to ASTM D 4218. The average test results are listed below.

#### **RESIN PROPERTIES**

	Melt Flow Index	Density	Carbon Black Cont.
Blend Number	(g/⊀0 min)	(g/cm³)	(%)
4169	0.169	0.949	

Quality Control Manager

6-13-00

Bill of Lading: 1888

## Tex-Net™ Testing Results

											Base Net	Net		TexNet
			Ply Adheslon	neslon	Percent	ent		Mass Per	Avg Net	MD Net	Mass Per	Carbon	Net Et	Trans
	GeoTextile Numbers	Numbers	(bb)	Ē	Adhesion	sion	Thickness	Unit Area	Thickness	Tensile	<b>Unit Area</b>	Black	Density (m²/sec	(m²/sec
Roll Number	Тор	Bottom	Тор	Bot.	Тор	Bot.	(inches)	(lbs/ft²)	(inches)	(ppi)	(lbs/ft²)	(%)	(g/cm³)	x 10-³)
4017775-4169	858257A	858187A	1.7	1.8	96	92	0.2859	0.2842	0.2233	64.2	0.1949	2.70	0.965	0.452
4017776-4169	858178A	858187A	1.7	1.8	96	92	0.2859	0.2842	0.2233	64.2	0.1949	2.70	0.965	0.452
4017777-4169	858178A	858187A	1.7	1.8	96	95	0.2859	0.2842	0.2233	64.2	0.1949	2.70	0.965	0.452
4017778-4169	858178A	858284A	1.7	1.8	96	95	0.2859	0.2842	0.2233	64.2	0.1949	2.70	0.965	0.452
4017779-4169	858178A	858284A	1.7	1.8	96	95	0.2859	0.2842	0.2233	64.2	0.1949	2.70	0.965	0.452
4017780-4169	858178A	858284A	1.7	1.8	96	95	0.2859	0.2842	0.2282 *	65.4	0.1953 *	2.76 *	0.965 *	0.452
4017781-4169	858149A	858284A	1.7 *	1.8 *	<b>.</b> 96	• 26	0.2859 *	0.2842 *	0.2241	64.3	0.1939	2.76	0.965	0.452
4017782-4169	858149A	858177A	1.7	1.8	96	95	0.2859	0.2842	0.2241	64.3	0.1939	2.76	0.965	0.452
4017783-4169	858149A	858177A	1.7	8.	96	95	0.2859	0.2842	0.2241	64.3	0.1939	2.76	0.965	0.452
4017784-4169	858149A	858177A	1.7	1.8	96	95	0.2859	0.2842	0.2241	64.3	0.1939	2.76	0.965	0.452
4017785-4169	858149A	858177A	1.7	1.8	96	95	0.2859	0.2842	0.2241	64.3	0.1939	2.76	0.965	0.452
4017786-4169	858191A	858177A	1.7	1.8	96	95	0.2859	0.2842	0.2241	64.3	0.1939	2.76	0.965	0.452
4017787-4169	858134A	858174A	1.7	1.8	96	95	0.2859	0.2842	0.2241	64.3	0.1939	2.76	0.965	0.452
4017789-4169	858134A	858174A	3.7 *	3.0 *	<b>*</b> 26	• 96	0.2979 *	0.2945 *	0.2235	59.5	0.1939	2.73	0.965	0.452 *
4017790-4169	858134A	858174A	1.8	3.0	26	96	0.2949	0.2945	0.2235	59.5	0.1939	2.73	0.965	0.287
4017791-4169	858173A	858185A	1.8	3.0	26	96	0.2949	0.2945	0.2235	59.5	0.1939	2.73	0.965	0.287
4017793-4169	858173A	858185A	1.8	3.0	46	96	0.2949	0.2945	0.2235	59.5	0.1939	2.73	0.965	0.287
4017794-4169	858173A	858185A	1.8	3.0	6	96	0.2949	0.2945	0.2235	59.5	0.1939	2.73	0.965	0.287

NOTE: An astrisk indicates the test was performed on that roll.

Quality Control Manager Jane Aller

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## Tex-Net™ Testing Results

Bill of Lading: 1888

											Base Net	Net		TexNet
			Ply Ad	Ply Adhesion	Percent	ent		Mass Per	Mass Per Avg Net		MD Net Mass Per Carbon	Carbon	Net	Trans
	GeoTextile	GeoTextile Numbers	٩	(ppi)	Adhe	Adhesion	Thickness		Thickness	Tensile	<b>Unit Area</b>	Black	Density (m²/sec	(m²/sec
Roll Number	Тор	Bottom	Тор	Top Bot.	Тор	Top Bot.	(inches)	(lbs/ft²)	(lbs/ft²) (inches) (ppi) (lbs/ft²) (%) (g/c $m^3$ ) x 10- $^3$ )	(bbi)	(lbs/ft²)	(%)	(g/cm³)	x 10-3)
4017795-4169	858173A	858151A	1.8	1.8 3.0	96 26	96	0.2949	0.2945	0.2235	59.5	0.1939	2.73	0.965	0.287
4017796-4169	858214A	858151A	1.8	3.0	26	96	0.2949	0.2945	0.2235 *	59.5	0.1948 *	2.73 *	2.73 * 0.965 * 0.287	0.287
4017799-4169	858214A	858151A	1.8	1.5	93	93	0.2785	0.2859	0.2235	52.1	0.1884	2.73	0.965	0.287
4017800-4169	858183A	858216A	1.8	1.5	93	93	0.2785	0.2859	0.2235	52.1	0.1884	2.73	0.965	0.287
4617661-4168	8581838	858246A.	υ. Obj	3.	63	ÊĠ	0.2785	D 2859	0 2235	52.1	0.1884	2.73	0,965	0.287
4017803-4169	858183A	858216A	1.8	1.5	93	93	0.2785	0.2859	0.2235	52.1	0.1884	2.73	0.965	0.287

NOTE: An astrisk indicates the test was performed on that roll.

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6-13-00 Date

### Geomembrane Certificate of Analysis

Customer: WMI of NY - Albion

Resin Type: HDPE

Project Name: McKenna Landfill

Bills of Lading: 1890

Project Number: 3176

I certify, the polyethylene geomembrane for the above identified shipment meets or exceeds Serrot International, Inc.'s specifications. Testing was performed on each resin blend.

Melt flow index was determined according to ASTM D 1238. Density was determined according to ASTM D 1505. Where appropriate, carbon black was determined according to ASTM D 4218. The average test results are listed below.

### **RESIN PROPERTIES**

	Melt Flow Index	Density	Carbon Black Cont.
Blend Number	(g/10 min)	(g/cm³)	(%)
4169	0.169	0.949	
4164	0.300	0.948	

Quality Control Manager

<u>6-13-0</u>0 Date

## Tex-Net™ Testing Results

Bill of Lading: 1890

											Base Net	Net		TexNet
			Ply Ad	Ply Adhesion	Percent	ent		Mass Per	Avg Net	MD Net	Mass Per	Carbon	Net	Trans
	GeoTextile Numbers	Numbers	(idd)	pi)	Adhe	Adhesion	Thickness	<b>Unit Area</b>	Thickness	Tensile	Unit Area	Black	Density (m2/sec	(m²/sec
Roll Number	Тор	Bottom	Тор	Bot.	Тор	Bot.	(inches)	(lbs/ft²)	(inches)	(bbi)	(lbs/ft²)	(%)	(g/cm³)	x 10-3)
4017716-4164	858261A	858498A	1.9	2.1	92	95	0.2857	0.2893	0.2326 *	52.0 *	0.1878 *	2.51 *	0.949 *	0.272
4017717-4164	858261A	858243A	1.9	2.1	98	92	0.2857	0.2893	0.2326	6.03	0.1878	2.51	0.949	0.272
4017718-4164	858261A	858243A	1.9	3.1	* 26	<b>*</b> 96	0.2857 *	0.2893 *	0.2326	6.03	0.1878	2.51	0.949	0.272
4017719-4164	858261A	858243A	1.7	2.2	26	96	0.2857	0.2893	0.2326	50.9	0.1878	2.51	0.949	0.272
4017720-4164	858181A	858243A	17	22	26	96	0 2857	£682 U	0.2326	50.9	0.1878	2.51	9.949	0.272
4017721-4164	858181A	858284A	1.7	2.2	26	96	0.2857	0.2893	0.2326	50.9	0.1878	2.51	0.949	0.272
4017722-4164	858181A	858284A	1.7	2.2	26	96	0.2857	0.2893	0.2326	50.9	0.1878	2.51	0.949	0.272
4817723-4184	:855181A	6362844	1.7	2.2	66	. <i>L</i> B	.0.3028	້. 3051	Ù.2326	30.3	Ü.1878	1.51	6,848.0	0.272 -
4017765-4164	858181A	858486A	3.4 *	1.5 *	• 96	95 *	0.3257 *	0.3021 *	0.2222	64.2	0.1949	2.45	0.965	0.732 *
4017766-4164	858406A	858486A	3.0	1.5	96	92	0.3053	0.3021	0.2222	64.2	0.1949	2.45	0.965	0.452
4017767-4164	858406A	858486A	3.0	1.5	96	92	0.3053	0.3021	0.2222	64.2	0.1949	2.45	0.965	0.452
4017768-4164	858406A	858148A	3.0	1.5	96	92	0.3053	0.3021	0.2222	64.2	0.1949	2.45	0.965	0.452
4017770-4164	858406A	858148A	3.0	1.5	96	95	0.3053	0.3021	0.2222	64.2	0.1949	2.45	0.965	0.452
4017771-4164	858257A	858148A	3.0	1.5	96	92	0.3053	0.3021	0.2222	64.2	0.1949	2.45	0.965	0.452
4017772-4169	858257A	858148A	3.0	1.5	96	92	0.3053	0.3021	0.2233 *	64.2 *	0.1949 *	2.70 *	0.965	0.452
4017773-4169	858257A	858187A	3.0 *	4.5 *	* 26	* 76	0.3053 *	0.3044 *	0.2233	64.2	0.1949	2.70	0.965	0.452
4017774-4169	858257A	858187A	1.7	1.8	96	95	0.2859	0.2842	0.2233	64.2	0.1949	2.70	0.965	0.452
4017788-4169	858134A	858174A	1.7	1.8	96	95	0.2859	0.2842	0.2241 *	64.3 *	0.1939 *	2.84 *	0.965	0.452

NOTE: An astrisk indicates the test was performed on that roll.

Quality Control Manager Jane Allen

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6-13-00 Date

**Serrot International, Inc.** 

## Tex-Net™ Testing Results

Bill of Lading: 1890

											Base Net Net	Net		TexNet
			Ply Ad	Ply Adhesion	Percent	ent		Mass Per	Mass Per Avg Net	MD Net	MD Net Mass Per Carbon	Carbon	Net Trans	Trans
	GeoTextile	GeoTextile Numbers	ā	(jdd)	Adhe	Adhesion	Thickness	Unit Area	Thickness	Tensile	Unit Area	Black	Density (m²/sec	(m²/sec
Roll Number	Тор	Bottom	Тор	Top Bot.	Тор	Top Bot.	(inches)	(lbs/ft²)	(inches) (ppl)	(ldd)	(lbs/ft²)	(%)	(g/cm³) × 10-³)	x 10-3)
4017792-4169	858173A	858185A	1.8	1.8 3.0	96 26	96	0.2949	0.2945	0.2235	59.5	0.1939	2.73	0.965	0.287
4017797-4169	858214A	858151A	1.8	1.8 * 3.3 * 97 * 97 *	• 26	• 26	0.2949 *	0.2998 *	0.2235	52.1	0.1884	2.73	0.965	0.287
4017808-4169	858168A	858499A	4.4	4.4 1.5 93	93	93	0.2859	0.2859	0.2233	52.1	0.1884	2.86	0.965	0.287
4017809-4169	858168A	858499A	4.4	1.5	93	93	0.2859	0.2859	0.2233	52.1	0.1884	2.86	0.965	0.287
4017810-4169	858168A	858215A	4.4	4.4 1.5 93	93	93	0.2859	0.2859	0.2233	52.1	0.1884	2.86	0.965	0.287
4017811-4169	858168A	858215A	4.4	2.5 * 95 * 95 *	• 36	• 36	0.2859 *	0.3064 *	0.2233	56.4 *	0.1906 *		2.91 * 0.965 * 0.287 *	0.287

NOTE: An astrisk indicates the test was performed on that roll.

Jane Allen

Quality Control Manager

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0 1 0

### TEST' RESULTS

### INTERFACE FRICTION TEST RESULTS

(LOG # E2128-24-09)

Client

Serrot

Project:

McKenna Landfill Test Date: 08/16-08/17/00

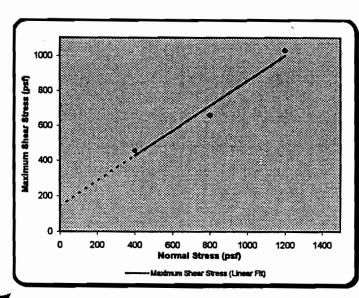
TRI Log#:

E2128-24-09

Test Method:

**ASTM D 5321** 

Tested Interface: Double-Sided Geocomposite vs. 60 mil LLDPE Textured Geomembrane



Upper Box:

Double-Sided Geocomposite

Lower Box:

60 mil textured LLDPE Geomembrane

Interface Conditioning: Interface soaked and loading applied for a minimum of 12 hours prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.04 inches/minute

**Trial Number** Bearing Slide Resistance (lbs) Normal Stress (psf) Maximum Shear Stress (psf) Corrected Shear Stress (psf) Secant Angle (degrees)

1	2	3
10	13	16
400	800	1200
466	673	1045
456	660	1029
48.8	39.5	40.6

RESULTS: Maximum Friction Angle and Y-	intercep	t			
Regression Friction Angle (degrees): Y-intercept or Regression Adhesion (psf):		35.6 142			
Regression Line: Regression Coefficient (r squared):	Y=	0.717 0.973	*X+	142	

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

Client:

Serrot

**Project:** 

McKenna Landfill

Test Date: 08/16-08/17/00

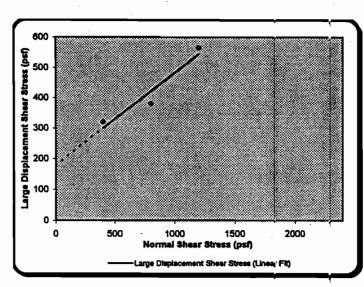
TRI Log#:

E2128-24-09

**Test Method:** 

**ASTM D 5321** 

Tested Interface: Double-Sided Geocomposite vs. 60 mil LLDPE Textured Geomembrane



Upper Box:

Double-Sided Geocomposite

Lower Box:

60 mil textured LLDPE Geomembrane

Interface Conditioning: Interface soaked and loading applied for a minimum of 12 hours prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.04 inches/minute

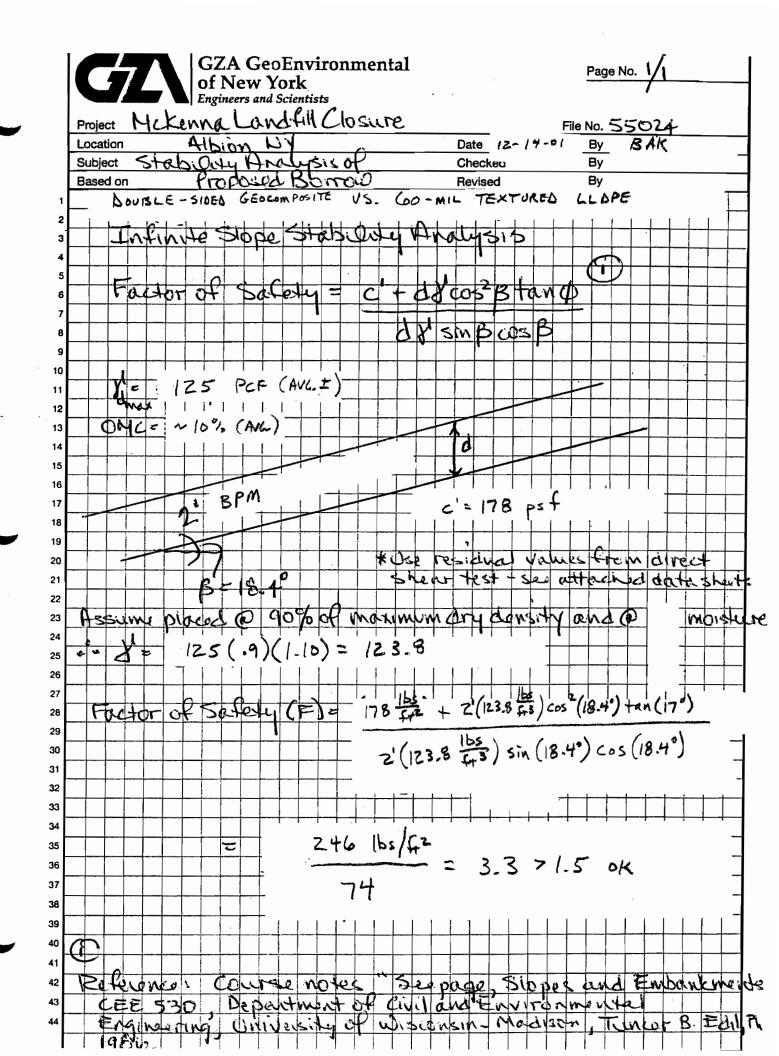
Trial Number Bearing Slide Resistance (lbs) Normal Stress (psf) Large Displacment Shear Stress (psf) Corrected Shear Stress (psf) Secant Angle (degrees)

1	2	3
10	13	16
400	800	1200
363	393	581
321	380	565
38.7	25.4	25.2

RESULTS: Large Displacement Friction A at 3.6-in. of Displacement	uigle and	d Y-interce	ot		
Regression Friction Angle (degrees):	1	17.0			
Y-intercept or Regression Adhesion (psf):		178			
Regression Line: Regression Coefficient (r squared):	Y=	0.305 0.919	*X+	178	N

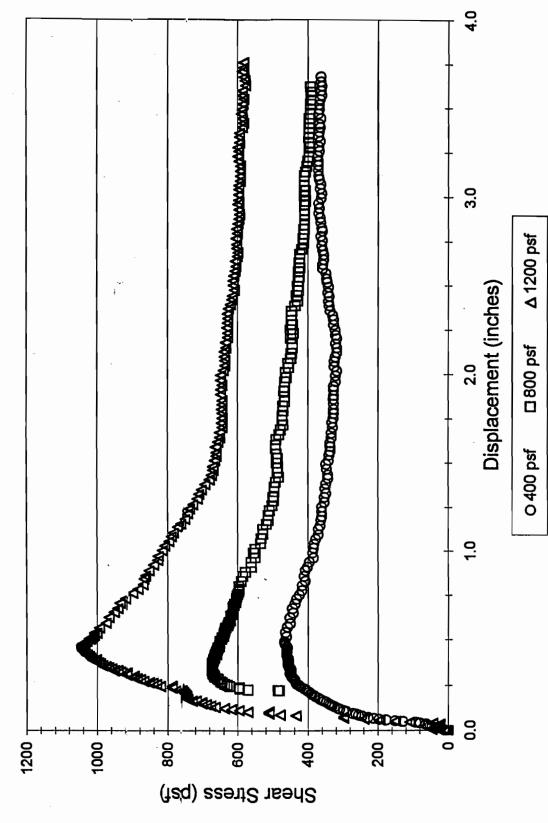
Quality Review/Date

The testing herein is based upon accepted industry practice as well as, the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



TRI/ENVIRONMENTAL, INC.

## Double-Sided Geocomposite vs. 60 mil Textured LLDPE **SERROT INTERFACE FRICTION TEST** Geomembrane



Client

Serrot

**Project**:

McKenna Landfill Test Date: 09/06-09/08/00

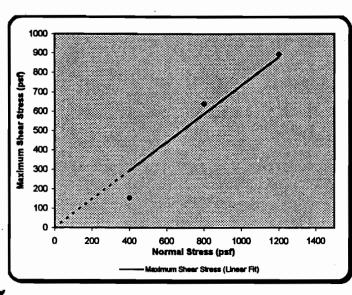
TRI Log#:

E2128-24-09

Test Method:

**ASTM D 5321** 

### Tested Interface: Subgrade Soil vs. Double-Sided Geocomposite



Upper Box:

Subgrade soil compacted to 111.6 pcf at

12.5 % moisture content (90 % maximum dry density at + 2 % Opt. Moisture Content as determined by a modified Proctor test).

Lower Box:

**Double-Sided Geocomposite** 

interface Conditioning: Interface soaked and loading applied for a minimum of 12 hours prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.04 inches/minute

Trial Number Bearing Slide Resistance (lbs) Normal Stress (psf) Maximum Shear Stress (psf) Corrected Shear Stress (psf) Secant Angle (degrees)

1	2	3
10	13	16
400	800	1200
164	652	909
154	639	893
21.1	38.6	36.7

RESULTS:	Maximum	Friction	Angle	and	Y-intercept
----------	---------	----------	-------	-----	-------------

Regression Friction Angle (degrees):

36.3

Y-intercept or Regression Adhesion (psf):

0

Regression Line:

Regression Coefficient (r squared):

Y≖ 0.734 0.939

\*X+

10-31-00

Quality Review/Date

Note: The regression line includes the origin.

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

Client:

Serrot

Project:

McKenna Landfill

Test Date: 09/06-09/08/00

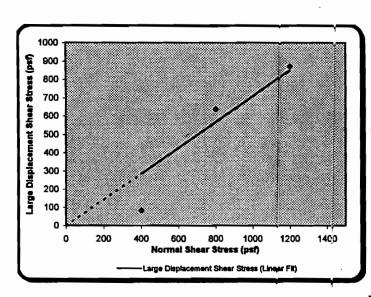
TRI Log#:

E2128-24-09

Test Method:

**ASTM D 5321** 

### Tested Interface: Subgrade Soil vs. Double-Sided Geocomposite



Upper Box:

Subgrade soil compacted to 111.6 pcf at 12.5 % moisture content (90 % maximum dry density at + 2 % Opt. Moisture Content as determined by a modified Proctor test).

Lower Box:

**Double-Sided Geocomposite** 

Interface Conditioning: Interface soaked and loading applied for a minimum of 12 hours prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.04 inches/minute

Trial Number
Bearing Slide Resistance (lbs)
Normal Stress (psf)
Large Displacment Shear Stress (psf)
Corrected Shear Stress (psf)
Secant Angle (degrees)

1	2	3
10	13_	16
400	800	1200
93	651	889
83	638	873
11.7	38.6	36.0

ingle and	d Y-interce	ot		
	35.4 0			
Y=	0.711 0.874	*X+	0	
	·	35.4 0 Y= 0.711	0 Y= 0.711 *X+	35.4 0 Y= 0.711 *X+ 0

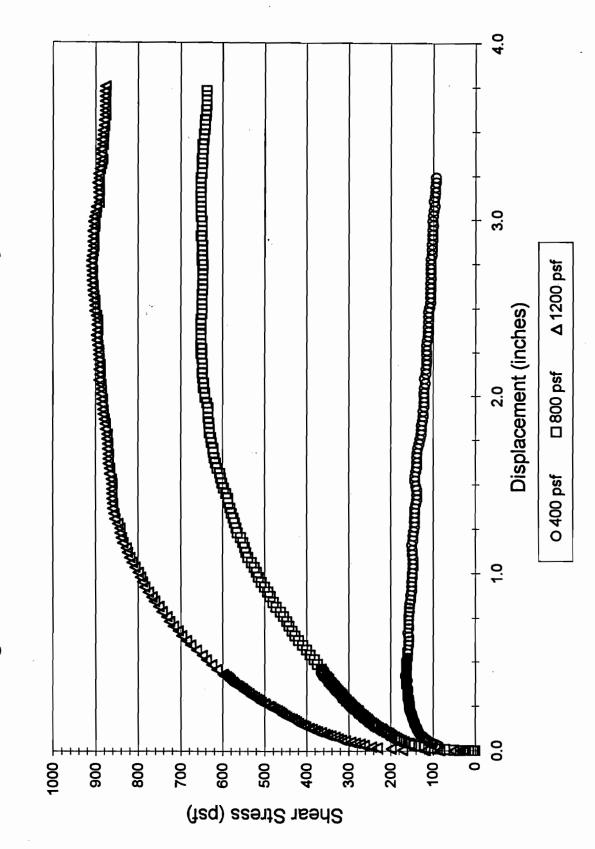
Ovelity Perious/Date

Quality Review/Date

Note: The regression line includes the origin.

The testing herein is based upon accepted industry practice as well us the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

# Subgrade Soil vs. Double-Sided Geocomposite



TRI Log No. E2128-24-09 9063 Bee Caves Road 🗆 Austin, TX 78733-6201 🗆 (512) 263-2101 🗆 FAX (512) 263-2558 🗅 1-800-880-TEST

### **GEOTEXTILE**

Geotextile Type I is a non-woven polypropylene needle punched fabric separating the drainage stone and gas venting stone from underlying subgrades and adjacent or overlying soils. The geotextile was manufactured by Synthetic Industries, Inc. (SI) Style 651.

Geotextile Type II is a non-woven polypropylene needle punched fabric, manufactured by SI Style 1291, separating the following:

- The geomembrane from the underlying subgrades where the geocomposite leachate collection/gas venting layer does not underlie the geomembrane.
- The geomembrane from the overlying barrier protection layer.

Certificates of compliance and quality control data provided by SI and Serrot is included herein.

Also included are interface friction test results demonstrating that the following interfaces have a friction angle exceeding the required minimum of 27 degrees:

- Geotextile Type II vs. 60 mil LLDPE Textured Geomembrane;
- Geotextile Type II vs. Low Permeability Barrier Soil;
- Geotextile Type II vs. Barre Stone Barrier Protection Material; and
- Geotextile Type II vs. Brockport Site Barrier Protection Material.



9/22/2000

Serrot International Inc.

FA

Connie Turner 167 Anderson Rd

Cranberry Twp PA

16066

BOL

80068038

PO 14461 DD

Ref. Job 10057 Order 00003176 NY Albion Mc Kenna LF

This is to certify that Product GEOTEX 651 , a nonwoven polypropylene geotextile produced by Synthetic Industries, will meet the following certifiable minimum average values when tested in accordance with the proper ASTM test methods. A minimum average roll value is calculated as the mean minus two standard deviations, yielding a 97.5 percent confidence level. This geotextile has been continuously inspected for the presence of needles and none were detected.

Physical Property	<b>Test Method</b>	MARV	<u>SI Unit</u>
Mass Per Unit Area Thickness Tensile Strength Elongation Trapezoidal Tear Mullen Burst Puncture Strength A.O.S. Permittivity Permeability Water Flow Rate UV Resistance	ASTM D-5261 ASTM D-5199 ASTM D-4632 ASTM D-4533 ASTM D-4533 ASTM D-4533 ASTM D-4751 ASTM D-4451 ASTM D-4451 ASTM D-4451 ASTM D-4451 ASTM D-4355	80 m 170 lb 50 % 70 lb 330 ps 110 lb: 70 Si 1.30 se 0.24 cn	50 % 50 % 50 % 50 % 51 (2275.0 kPa 53 (489.5) N 66ve 0.212 mm 6c-1 1.30 sec-1 7/sec 0.24 cm/sec 50m/ft2 (4481.917 ipm/m2

Strength Related after \$00 hours exposure in Xanon Arc Weatherometr

incerely

Patti Weaver Technical Manager

Geosynthetic Products Division

Seller makes no warmity express or implied concerning the product fungered revolution of the time of delivery it shell be of the quality and specification stated herein. ANY (MPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE IS EXPRESSLY EXCLUDED, AND TO THE EXTENT THAT IF IT'S CONTRARY TO THE PORTICULAR PURPOSE IS EXPRESSLY EXCLUDED. Any monormediately are required by the Seller concerning uses or applicables as 4 sale product or believed (visible and Seller makes no warmity of results to be obtained. If the product make it was product date not may if symbotic industries before the product, that Symbotic notices are supported by the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product of the product

9/19/2000

CustomerNumber:

PoNumber. ShipDate:

> Synthetic Industries
> Individual Roll Data
> of Lading: 80068038 Bill of Lading:

Roll Number Style	Style	Mass	Thickness	Tensile	ile ile	Elong	longation	Trap	Trap Tear	Burst	Puncture	
		Osy D5261	mits D5189	MD lbs D4632	CD lbs D4632	MD % % D4632	CD % D4632	MD lbs D4533	CD lbs D4533	psi D3786	lbs D4833	
6091850A	1291	13.8	152	477	512	77	98	<b>16</b>	188	803	241	
6091890A	1291	14.5	168	404	497	69	<b>20</b>	165	220	800	251	
6092040A	1291	13.0	144	362	432	99	72	176	202	780	241	
6128110A	1291	13.5	159	430	466	81	70	190	256	780	238	•
5196260A	651	7.1	96	182	263	4	52	86	138	369.	127	
5197710A	651	7.2	101	194	202	70	69	108	137	370	123	
5197800A	651	6.7	93	187	243	89	73	66	117	351	113	





11/3/2000

Serrot International Inc.

PA

Connie Turner

167 Anderson Rd Cranberry Twp PA

16066

BOL

80076402

PO 15636QD

Ref. JOB 10057 ORDER 00003176 WMI OF WY ALBION MC KENNA LF

This is to certify that Product GEOTEX 651 , a nonwoven polypropylene geotextile produced by Synthetic Industries, will meet the following certifiable minimum average values when tested in accordance with the proper ASTM test methods. A minimum average roll value is calculated as the mean minus two standard deviations, yielding a 97.5 percent confidence level. This geotextile has been continuously ir spected for the presence of needles and none were detected.

Physical Property	Test Method	MARV	<u>SI Unit</u>	
Mass Per Unit Area Thickness Tensile Strength Elongation Trapezoidal Tear Mullen Burst Puncture Strength A.O.S. Permittivity Permeability Water Flow Rate UV Resistance	ASTM D-5261 ASTM D-5199 ASTM D-4632 ASTM D-4632 ASTM D-4533 ASTM D-3786 ASTM D-4833 ASTM D-4751 ASTM D-4491 ASTM D-4491 ASTM D-4491 ASTM D-4356	6.0 oz/yd2 80 mils 170 lbs 50 % 70 lbs 330 psi 110 lbs 70 Sieve 1.30 sec-1 0.24 cm/sec 110 gpm/ft2 70 %	(203.4) (2.032) (756.5) 50 (311.5) (2275.0 (489.5) 0.212 1.30 0.24 (4481.917	g/m2 mm N % N kPa N mm sec-1 cm/sec lpm/m2 %

Patti Weaver Technical Manager

Geosynthetic Products Division

SERROTINT'L, INC. NORTHEAST DIVISION

ndustries	oll Data	8007640
Symmetic	Individo	Bill of Lading

UCOSTALIT

М

Punct		ths.	D4633	119	110	152	811
Burst		įž	D3786	409	330	411	360
=	XMD	sqi sqi	D4533	142	121	132	103
T.Tear	Š	đ	D4533	103	89	105	\$
Elongation	XMD	*	D4632	*\$	\$	89	22
Elong	Ş	*	D4632	75	23	75	29
Tensile	XMD	<del>sq.</del>	04632	245	215	254	205
Ten	Ñ	<u>\$</u>	D4632	195	168	221	181
Thick		mils	D5199	65	82	102	86
Weight		Osy	D5261	6.8	6.3	9.7	9.6
Batch				11457	11457	80218	80225
Style				651	651	651	651
Roll #				1157870A	1157920A	B830760A	B832550A



Synthetic Industries' current standard manufacturing quality control (MQC) testing frequency for GEOTEX nonwoven geotextiles is one (1) test per 90,000 sf (8,360 sm) for index properties for skyles heavier than 601 and one (1) test per 162,000 sf (15,000 sm) for index properties for style 601 and lighter. Although we strive to test our nonwoven geotextiles for apparent opening size (AOS) and Permittivity/permeability/water flow rate approximately once every 540,000 sf (50,160 sm), the actual frequency of testing for performance properties will vary depending upon production schedules, product availability, customer requirements, job specifications or other agreements arranged with Synthetic Industries and set for assistance in calculating the costs for the additional tests.

Contrast is the purchaser's responsibility to notify Synthetic Industries and ask for assistance in calculating the costs for the additional tests.

Contrast is a produced, inspecded and the test results from the frequency stated above indicates that materials produced during the production run as the rolls are holded and a shipped for storage until an order requires the material to be shipped. Since rolls are backed above may include data from rolls which were not shipped. However, the data provided is from the same production run as the rolls actually shipped on this bill of lading.



6/28/2000

Serrot International Inc Connie Turner 167 Anderson Rd Cranberry Twp PA 16066

Ref: WMI OF NY ALBION-MC KENINA # (C)

This is to certify that Product GEOTEX 1291 , a nonwoven polypropylene geotextile produced by Synthetic Industries, will meet the following certifiable minimum average values when tested in accordance with the proper ASTM test methods. A minimum average roll value is calculated as the mean mirus two standard deviations, yielding a 97.5 percent confidence level. This geotextile has been continuously inspected for the presence of needles and none were detected.

Physical Property	<u>Test Method</u>	MARV		<u>SI Unit</u>	
Mass Per Unit Area Thickness Tensile Strength Elongation Trapezoidal Tear Mullen Burst Puncture Strength A.O.S. Permittivity Permeability	ASTM D-5261 ASTM D-5199 ASTM D-4632 ASTM D-4632 ASTM D-4533 ASTM D-3786 ASTM D-4833 ASTM D-4751 ASTM D-4491 ASTM D-4491	12.0 115 320 50 125 620 210 100 0.8 0.29	oz/yd2 mils lbs % lbs psi lbs Sieve sec-1 cm/sec gpm/ft2	(406.8) (2.921) (1424) 50 (556.25) (4274.2 (934.5) 0.15 0.8 0.29	g/m2 mm N % N kPa N mm sec-1 cm/sec
Water Flow Rate UV Resistance	ASTM D-44\(\)1 ASTM D-43\(\)5	60 70	%	(2444.682 70	lpm/m2 %

Strength Retained after 500 hours exposure in Xenon Arc Weatherometers

Sincerely

Warren Sickler

Senior Technical Manager

Geosynthetic Products Division

Selier makes no warranty express or implied concerning the product furnished hereunder other than at the time of delivery it shall be of the quality and specification stated herein. ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE IS EXPRESSLY EXCLUDED. AND TO THE EXTENT THAT IF IT IS CONTRARY TO THE FOREGOING SENTENCE ANY IMPLIED WARRANTY OF MERCHANTABILITY IS EXPRESSLY EXCLUDED. Any recommendation is made by the Seler concerning uses or applications of said product are believed reliable and Seller makes no warranty of results to be obtained. If the product does not ment synthetic industries before installing the product, then Synthetic industries will replace the product without channe or returned the purchase price. This Data Sheet supersedes all previous Data Sheets for this style and is subject to change without notice. The effective date for this product data is



6/23/2000

Serrot International Inc Connie Turner 167 Anderson Rd Cranberry Twp PA

16066

BOL

80049355 PO 112250D

Ref: WMI of NY Albion-MC Kenna

This is to certify that Product GEOTEX 1291 , a nonwoven polypropylene geotextile produced by Synthetic Industries, will meet the following certifiable minimum average values when tested in accordance with the proper ASTM test methods. A minimum average roll value is calculated as the mean minus two standard deviations, yielding a 97.5 percent confidence level. This geotextile has been continuously inspected for the presence of needles and none were detected.

<b>Physical Property</b>	Test Method	MARV		SI Unit	
Mass Per Unit Area Thickness Tensile Strength Elongation Trapezoidal Tear Mullen Burst Puncture Strength A.O.S. Permittivity Permeability Water Flow Rate UV Resistance	ASTM D-5261 ASTM D-5199 ASTM D-4632 ASTM D-4533 ASTM D-3786 ASTM D-4833 ASTM D-4751 ASTM D-4491 ASTM D-4491 ASTM D-4491	125 620 210 100 0.8 0.29 60	oz/yd2 mils lbs % lbs psi lbs Sieve sec-1 cm/sec gpm/ft2 %	(406.8) (2.921) (1424) 50 (556.25) (4274.2 (934.5) 0.15 0.8 0.29 (2444.682	g/m2 mm N % N kPa N mm sec-1 cm/sec lpm/m2
UV Resistance	ASTM D-4355	70	70	70	%

Strength Retained after 500 hours exposure in Xenon Arc Weatherometer

Sincerely

Warren Sickler

Senior Technical Manager

Geosynthetic Products Division

Seller makes no warranty express or implied concerning the product furnished hereunder other than at the time of delivery it shall be of the quality and specification stated herein. ANY IMPUED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE IS EXPRESSLY EXCLUDED AND TO THE EXTENT THAT IF IT IS CONTRARY TO THE FOREGOING SENTENCE ANY IMPUIED WARRANTY OF MERCHANTABILITY IS EXPRESSLY EXCLUDED. Any recommendations made by the Seller concerning uses or applications of said product are believed reliable and Seller makes no warrantly of results to be obtained. If the product does not meet Synthetic Industries current published specifications, and the Customer gives notice to Synthetic Industries before installing the product, then Synthetic Industries will replace the product without charge or refund the purchase price. This Data Sheet supersedes all previous Data Sheets for this style and is subject to change without notice. The effective date for this product data is

6/23/2000

Punct		sql	D4833	229	235	256
Burst		psi	D3786	733	823	793
<u>_</u>	XMD	sql	D4533	215	217	256
T.Tear	MD	sq	D4533	208	222	180
Elongation	XMD	%	D4632	81	70	11
Elong	MD	%	D4632	11	75	82
ile	XMD	sql	D4632	463	481	484
Tensile	MD	sql	D4632	445	439	468
Thick		mils	D5199	148	146	155
Weight		Osy	D5261	13.4	13.6	14.2
Batch				60539	60541	60541
Style				1291	1291	1291
Roll #				6101270A	6101610A	6101630A 1291



Synthetic Industries' current standard manufacturing quality control (MQC) testing frequency for GEOTEX nonwoven geotextiles is one (1) test per 90,000 sf (8,360 sm) for index properties (mass per unit area, thickness, grab tensile and elongation, trapezoidal tear, mullen burst and puncture resistance) for styles heavier than 601 and one (1) test per 162,000 sf (15,000 sm) for index properties for style 601 and lighter. Although we strive to test our nonwoven geotextiles for apparent opening size (AOS) and Permittivity/permeability/water flow rate approximately once every 540,000 sf (50,160 sm), the actual frequency of testing for performance properties will vary depending upon production schedules, product availability, customer requirements, job specifications or other agreements arranged with Synthetic Industries prior to the time of purchase. If additional testing is needed to meet higher frequencies required by the project specifications, it is the purchaser's responsibility to notify Synthetic Industries and ask for assistance in calculating the costs for the additional tests.

Once rolls of nonwoven geotextiles are produced and the test results from the frequency stated above indicates that materials produced during the production run as the rolls are loaded at the warehouse independent of production sequence test results listed above may include data from rolls which were not shipped. However, the data provided is from the same production run as the rolls actually shipped on this bill of lading.



6/23/2000

Serrot International Inc Connie Turner 167 Anderson Rd

Cranberry Twp PA 16066

BOL

80048106

PO 112250D

Ref: WMI of NY Albion-MC Kenna

, a nonwoven polypropylene This is to certify that Product GEOTEX 1291 geotextile produced by Synthetic Industries, will meet the following certifiable minimum average values when tested in accordance with the proper ASTM test methods. A minimum average roll value is calculated as the mean minus two standard deviations, yielding a 97.5 percent confidence level. This geotextile has been continuously inspected for the presence of needles and none were detected.

Physical Property	Test Method	MARV		SI Unit	
Mass Per Unit Area Thickness Tensile Strength Elongation Trapezoidal Tear Mullen Burst Puncture Strength A.O.S. Permittivity Permeability Water Flow Rate	ASTM D-5261 ASTM D-5199 ASTM D-4632 ASTM D-4533 ASTM D-3786 ASTM D-4833 ASTM D-4751 ASTM D-4491 ASTM D-4491	12.0 115 320 50 125 620 210 100 0.8 0.29 60	oz/yd2 mils lbs % lbs psi lbs Sieve sec-1 cm/sec gpm/ft2 %	(406.8) (2.921) (1424) 50 (556.25) (4274.2 (934.5) 0.15 0.8 0.29 (2444.682	g/m2 mm N % N kPa N mm sec-1 cm/sec lpm/m2
A.O.S. Permittivity Permeability	ASTM D-4751 ASTM D-4491 ASTM D-4491	100 0.8 0.29	Sieve sec-1 cm/sec	0.15 0.8 0.29	mm sec

Strength Retained after 500 hours exposure in Xenon Arc Weatherometer

Sincerely

Warren Sickler

Senior Technical Manager

Geosynthetic Products Division

Seller makes no warranty express or implied concerning the product furnished hereunder other than at the time of delivery it shall be of the quality and specification stated herein. ANY IMPUED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE IS EXPRESSLY EXCLUDED AND TO THE EXTENT THAT IF IT IS CONTRARY TO THE FOREGOING SENTENCE ANY IMPLIED WARRANTY OF MERCHANTABILITY IS EXPRESSLY EXCLUDED. Any recommendations made by the Seller concerning uses or applications of said product are believed reliable and Seller makes no warranty of results to be obtained. If the product does not meet Synthetic Industries current published specifications, and the Customer gives notice to Synthetic Industries before installing the product, then Synthetic Industries will replace the product without charge or refund the purchase price. This Data Sheet supersedes all previous Data Sheets for this style and is subject to change without notice. The effective date for this product data is

Synthetic Industries Individual Roll Data Bill of Lading:

80048106

Roll Number Style	Style	Mass	Thickness	Tensile	sile	Elong	Elongation	Trap	Trap Tear	Puncture	Burst
		Osy D5261	mils D5199	MD lbs D4632	CD lbs D4632	MD % D4632	MD CD % % 4632 D4632	MD CD lbs lbs D4533 D4533	CD lbs D4533	lbs D4833	psi D3786
6101310A	1291	12.1	122	404	384	75	92	190	222	212	719
6101370A	1291	13.5	155	434	481	42	85	185	246	214	089
£1014004	1291	12.4	143	380	432	83	88	154	221	216	644
6101415A	1291	12.8	146	419	486	06	87	191	219	221	761
6101430A	1291	13.3	152	484	486	88	83	171	218	244	763
6101445A	1291	12.1	134	341	456	75	79	166	192	211	



PoNumber: ShipDate:

15564

CustomerNumber:

112250D 6/14/2000



6/23/2000

Serrot International Inc Connie Turner 167 Anderson Rd

Cranberry Twp PA

16066

BOL

80049055

PO 112250D

Ref: WMI of NY Ablion-MC Kenna

This is to certify that Product GEOTEX 1291, a nonwoven polypropylene geotextile produced by Synthetic Industries, will meet the following certifiable minimum average values when tested in accordance with the proper ASTM test methods. A minimum average roll value is calculated as the mean minus two standard deviations, yielding a 97.5 percent confidence level. This geotextile has been continuously inspected for the presence of needles and none were detected.

Physical Property	Test Method	MARV		SI Unit	
Mass Per Unit Area Thickness Tensile Strength Elongation Trapezoidal Tear Mullen Burst Puncture Strength A.O.S. Permittivity Permeability Water Flow Rate UV Resistance	ASTM D-5261 ASTM D-5199 ASTM D-4632 ASTM D-4632 ASTM D-4533 ASTM D-3786 ASTM D-4833 ASTM D-4751 ASTM D-4491 ASTM D-4491 ASTM D-4491 ASTM D-4355	12.0 115 320 50 125 620 210 100 0.8	oz/yd2 mils lbs % lbs psi lbs Sieve sec-1 cm/sec gpm/ft2 %	(406.8) (2.921) (1424) 50 (556.25) (4274.2 (934.5) 0.15 0.8 0.29 (2444.682	g/m2 mm N % N kPa N mm sec-1 cm/sec lpm/m2
UV Resistance	AS INI D-4355	70	70	70	%

Strength Retained after 500 hours exposure in Xenon Arc Weatherometer

Sincerely

Warren Sickler

Senior Technical Manager

Geosynthetic Products Division

Seller makes no warranty express or implied concerning the product furnished hereunder other than at the time of delivery it shall be of the quality and specification stated herein. ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE IS EXPRESSLY EXCLUDED AND TO THE EXTENT THAT IF IT IS CONTRARY TO THE FOREGOING SENTENCE ANY IMPLIED WARRANTY OF MERCHANTABILITY IS EXPRESSLY EXCLUDED. Any recommendations made by the Seller concerning uses or applications of said product are believed reliable and Seller makes no warranty of results to be obtained. If the product does not meet Synthetic Industries current published specifications, and the Customer gives notice to Synthetic Industries before installing the product, then Synthetic Industries will replace the product without charge or refund the purchase price. This Data Sheet supersedes all previous Data Sheets for this style and is subject to change without notice. The effective date for this product data is

Synthetic Industries Individual Roll Data 3ill of Lading: 80049055 Bill of Lading:

1556	CustomerNumber:
6/15/200	ShipDate:
112250	PoNumber:

Roll Number Style	Style	Mass	Thickness	Tensile	ile	Elong	Elongation	Trap	Trap Tear	Puncture	Burst
		(	mile	M :	CD "	MD	CD	WD:	MD CD	:	•
		Osy	2	sql	sqi	%	<b>%</b>	sqi	sql	sqi	ısd
		D5261	D5199	D4632	D4632	D4632	D4632	D4533	D4533	D4833	D3786
6101610A	1291	13.6	146	439	481	75	2	222	217	235	823
6101640A	1291	13.4	142	405	486	78	75	183	232	239	773





6/28/2000

Serrot International Inc. Connie Turner 167 Anderson Rd Cranberry Twp PΑ

80050857

16066

PO 11225OD

BOL

Ref: WMI OF NY ALBION-MC KENNA

This is to certify that Product GEOTEX 1291 , a nonwoven polypropylene geotextile produced by Synthetic Industries, will meet the following certifiable minimum average values when tested in accordance with the proper ASTM test methods. A minimum average roll value is calculated as the mean minus two standard deviations, yielding a 97.5 percent confidence level. This geotextile has been continuously inspected for the presence of needles and none were detected.

<b>Physical Property</b>	Test Method	MARV		SI Unit	
Mass Per Unit Area Thickness Tensile Strength Elongation Trapezoidal Tear Mullen Burst Puncture Strength A.O.S. Permittivity	ASTM D-5261 ASTM D-5199 ASTM D-4632 ASTM D-4632 ASTM D-4533 ASTM D-3786 ASTM D-4833 ASTM D-4751 ASTM D-4491	12.0 115 320 50 125 620 210 100 0.8	oz/yd2 mils lbs % lbs psi lbs Sieve sec-1 cm/sec	SI Unit (406.8) (2.921) (1424) 50 (556.25) (4274.2 (934.5) 0.15 0.8 0.29	g/m2 mm N % N kPa N mm sec-1
Permeability	ASTM D-4491	0.29			cm/sec
Water Flow Rate	ASTM D-4491	60	gpm/ft2	(2444.682	lpm/m2
UV Resistance	ASTM D-4355	70	%	70	·%

Strength Retained after 500 hours exposure in Xenon Arc Weatheromete

Sincerely

Warren Sickler

Senior Technical Manager

Geosynthetic Products Division

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Synthetic Industries Individual Roll Data Bill of Lading: 80050857

15564 112250D 6/23/2000 CustomerNumber: PoNumber: ShipDate:

Roll Number Style	Style	Mass	Thickness Tensile	Tens	ile	Elong	Elongation	Trap	Trap Tear	Puncture	Burst
		Osy D5261	mils D5199	MD lbs D4632	CD lbs D4632	MD % D4632	MD CD % % D4632 D4632	MD lbs D4533	CD lbs b4533	lbs D4833	psi D3786
6101550A	1291	12.6	137	399	445	82	72	192	228	214	069
6101630A	1291	14.2	155	468	484	82	77	180	256	256	793
GTUTOOÚÁ	1281	\$. 3.	136	384	443	79	7.3	158	228	232	727
6101659A	1291	13.0	145	419	443	82	74	155	208	239	764

1/4



6/28/2000

Serrot International Inc Connie Turner 167 Anderson Rd Cranberry Twp PA 16066

BOL

80050912

PO 11225OD

Ref: WMI OF NY ALBION-MC KENNA

This is to certify that Product GEOTEX 1291 , a nonwoven polypropylene geotextile produced by Synthetic Industries, will meet the following certifiable minimum average values when tested in accordance with the proper ASTM test methods. A minimum average roll value is calculated as the mean minus two standard deviations, yielding a 97.5 percent confidence level. This geotextile has been continuously inspected for the presence of needles and none were detected.

<b>Physical Property</b>	Test Method	<u>MARV</u>	SI Unit
Mass Per Unit Area Thickness Tensile Strength Elongation Trapezoidal Tear Mullen Burst Puncture Strength A.O.S. Permittivity Permeability Water Flow Rate	ASTM D-5261 ASTM D-5199 ASTM D-4632 ASTM D-4533 ASTM D-3786 ASTM D-4833 ASTM D-4751 ASTM D-4491 ASTM D-4491	12.0 oz/yd2 115 mils 320 lbs 50 % 125 lbs 620 psi 210 lbs 100 Sieve 0.8 sec-1 0.29 cm/sec 60 gpm/ft2	(406.8) g/m2 (2.921) mm (1424) N 50 % (556.25) N (4274.2 kPa (934.5) N 0.15 mm 0.8 sec-1 0.29 cm/sec (2444.682 lpm/m2
•		60 gpm/ft2 70 %	(2444.682 lpm/m2 70 %

Strength Retained after 500 hours exposure in Xenon Arc Weatherometer

Sincerely

Warren Sickler

Senior Technical Manager

Geosynthetic Products Division

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Synthetic Industries Individual Roll Data

Bill of Lading:

80050912

Roll Number Style	Style	Mass	Thickness	Tensile	sile	Elong	Elongation	Trap	Trap Tear	Puncture	Burst
		Oso	mils	MD ad	CD 4	MD %	CD %	MD	CO 4	<u> </u>	č
		D5261	D5199	D4632		, D4632	D4632 D4632		D4533	D4833	D3786
6101560A	1291	12.9	142	441	440	62	71	163	213	241	785
6101579A	1291	13.3	146	404	465	83	70	159	249	232	717
61615968	4.284	14.0	152	456	474	87	74	170	234	235	797



PoNumber:

CustomerNumber:

ShipDate:

112250D 6/23/2000

15564

Client

Serrot

**Project**:

McKenna Landfill Test Date: 08/16-08/17/00

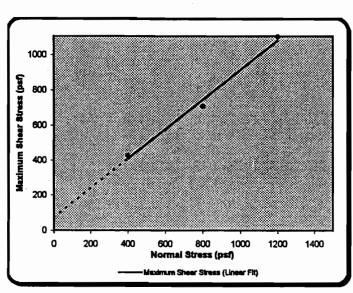
TRI Log#:

E2128-24-09

Test Method:

**ASTM D 5321** 

Tested Interface: 12 oz. Non-Woven Geotextile vs. 60 mil LLDPE Textured Geomembrane



Upper Box:

Synthetic Industries 12 oz. Non-woven

Geotextile

Lower Box:

60 mil textured LLDPE Geomembrane

Interface

Interface soaked and loading applied

Conditioning:

for a minimum of 12 hours prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.04 inches/minute

**Trial Number** Bearing Slide Resistance (lbs) Normal Stress (psf) Maximum Shear Stress (psf) Corrected Shear Stress (psf) Secant Angle (degrees)

1	2	3
10	13	16
400	800	1200
438	723	1118
428	710	1102
46.9	41.6	42.6

RESULTS: Maximum Friction Angle and Y	'-intercept
	•
	•
Regression Friction Angle (degrees):	40.1
Vintercent or Degraceian Adhasian (neft)	72

-Intercept or Regression Adhesion (psf):

Y=

\*X+

73

0-71-00

Regression Line: Regression Coefficient (r squared): 0.843 0.991

Quality Review/Date

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

Client:

Serrot

Project:

McKenna Landfill

Test Date: 08/16-08/17/00

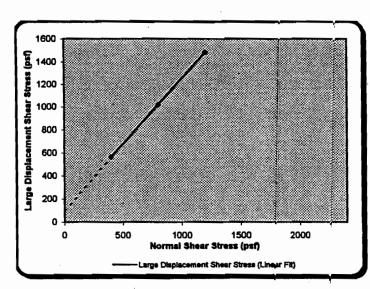
TRI Log#:

E2128-24-09

Test Method:

**ASTM D 5321** 

Tested Interface: 12 oz. Non-Woven Geotextile vs. 60 mil LLDPE Textured Geomembrane



Upper Box:

Synthetic Industries 12 oz. Non-woven

Geotextile

Lower Box:

60 mil textured LLDPE Geomembrane

Interface Conditioning: Interface soaked and loading applied for a minimum of 12 hours prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.04 inches/minute

Trial Number Bearing Slide Resistance (lbs) Normal Stress (psf) Large Displacment Shear Stress (psf) Corrected Shear Stress (psf) Secant Angle (degrees)

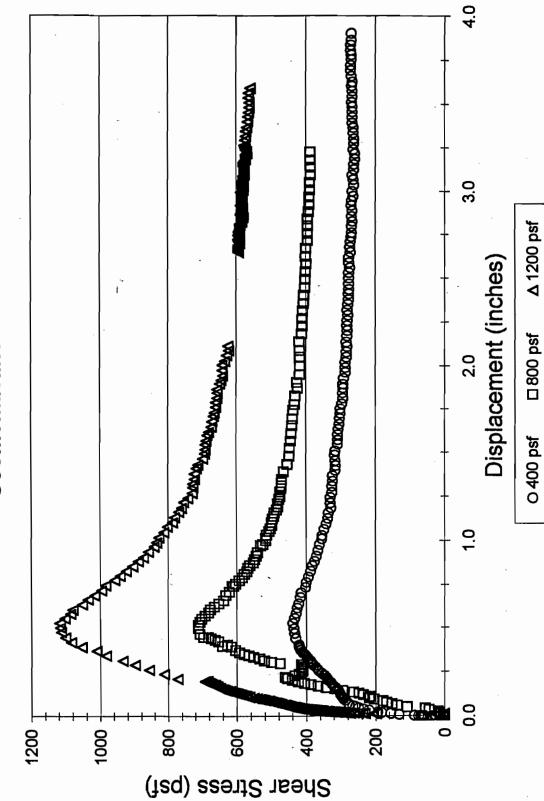
1	2	3
10	13	16
400	800	1200
576	1031	1499
566	1018	1483
54 <u>.</u> 8	51.8	51.0

RESULTS: Large Displacement Friction <i>F</i> at 3.8-in. of Displacement	ingle and	d Y-intercep	ot		<u>.</u>
Regression Friction Angle (degrees): Y-intercept or Regression Adhesion (psf):		48.9 105			
Regression Line: Regression Coefficient (r squared):	Y=	1.147 1.000	*X+	105	

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## 12 oz. Non-Woven Geotextile vs. 60 mil Textured LLDPE SERROT INTERFACE FRICTION TEST Geomembrane



9063 Bee Caves Road 🛭 Austin, TX 78733-6201 🏾 (512) 263-2101 🗅 FAX (512) 263-2558 🗅 1-800-880-TEST TRI Log No. E2128-24-09

Client:

Serrot

Project:

McKenna Landfill Test Date: 08/17-09/1/00

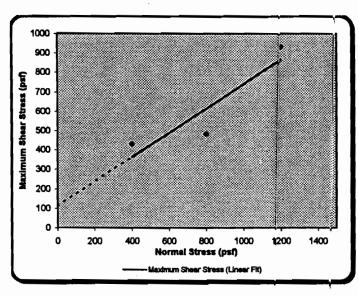
TRI Log#:

E2128-24-09

Test Method:

**ASTM D 5321** 

### Tested Interface: Low Ferm Barrier Soil vs. 12 oz. Non-Woven Geotextile



Upper Box:

Low Perm Barrier Soil compacted to 99.5 pcf at

20.5 % moisture content (90 % maximum dry density at + 2 % Opt. Moisture Content as determined by a modified Proctor test).

Lower Box:

Synthetic Industries 12 oz. Geotextile

Interface Conditioning: interface soaked and loading applied for a minimum of 12 hours prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.04 inches/minute

Trial Number Bearing Slide Resistance (lbs) Normal Stress (psf) Maximum Shear Stress (psf) Corrected Shear Stress (psf) Secant Angle (degrees)

1	2	3
10_	13	16
400	800	1200
439	496	947
429	483	931
47.0	31.1	37.8

RESULTS: Maximum Friction Angle and Y-	iritercep 	ot			
Regression Friction Angle (degrees):	- 1	32.1			
Y-intercept or Regression Adhesion (psf):		112			
Regression Line:	Y=	0.628	*X+	112	
Regression Coefficient (r squared):		0.830			

10-71-00

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Client:

Serrot

Project:

McKenna Landfill Test Date: 08/17-09/1/00

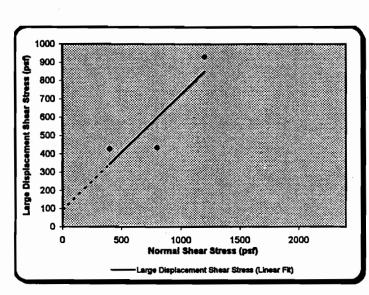
TR! Log#:

E2128-24-09

Test Method:

**ASTM D 5321** 

### Tested Interface: Low Perm Barrier Soil vs. 12 oz. Non-Woven Geotextile



Upper Box:

Low Perm Barrier Soil compacted to 99.5 pcf a 20.5 % moisture content (90 % maximum dry density at + 2 % Opt. Moisture Content as determined by a modified Proctor test).

Lower Box:

Synthetic Industries 12 oz. Geotextile

Interface Conditioning: Interface soaked and loading applied for a minimum of 12 hours prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.04 inches/minute

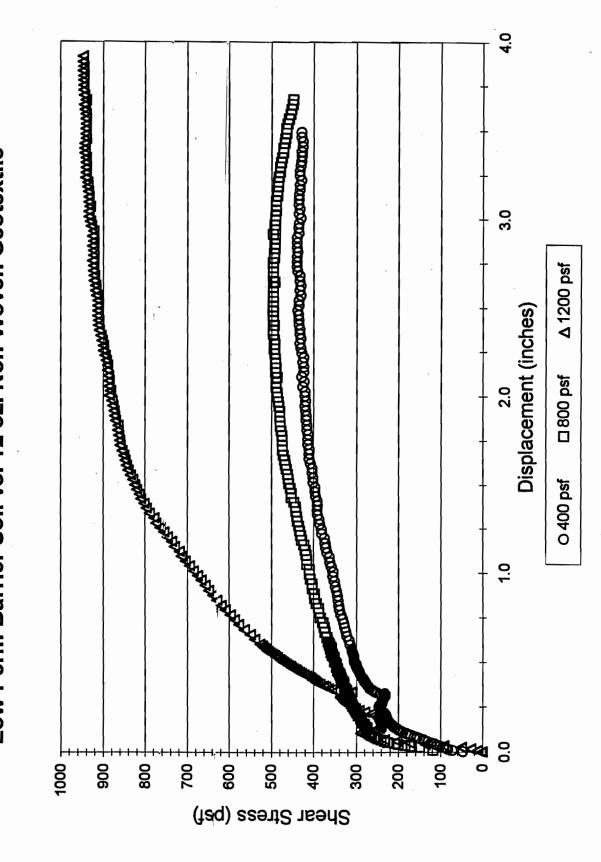
Trial Number Bearing Slide Resistance (lbs) Normal Stress (psf) Large Displacment Shear Stress (psf) Corrected Shear Stress (psf) Secant Angle (degrees)

1 .	2	3
10	13	16
400	800	1200
437	447	947
427	434	931
46.9	28.5	37.8

RESULTS: Large Displacement Friction Angle and Y-intercept at 3.6-in. of Displacement					
Regression Friction Angle (degrees): Y-intercept or Regression Adhesion (psf):		32.2 93			
Regression Line: Regression Coefficient (r squared):	Y=	0.630 0.761	*X+	93	

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## Low Perm Barrier Soil vs. 12 oz. Non-Woven Geotextile SERROT INTERFACE FRICTION TEST



TRI 🕍 No. E2128-24-099063 Bee Caves Road 🗆 Austin, TX 78733-6201 🗀 (💅 263-2101 🗀 FAX (512) 263-2558 🗅 1-800-880-TEST

Client

Serrot

Project:

McKenna Landfill Test Date: 09/5-09/6/00

TRI Log#:

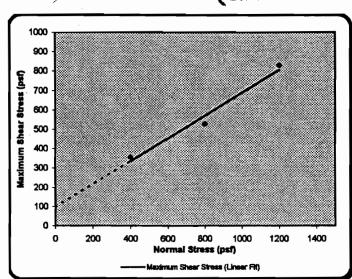
E2128-24-09

Test Method:

**ASTM D 5321** 

Tested Interface: Barrier Protection Layer Soil vs. 12 oz. Non-Woven Geotextile

(BARRE STONE)



Upper Box

Barrier Protection soil compacted to 109.8 pcf a

15 % moisture content (90 % maximum dry density at + 2 % Opt. Moisture Content as determined by a modified Proctor test).

Lower Box

Synthetic Industries 12 oz. Geotextile

Interface Conditioning:

interface soaked and loading applied for a minimum of 12 hours prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.04 inches/mirrute

Trial Number Bearing Slide Resistance (lbs) Normal Stress (psf) Maximum Shear Stress (psf) Corrected Shear Stress (psf) Secant Angle (degrees)

1	2	. 3
10	13	16
400	800	1200
366	540	845
356	527	829
41.7	33.4	34.6

RESULTS: Maximur	n Friction Angle	and Y-intercept
------------------	------------------	-----------------

Regression Friction Angle (degrees):

30.6

Y-intercept or Regression Adhesion (psf):

98

Regression Line:

Y= 0.592 \* X +

Regression Coefficient (r squared):

0.975

98

10-71-00

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### INTERFACE FRICTION TEST REPORT

**Client**:

Serrot

Project:

McKenna Landfill Test Date: 09/5-09/6/00

TRI Log#:

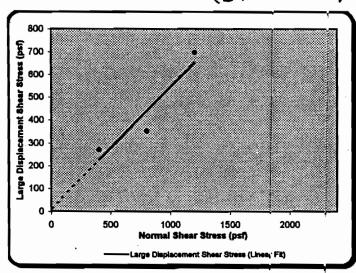
E2128-24-09

Test Method:

**ASTM D 5321** 

Tested Interface: Barrier Protection Layer Soil vs. 12 oz. Non-Woven Geotextile

(BARRE STONE)



**Upper Box:** 

Barrier Protection soil compacted to 109.8 pcf 15 % moisture content (90 % maximum dry density at + 2 % Opt. Moisture Content as determined by a modified Proctor test).

Lower Box:

Synthetic Industries 12 oz. Geotextile

Interface Conditioning:

Interface soaked and loading applied for a minimum of 12 hours prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.04 inches/minute

Trial Number Bearing Slide Resistance (lbs) Normal Stress (psf) Large Displacment Shear Stress (psf) Corrected Shear Stress (psf) Secant Angle (degrees)

1	2	3
_10	13	16
400	800	1200
282	365	714
272	352	698
34.2	23.8	30.2

RESULTS: Large Displacement Friction Angle and Y-intercept at 3.6-in. of Displacement			
			· · · · · · · · · · · · · · · · · · ·

Regression Friction Angle (degrees): Y-intercept or Regression Adhesion (psf): 28.0

15

Regression Line:

Y= 0.533 \* X +

ΛΕΥ

Regression Coefficient (r squared):

0.885

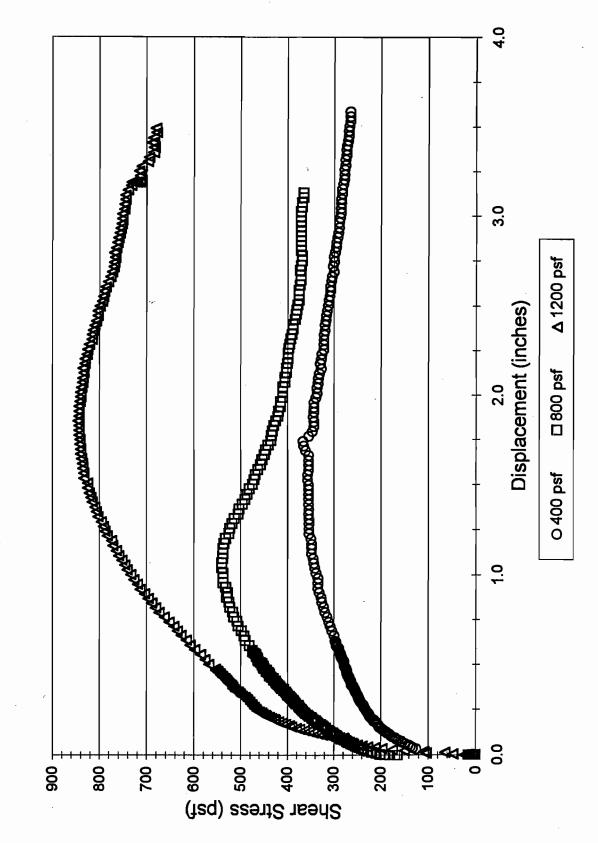
Quality Review/Date

15

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# Barrier Protection Layer Soil vs. 12 oz. Non-Woven Geotextile SERROT INTERFACE FRICTION TEST



TRI Log No. E2128-24-099063 Bee Caves Road □ Austin, TX 78733-6201 □ (512) 263-2101 □ FAX (512) 263-2558 □ 1-800-880-TEST

**FAX COVER** 

JLT

938 South Central Avenue Canonsburg, Pa. 15317

Tel: 724-746-4441 Fax: 724-745-4261

To: Al Hopkins

Company: Glynn Geotechnical Engineering

Fax Number: 1-716-625-6983

From : John Boschuk, Jr.

J & L Testing Company, Inc.

Fax Number: 1-724-745-4261

Subject: McKenna Landfill Test Results

Pages including cover page: 4

Date: 7/21/01

Time: 2:04:36 PM

### **MESSAGE**

Al,

Attached are the results for the McKenna Landfill Project. Interface Shear of Barrier Protection Soil vs 12 oz/sy Geotextile

Thanks.

(BROCKPORT,

SITE

Jack Boschuk

Visit our Web Site at "www, janditesting.com"

WinFax PRO Cover Page

### INTERFACE SHEAR TEST RESULTS

**ASTM D-5321** 

Client Project: Material Description: Glynn Geotechnical Engineering McKenna Landfill Project Compacted Silty Clay

VS Geotextile Date:

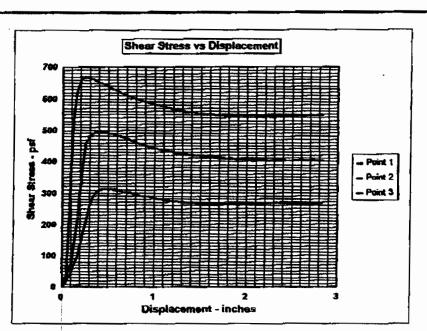
7/21/01 01S2702-01

Project No.: Perfd By:

DL

Chkd By:

JB



PEAK and RESIDUAL STRESS VS NORMAL LOAD

Тор Вох

Compected Sitty Clay

"Barrier Protection Material"

**Bottom Box** 

: 12 oz/sy Geoleodile - MD No Roll ID Information

Tested 15 provided

Other Informa

Compacted as Specified	ref %	
AANA at abareness 3	70	
on Lab Assignment Sheet 12	0.9 7.5	

CURVE DATA			
	Normal	Peak	Residual
	Load	Strength	Strength
Point	pef	psf	paf
1	400	313	267
2	800	496	405
3	1,200	668	548
4			
8	-		
6	_		

0.04 infraire

Displacement Rate: Saturation (inundation):

Yes

Equilibrium Time: (soaling) Overnight

STRENGTH PROPERTIES			
		Peak	Residual
Adhesion	psf	136	127
Frigtion	Dogress	23.9	19.4

Commente:

FIGURE Clay vs Geotextile

Client Project Material Description: Glynn Geotechnical Engineering

McKenna Landfill Project Compacted Sitty Clay

٧S

Geotextile

Point 1	Point 2	Point 3	Point 4	Point 5
Load	Load	Load	Load	Load
tbs .	bs	lbs	lbs	ibs
0	0	0		
1	2	4		
2	4	16		
	12	22		T
		29		1
		33		T
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69				ļ.——
77	156			L
88	180			
101	234	636		L
130	288	649	_,	Γ΄
	341	663		
	386	665		1-
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312	494			
313	493	645		<u> </u>
313	493	640		
312	491	636		
312	490	632		
	426	630		1
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			<b></b>	
				<u></u>
296	464	602		
295	461	600		
	458	596		
		595		1
				·
				-
	446	588		,
290				
	Load bs 0 1 2 2 6 11 17 21 25 30 34 36 42 46 50 57 69 77 88 101 130 149 169 182 210 229 249 266 276 287 295 304 309 311 312 313 312 311 311 309 305 304 303 301 302 299 296	Load   Load   bbs	Load   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos   Bos	Load   Load   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lbs   lb

Date: 7/21/01 Project No.: 01S2702-01

Perfd By: DL Chk'd By: JB

LOWER GRAPH				
Pn	Peak	Residual		
400	313			
800	495	405		
1200	668	548		
		•		

Engineering Properties				
	Peak	Residual		
52	668	548		
P2	1,200	1,200		
S1	313	267		
P1	400	400		
Slope, m	0.44375	0.35125		
Cohesion	135.5	126.5		
Phi, degrees	23.9292548	19.3538251		

FIGURE Clay vs Geotextile Replicate 1 Page 1

0.9	983	284	444	585		
1.0	007	283	443	582		T
1.0	040	281	440	580		T
1.0	073	280	437	579		1
	106	279	435	575		1
	138	277	434	572		<del>                                     </del>
	171	275	431	570	<del></del>	<del>                                     </del>
	204	274	430	568	<del></del>	<del>                                     </del>
	237	273	427	565	<del>                                     </del>	<del> </del>
	269	272	426	564		<del>                                     </del>
	302	272	425	561	$\overline{}$	<del>                                     </del>
	335	271	424	559		<del> </del>
	88	271	423	558	<del></del>	<del> </del>
	101	270	421	557		<del>                                     </del>
	33	269	419	556		
-	<u>~</u>	268	419	552		
	99	268	418	552		
	32	267	416	551		<del>                                     </del>
1	64	286	415	551		
1.5		266	414	550		<b></b>
1.6		264 264		550		
~			415			<b></b>
1.6		265	412	549		
1.6		265	411	549		
1.7		264	410	549		
1.7		265	409	547		
1.8		266	410	548		
1.8		265	409	547		
1.9		267	408	548		
1.9		266	408	549		
1.9	82	266	407	548		
2.0	23	267	406	549		
2.0	64	267	407	548		
210	05	267	406	548		
2.1	46	268	407	548		
2.1	87	267	406	549		· ·
2.2	28	267	405	547		
2.2	59	268	405	548		
2.3		268	406	548		
2.3	51	269	405	547		
2.39	32	268	405	548		
24	32	267	404	548		
2.4		267	404	548		
2.5	_	266	405	547		
2.5		266	405	548		
2.56		267	406	548		
2.5	_	266	405	547		
287		267	405	548		
2.00		267	406	549	<del></del>	
2.76						
	_	266	405	548		
2.80		267	406	548		
2.84	<b>*</b>	267	405	548		
L						

FIGURE Clay vs Geotextile Replicaté 1 Page 2

### LLDPE LINER

The 60-mil thick LLDPE geomembrane used for the final cover system construction of the Remedial Closure Project was a textured geomembrane manufactured by Serrot. The resin used for the manufacture of the geomembrane was produced by Chevron, U.S. Chemicals.

Pre-construction testing of the LLDPE liner material was done by Serrot. The test data indicates the liner material meets project requirements.

The pre-construction submittal information included herein includes:

- documentation demonstrating that the field crew foreman has at least 50 acres of previous landfill or comparable geosynthetic systems;
- quality control data from the resin producer demonstrating the physical properties of the material by lot number;
- documentation that shows correlation between the resin lot number and the respective liner rolls;
- pre-construction testing of the LLDPE liner material by Serrot; and



125 Cassia Way Henderson, NV 89014 (702) 566-8600 (800) 237-1777 FAX (702) 566-4601 www.SERROT.com

### **SALES OFFICES:**

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(800) 843-6313
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E-Mail: thompsonjr@serrot.com

Los Angeles 5401 Argosy Drive Huntington Beach, CA 92648 (714) 895-3010 (800) 624-2437 FAX (714) 895-0903 E-Mail: perezg@serrot.com

PHILADELPHIA 303 Paxson Avenue Mercerville, NJ 08619 (609) 584-0788 FAX (609) 584-0751 E-Mail: biondis@serrot.com

HAMBURG Postfach 2546 D-21316 Lüneburg, Germany 011-49-4131-733051 FAX 011-49-4131-733053

### PROJECT SUPERINTENDENT

### Rafael Herrera Angel

Rafael Herrera Angel has 8 years of experience in geosynthetic linings installation. He is responsible for supervising men and equipment for the installation and seaming of a variety of synthetic liners and components. He has assisted in all aspects of lining system installation and has had in-house training and hands on experience that has met all the criteria required to be rated as a Serrot Welder, QC Technician, and Installer. He has also supervised the installation of a number of complex, specialty applications. Serrot Superintendent rating requires a minimum of five million square feet of installation experience. He is also qualified to assist in the training of geomembrane Welders, QC Technicians, and Installers.

**Linings installed and seamed include:** Textured and/or smooth HDPE, LLDPE, and PFR liners.

**Component materials** include: Geosynthetic clay liner, geonet, geotextile, and geocomposite.

Project applications include: Heap leach pad liners, process ponds, waste containment cells, landfill caps and closures, secondary containment systems, tailings dam impoundments, and methane barriers.

Customer: WMI of NY - Albion

Number of Rolls Shipped: 1

Project Name: McKenna Landfill

Nominal Thickness: 60 mil

Project Number: 3176

1 COUL XI

Bills of Lading: 150500

I certify the polyethylene geomembrane for the above identified shipment meets or exceeds Serrot International, Inc.'s specifications, listed below. Testing was performed at the given frequencies.

The raw polymeric material is first quality polyethylene resin.

A database listing of all test values follows.

### **GEOMEMBRANE SPECIFICATIONS**

	Property	<b>Test Method</b>	Minimum Specification	Frequency
	Avg Thickness	ASTM D 5994	57 mils	at least every Every Roll
	Stress at Break	ASTM D 638	90 ppi	at least every 50,000 ft <sup>2</sup>
	Strain at Break	ASTM D 638	250 %	at least every 50,000 ft <sup>2</sup>
	Carbon Black Dispersion	ASTM D 5596	1 or 2 Category	at least every 50,000 ft <sup>2</sup>
	Carbon Black Content	ASTM D 4218	2.0 - 3.0 %	at least every 50,000 ft <sup>2</sup>
	Density	ASTM D 1505	.939 g/cm³	at least every Resin Batch
	Dimensional Stability 100°C	ASTM D 1204	± 1.5 % (Maximum)	at least every Resin Batch
F	Puncture Resistance - ASTM	ASTM D 4833	102 lbs	at least every 50,000 ft 2
	Tear Resistance	ASTM D 1004	45 lbs	at least every 50,000 ft 2

SEP 1.5 2003

Jane Allen

**Quality Control Manager** 

9-13-2000

### SERROT INTERNATIONAL, INC.

### Resin Certificate of Analysis

Customer: WMI of NY - Albion Project Name: McKenna Landfill

Project Number: 3176 Resin Type: LLDPE Bill of Ladings: 150500

We hereby certify that the polyethylene resin for the above identified shipment meets or exceeds Serrot International, Inc.'s specifications. Testing was performed on each resin blend.

Melt Flow Index was determined according to ASTM D 1238. Density was determined according to ASTM D 1505. Where appropriate, carbon black was determined according to ASTM D 4218. The average test results are listed below.

### RESIN PROPERTIES

Blend Number	Melt Flow Index (g/10 min)	Density (g/cm)	Carbon Black Content (%)
4147	0.310	0.916	

Janie Simpson

Quality Control Manager

4-13-0

Bills of Lading 150500

## Geomembrane Testing Results

TD Tear Resistanc e	20
MD Tear Resistanc e	52
Puncture ASTM	109
TD 100° Dim Stab	0.0
MD 100° Dim Stab	0.0
Density	0.929
Carbon Content 4218	2.50
Carbon Dispersion	-
TD Strain at Break	629
MD Strain at Break	559
Avg MD Stress TD Stress hickness at Break at Break	210
MD Stress at Break	178
Avg Thickness	65
	4105702-4147

Date

Quality Control Manager Jane AlleM

Customer: WMI of NY - Albion

Number of Rolls Shipped: 11

Project Name: McKenna Landfill

Nominal Thickness: 60 mil

Project Number: 3176

Bills of Lading: 150482

I certify the polyethylene geomembrane for the above identified shipment meets or exceeds Serrot International, Inc.'s specifications, listed below. Testing was performed at the given frequencies.

The raw polymeric material is first quality polyethylene resin.

A database listing of all test values follows.

### GEOMEMBRANE SPECIFICATIONS

Property	Test Method	Minimum Specification	Frequency
Avg Thickness	ASTM D 5994	57 mils	at least every Every Roll
Stress at Break	AST'M D 638	90 ppi	at least every 50,000 ft <sup>2</sup>
Strain at Break	ASTM D 638	250 %	at least every 50,000 ft <sup>2</sup>
Carbon Black Dispersion	ASTM D 5596	1 or 2 Category	at least every 50,000 ft <sup>2</sup>
Carbon Black Content	ASTM D 4218	2.0 - 3.0 %	at least every 50,000 ft²
Density	ASTNI D 1505	.939 g/cm³	at least every Resin Batch
Dimensional Stability 100°C	ASTN D 1204	± 1.5 % (Maximum)	at least every Resin Batch
Puncture Resistance - ASTM	AST <b>N</b> I D 4833	102 lbs	at least every 50,000 ft 2
Tear Resistance	ASTN D 1004	45 lbs	at least every 50,000 ft 2

Quality Control Manager

9-12-00 Date

Customer: WMI of NY - Albion

Number of Rolls Shipped: 11

Project Name: McKenna Landfill

Nominal Thickness: 60 mil

Project Number: 3176

Bills of Lading: 150482

I certify the polyethylene geomembrane for the above identified shipment meets or exceeds Serrot International, Inc.'s specifications, listed below. Testing was performed at the given frequencies.

The raw polymeric material is first quality polyethylene resin.

A database listing of all test values follows.

### **GEOMEMBRANE SPECIFICATIONS**

Property	Test Method	Minimum Specification	Frequency
Avg Thickness	ASTM D 5994	57 mils	at least every Every Roll
Stress at Break	ASTM D 638	90 ppi	at least every 50,000 ft <sup>2</sup>
Strain at Break	ASTM D 638	250 %	at least every 50,000 ft <sup>2</sup>
Carbon Black Dispersion	ASTM D 5596	1 or 2 Category	at least every 50,000 ft <sup>2</sup>
Carbon Black Content	ASTM D 4218	2.0 - 3.0 %	at least every 50,000 ft <sup>2</sup>
Density	ASTM D 1505	.939 g/cm³	at least every Resin Batch
Dimensional Stability 100°C	ASTM D 1204	± 1.5 % (Maximum)	at least every Resin Batch
Puncture Resistance - ASTM	ASTM D 4833	102 lbs	at least every 50,000 ft 2
Tear Resistance	ASTM D 1004	45 lbs	at least every 50,000 ft 2

**Quality Control Manager** 

9-12-00 Date

### SERROT INTERNATIONAL, INC.

### **Resim Certificate of Analysis**

Customer: WMI of NY - Albion Project Name: McKenna Landfill

Project Number: 3176 Resin Type: LLDPE Bill of Ladings: 150482

We hereby certify that the polyethylene resin for the above identified shipment meets or exceeds Serrot International, Inc.'s specifications. Testing was performed on each resin blend.

Melt Flow Index was determined according to ASTM D 1238. Density was determined according to ASTM D 1505. Where appropriate, carbon black was determined according to ASTM D 4218. The average test results are listed below.

### **RESIN PROPERTIES**

Blend Number	Melt Flow Index (g/10 min)	Density (g/cm)	Carbon Black Content (%)
4147	0.310	0.916	
4208	0.375	0.916	

Jane Allen

Quality Control Manager

9-12-00

Bills of Lading 150482

## Geomembrane Testing Results

Avg Thickness	MD Stress at Break	TD Stress at Break	MD Strain at Break	TD Strain at Break	Carbon Dispersion	Carbon Content 4218	Density	MD 100° Dim Stab	TD 100° Dim Stab	Puncture ASTM	MD Tear Resistanc e	TD Tear Resistanc e
	191	177	583	578	-	2.50	0.929	0.0	0.0	109	48	20
	191	175	583	558	_	2.50	0.929	0.0	0.0	109	48	20
	191	175	583	558	-	2.50	0.929	0.0	0.0	109	48	20
	210	175	638	559	2	2.67	0.930	-0.2	4.0	114	48	20
	182	175	603	559	-	2.67	0:630	-0.2	0.4	113	48	49
	182	175	603	529	-	2.67	0:630	-0.2	0.4	113	48	49
	182	175	603	529	-	2.67	0.930	-0.2	0.4	113	48	49
	182	180	603	280	-	2.68	0:630	-0.2	0.4	113	49	49
	193	169	929	220	-	2.50	0.929	0.0	0.0	119	20	47
	193	169	929	550	-	2.50	0.929	0.0	0.0	119	20	47
	194	178	298	572	-	2.65	0.931	0.0	0.0	118	49	20

Jane Allen

Quality Control Manager

Bills of Lading 150482

## Geomembrane Testing Results

	Avg Thickness	Avg MD Stress Thickness at Break	TD Stress at Break	MD Strain at Break	TD Strain at Break	Carbon Dispersion	Carbon Content 4218	Density	MD 100° Dim Stab	TD 100° Dim Stab	Puncture ASTM	MD Tear Resistanc e	TD Tear Resistanc e
4105719-4147	63	212	169	643	540	-	2.65	0.929	-0.2	0.4	119	20	48
4105720-4147	65	210	169	624	540	-	2.42	0.929	-0.2	0.4	119	49	48
4105721-4208	63	210	169	624	540	-	2.42	0.929	-0.2	0.4	119	49	48
4105726-4208	64	184	177	601	555	-	2.42	0.929	0.0	0.0	115	49	20
4105730-4208	65	184	177	976	555	-	2.50	0.929	0.0	0.0	115	20	47
4105731-4208	70	193	189	929	277	-	2.50	0.929	0.0	0.0	123	20	47
4405732 4208	<b>9</b> 9	485	463	£7£	€63	₩-	2.58	6.323	8.8 8.8	8.8	443	83	47
4105735-4208	63	199	169	592	550	-	2.54	0.931	0.0	0.0	119	54	51
4105736-4208	89	194	169	592	220	-	2.54	0.931	0.0	0.0	118	49	20
4105727-420B	βġ	107	160	500	<b>EEO</b>	₹	2.54	0.53.5	G:G	ç.;	4 G)	왉	ફુક
4105741-4208	70	194	178	298	572	-	2.65	0.931	0.0	0.0	118	49	20

9-12-00 Date

Quality Control Manager

Jane Allen

Customer: WMI of NY - Albion

Number of Rolls Shipped: 11

Project Name: McKenna Landfill

Nominal Thickness: 60 mil

Project Number: 3176

Bills of Lading: 150483

I certify the polyethylene geomembrane for the above identified shipment meets or exceeds Serrot International, Inc.'s specifications, listed below. Testing was performed at the given frequencies.

The raw polymeric material is first quality polyethylene resin.

A database listing of all test values follows.

### **GEOMEMBRANE SPECIFICATIONS**

Property	Test Method	Minimum Specification	Frequency
Avg Thickness	ASTM D 5994	57 mils	at least every Every Roll
Stress at Break	ASTM D 638	90 ppi	at least every 50,000 ft <sup>2</sup>
Strain at Break	ASTM D 638	250 %	at least every 50,000 ft <sup>2</sup>
Carbon Black Dispersion	ASTM D 5596	1 or 2 Category	at least every 50,000 ft <sup>2</sup>
Carbon Black Content	ASTM D 4218	2.0 - 3.0 %	at least every 50,000 ft <sup>2</sup>
Density	ASTM D 1505	.939 g/cm³	at least every Resin Batch
Dimensional Stability 100°C	ASTM D 1204	± 1.5 % (Maximum)	at least every Resin Batch
Puncture Resistance - ASTM	ASTM D 4833	102 lbs	at least every 50,000 ft 2
Tear Resistance	ASTM D 1004	45 lbs	at least every 50,000 ft 2

Quality Control Manager

9-12-00

### SERROT INTERNATIONAL, INC

### Resin Certificate of Analysis

Customer: WMI of NY - Albion Project Name: McKenna Landfill

Project Number: 3176 Resin Type: LLDPE Bill of Ladings: 150483

We hereby certify that the polyethylene resin for the above identified shipment meets or exceeds Serrot International, lnc.'s specifications. Testing was performed on each resin blend.

Melt Flow Index was determined according to ASTM D 1238. Density was determined according to ASTM D 1505. Where appropriate, carbon black was determined according to ASTM D 4218. The average test results are listed below.

### RESIN FROPERTIES

Blend Number	Melt Flow Index (g/10 min)	Density (g/cm)	Carbon Black Content (%)
4147	0.310	0.916	
4208	0.375	0.916	

Jane **X**llen

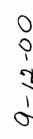
**Quality Control Manager** 

9-12-00

Bills of Lading 150483

## Geomembrane Testing Results

Avg MD Stress TD Stress Thickness at Break at Break	TD Stress at Break	MD Strain at Break	TD Strain at Break	Carbon Dispersion	Carbon Content 4218	Density	MD 100° Dim Stab	TD 100° Dim Stab	Puncture ASTM	MD Tear Resistanc e	TD Tear Resistanc e
	9	603	540	-	2.65	0.929	-0.2	4.0	113	49	48
	99	23	540	-	2.65	0.929	-0.2	0.4	113	49	48
	909	~	540	-	2.65	0.929	-0.2	0.4	113	49	48
	601		555	-	2.65	0.929	0.0	0.0	115	51	51
	576		555	-	2.50	0.929	0.0	0.0	115	20	47
184 177 576	576		555	-	2.50	0.929	0.0	0.0	115	20	47
	592		220	-	2.54	0.931	0.0	0.0	118	49	20
	296	~	572	-	2.65	0.931	0.0	0.0	118	49	20
194 178 598	298		572	-	2.65	0.931	0.0	0.0	118	49	20
178 175 568	268		572	-	2.56	0.931	0.0	0.0	121	20	48
	56	۵	553	-	2.56	0.931	0.0	0.0	118	20	48



This Certification of Analysis shall not be reproduced except in fuil, without the written approval of the laboratory. Serrot International, Inc. 320 Innovation Way - Wellford, SC - 29385

Quality Control Manager

Jane Allen U

Customer: WMI of NY - Albion

Number of Rolls Shipped: 11

Project Name: McKenna Landfill

Nominal Thickness: 60 mil

Project Number: 3176

Bills of Lading: 150480

I certify the polyethylene geomembrane for the above identified shipment meets or exceeds Serrot International, Inc.'s specifications, listed below. Testing was performed at the given frequencies.

The raw polymeric material is first quality polyethylene resin.

A database listing of all test values follows.

### **GEOMEMBRANE SPECIFICATIONS**

Property	Test Method	Minimum Specification	Frequency
Avg Thickness	ASTM D 5994	57 mils	at least every Every Roll
Stress at Break	ASTM D 638	90 ppi	at least every 50,000 ft <sup>2</sup>
Strain at Break	ASTM D 638	250 %	at least every 50,000 ft <sup>2</sup>
Carbon Black Dispersion	ASTM D 5596	1 or 2 Category	at least every 50,000 ft <sup>2</sup>
Carbon Black Content	ASTM D 4218	2.0 - 3.0 %	at least every 50,000 ft <sup>2</sup>
Density	ASTM D 1505	.939 g/cm³	at least every Resin Batch
Dimensional Stability 100°C	AST <b>M</b> D 1204	± 1.5 % (Maximum)	at least every Resin Batch
Puncture Resistance - ASTM	ASTM D 4833	102 lbs	at least every 50,000 ft 2
Tear Resistance	ASTM D 1004	45 lbs	at least every 50,000 ft 2

Jane Allen

Quality Control Manager

9-12-00

### SERROT INTERNATIONAL, INC

### **Resin Certificate of Analysis**

Customer: WMI of NY - Albion Project Name: McKenna Landfill

Project Number: 3176 Resin Type: LLDPE Bill of Ladings: 150480

We hereby certify that the polyethylene resin for the above identified shipment meets or exceeds Serrot International, Inc.'s specifications. Testing was performed on each resin blend.

Melt Flow Index was determined according to ASTM D 1238. Density was determined according to ASTM D 1505. Where appropriate, carbon black was determined according to ASTM D 4218. The average test results are listed below.

### **RESIN PROPERTIES**

Blend Number	Melt Flow Index (g/10 min)	Density (g/cm)	Carbon Black Content (%)
4208	0.375	0.9 <b>1</b> 6	
42 <b>1</b> 8	0.350	0.919	

Jane Allen

Quality Control Manager

9-12-00

Bills of Lading 150480

## Geomembrane Testing Results

	Avg Thickness	Avg MD Stress rhickness at Break	TD Stress at Break	MD Strain at Break	TD Strain at Break	Carbon Dispersion	Carbon Content 4218	Density	MD 100° Dim Stab	TD 100° Dim Stab	Puncture ASTM	MD Tear Resistanc e	TD Tear Resistanc e
4105747-4208	29	178	175	568	553	-	2.56	0.931	0.0	0.0	118	20	48
4105800-4218	73	509	176	629	559	-	2.55	0.935	0.0	0.0	117	46	49
4105801-4218	64	196	159	582	522	-	2.50	0.935	0.0	0.0	117	46	49
4105809-4218	64	198	186	588	222	-	2.46	0.935	0.0	0.0	123	20	20
4105821-4218	29	198	169	969	540	2	2.48	0.931	0.0	0.0	119	53	51
4105822-4218	63	179	162	295	909	-	2.48	0.931	0.0	0.0	118	51	48
4105823-4218	72	179	162	5,67	₹0£	₩.	2.48	0.034	8,8	8.8	\$18	5,	48
4105824-4218	20	179	162	299	909	-	2.48	0.931	0.0	0.0	118	51	48
4105825-4218	61	179	162	299	909	-	2.51	0.931	0.0	0.0	118	51	48
4105826-4218	29	179	162	295	506	-	251	0.034	C)	\$. \$.	ς) τ	ភូ	₹ <b>7</b>
4105827-4218	64	179	162	562	909	-	2.51	0.931	0.0	0.0	118	51	48

9-12-00 Date

Quality Control Manager

Jane Allen

Customer: WMI of NY - Albion

Number of Rolls Shipped: 8

Project Name: McKenna Landfill

Nominal Thickness: 60 mil

Project Number: 3176

Bills of Lading: 150465

I certify the polyethylene geomembrane for the above identified shipment meets or exceeds Serrot International, Inc.'s specifications, listed below. Testing was performed at the given frequencies.

The raw polymeric material is first quality polyethylene resin.

A database listing of all test values follows.

### **GEOMEMBRANE SPECIFICATIONS**

Property	Test Method	Minimum Specification	Frequency
Avg Thickness	ASTM D 5994	57 mils	at least every Every Roll
Stress at Break	ASTM D 638	90 ppi	at least every 50,000 ft <sup>2</sup>
Strain at Break	ASTM D 638	250 %	at least every 50,000 ft <sup>2</sup>
Carbon Black Dispersion	ASTM D 5596	1 or 2 Category	at least every 50,000 ft <sup>2</sup>
Carbon Black Content	ASTM D 4218	2.0 - 3.0 %	at least every 50,000 ft <sup>2</sup>
Density	ASTM D 1505	.939 g/cm³	at least every Resin Batch
Dimensional Stability 100°C	ASTM D 1204	± 1.5 % (Maximum)	at least every Resin Batch
Puncture Resistance - ASTM	ASTM D 4833	102 lbs	at least every 50,000 ft 2
Tear Resistance	ASTM D 1004	45 lbs	at least every 50,000 ft 2

Quality Control Manager

9-12-00 Date

### SERROT INTERNATIONAL, INC

### **Resin Certificate of Analysis**

Customer: WMI of NY- Albion Project Name: McKenna Landfill

Project Number: 3176 Resin Type: LLDPE Bill of Ladings: 150465

We hereby certify that the polyethylene resin for the above identified shipment meets or exceeds Serrot International, Inc.'s specifications. Testing was performed on each resin blend.

Melt Flow Index was determined according to ASTM D 1238. Density was determined according to ASTM D 1505. Where appropriate, carbon black was determined according to ASTM D 4218. The average test results are listed below.

### **RESIN PROPERTIES**

Blend Number	Melt Flow Index (g/10⊦min)	Density (g/cm)	Carbon Black Content (%)
4218	0.350	0.919	
4219	0.3 <sup>7</sup> 1	0.918	

Jane Allen

Quality Control Manager

9-12-00

Bills of Lading 150465

## Geomembrane Testing Results

	Avg Thickness	MD Stress TD Stress at Break at Break	TD Stress at Break	MD Strain at Break	TD Strain at Break	Carbon Dispersion	Carbon Content 4218	Density	MD 100° Dim Stab	TD 100° Dim Stab	Puncture ASTM	MD Tear Resistanc e	TD Tear Resistanc e
4105828-4218	65	179	162	562	506	~	2,51	0.931	0.0	0.0	118	51	48
4105829-4218	64	190	180	571	571	-	2.60	0.931	0.0	0.0	121	51	20
4105830-4218	64	190	162	571	493	-	2.48	0.931	0.0	0.0	121	51	20
4105831-4218	29	190	162	571	493	-	2.48	0.931	0.0	0.0	121	51	20
4105832-4218	99	190	162	571	493	-	2.48	0.931	0.0	0.0	121	51	20
4105833-4218	64	193	162	572	493	-	2.48	0.931	0.0	0.0	125	53	20
4105834-4218	89	193	160	572	487	-	2.48	0.931	0.0	0.0	125	53	49
4105835-4219	68	196	160	572	487	-	2.48	0.931	0.0	0.0	127	53	49

Quality Control Manager

Customer: WMI of NY - Albion

Number of Rolls Shipped: 11

Project Name: McKenna Landfill

Nominal Thickness: 60 mil

Project Number: 3176

Bills of Lading: 150459

I certify the polyethylene geomembrane for the above identified shipment meets or exceeds Serrot International, Inc.'s specifications, listed below. Testing was performed at the given frequencies.

The raw polymeric material is first quality polyethyllene resin.

A database listing of all test values follows.

### **GEOMEMBRANE SPECIFICATIONS**

Property	Test Method	Minimum Specification	Frequency
Avg Thickness	ASTM D 5994	57 mils	at least every Every Roll
Stress at Break	ASTM D 638	90 ppi	at least every 50,000 ft <sup>2</sup>
Strain at Break	ASTMID 638	250 %	at least every 50,000 ft <sup>2</sup>
Carbon Black Dispersion	ASTNI D 5596	1 or 2 Category	at least every 50,000 ft <sup>2</sup>
Carbon Black Content	ASTN D 4218	2.0 - 3.0 %	at least every 50,000 ft <sup>2</sup>
Density	ASTM D 1505	.939 g/cm³	at least every Resin Batch
Dimensional Stability 100°C	ASTM D 1204	± 1.5 % (Maximum)	at least every Resin Batch
Puncture Resistance - ASTM	ASTM D 4833	102 lbs	at least every 50,000 ft 2
Tear Resistance	ASTM D 1004	45 lbs	at least every 50,000 ft 2

Quality Control Manager

### SERROT INTERNATIONAL, INC

### Resin Certificate of Analysis

Customer: WMI of NY- Albion Project Name: McKenna Landfill

Project Number: 3176 Resin Type: LLDPE Bill of Ladings: 150459

We hereby certify that the polyethylene resin for the above identified shipment meets or exceeds Serrot International, Inc.'s specifications. Testing was performed on each resin blend.

Melt Flow Index was determined according to ASTM D 1238. Density was determined according to ASTM D 1505. Where appropriate, carbon black was determined according to ASTM D 4218. The average test results are listed below.

### **RESIN PROPERTIES**

Blend Number	Melt Flow Index (g/10 min)	Density (g/cm)	Carbon Black Content (%)
4208	0.375	0.916	
4218	0.350	0.919	

**Quality Control Manager** 

9-12-00

Bills of Lading 150459

# Geomembrane Testing Results

	Avg Thickness	Avg MD Stress TD: Thickness at Break at	Stress Break	MD Strain at Break	TD Strain at Break	Carbon Dispersion	Carbon Content 4218	Density	MD 100° Dim Stab	TD 100° Dim Stab	Puncture ASTM	MD Tear Resistanc e	TD Tear Resistanc e
4105765-4208	64	210	179	633	561	-	2.58	0.931	0.0	0.0	118	51	48
4105767-4208	70	210	174	612	557	-	2.52	0.931	0.0	0.0	118	48	48
4105768-4208	72	210	174	612	557	-	2.52	0.931	0.0	0.0	118	48	48
4105769-4208	64	202	174	612	557	-	2.52	0.931	0.0	0.0	120	48	51
4105770-4208	70	193	155	612	494	-	2.49	0.931	0.0	0.0	117	47	47
4105772-4208	70	193	155	612	494	-	2.49	0.931	0.0	0.0	117	47	47
4105773-4208	89	193	155	614	494	₩.	2.49	0.931	σσ	0.0	117	47	47
4105775-4208	65	191	155	594	464	-	2.49	0.931	0.0	0.0	117	47	47
4105810-4218	73	164	179	489	571	-	2.46	0.935	0.0	0.0	118	49	20
4105811-4218	75	164	179	489	571	-	2.46	0.935	UU	UU	α11	Q.	3
4105812-4218	94	164	179	489	571	-	2.46	0.935	0.0	0.0	118	49	20

9-12-00

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Jane Allen Quality Control Manager This Certification of Analysis shall not be reproduced except in full, without the written approval of the laboratory. Serrot International, Inc. 320 Innovation Way - Wellford, SC - 29385

aliora, 50 - 28565

Customer: WMI of NY - Albion

Number of Rolls Shipped: 11

Project Name: McKenna Landfill

Nominal Thickness: 60 mil

Project Number: 3176

Bills of Lading: 150457

I certify the polyethylene geomembrane for the above identified shipment meets or exceeds Serrot International, Inc.'s specifications, listed below. Testing was performed at the given frequencies.

The raw polymeric material is first quality polyethylene resin.

A database listing of all test values follows.

### **GEOMEMBRANE SPECIFICATIONS**

Property	Test Method	Minimum Specification	Frequency
Avg Thickness	ASTM D 5994	57 mils	at least every Every Roll
Stress at Break	ASTM D 638	90 ppi	at least every 50,000 ft <sup>2</sup>
Strain at Break	ASTM D 638	250 %	at least every 50,000 ft <sup>2</sup>
Carbon Black Dispersion	ASTM D 5596	1 or 2 Category	at least every 50,000 ft <sup>2</sup>
Carbon Black Content	ASTM D 4218	2.0 - 3.0 %	at least every 50,000 ft <sup>2</sup>
Density	ASTM D 1505	.939 g/cm³	at least every Resin Batch
Dimensional Stability 100°C	ASTM D 1204	± 1.5 % (Maximum)	at least every Resin Batch
Puncture Resistance - ASTM	ASTM D 4833	102 lbs	at least every 50,000 ft 2
Tear Resistance	ASTM D 1004	45 lbs	at least every 50,000 ft 2

Jane Allen

Quality Control Manager

9-08-00

### SERROT INTERNATIONAL, INC

### Resin Certificate of Analysis

Customer: WMI of NY- Albion Project Name: McKenna Landfill

Project Number: 3176 Resin Type: LLDPE Bill of Ladings: 150457

We hereby certify that the polyethylene resin for the above identified shipment meets or exceeds Serrot International, Inc.'s specifications. Testing was performed on each resin blend.

Melt Flow Index was determined according to ASTM D 1238. Density was determined according to ASTM D 1505. Where appropriate, carbon black was determined according to ASTM D 4218. The average test results are listed below.

### **RESIN PROPERTIES**

Blend Number	Melt Flow Index (g/10 min)	Density (g/cm)	Carbon Black Content (%)
4218	0.350	0.919	

Jane **Y**Allen

Quality Control Manager

9-08-00

Bills of Lading 150457

## Geomembrane Testing Results

	Avg Thickness	Avg MD Stress TD Stress Thickness at Break at Break	TD Stress at Break	MD Strain at Break	TD Strain at Break	Carbon Dispersion	Carbon Content 4218	Density	MD 100° Dim Stab	TD 100° Dim Stab	Puncture ASTM	MD Tear Resistanc e	TD Tear Resistanc e
4105805-4218	63	196	159	582	522	-	2.50	0.935	0.0	0.0	119	49	51
4105806-4218	29	196	159	582	522	-	2.46	0.935	0.0	0.0	119	49	20
4105807-4218	64	196	159	582	522	-	2.46	0.935	0.0	0.0	119	49	20
4105808-4218	64	196	159	582	522	-	2.46	0.935	0.0	0.0	119	49	20
4105813-4218	64	164	179	489	571	-	2.51	0.935	0.0	0.0	118	49	20
4105814-4218	20	164	179	489	571	-	2.47	0.931	0.0	0.0	116	49	49
4105815-4218	64	164	179	489	571	-	2.47	0.931	0.0	0.0	116	49	49
4105816-4218	65	164	179	489	571	-	2.47	0.931	0.0	0.0	116	49	49
4105817-4218	99	191	185	583	582	-	2.47	0.931	0.0	0.0	116	20	49
4105819-4218	99	191	169	583	540	-	2.47	0.931	0.0	0.0	116	20	49
4105820-4218	64	191	169	583	540	-	2.47	0.931	0.0	0.0	116	20	49

9-08-00

Jate

Quality Control Manager

Jane Allen

Customer: WMI of NY - Albion

Number of Rolls Shipped: 11

Project Name: McKenna Landfill

Nominal Thickness: 60 mil

Project Number: 3176

Bills of Lading: 150458

I certify the polyethylene geomembrane for the above identified shipment meets or exceeds Serrot International, Inc.'s specifications, listed below. Testing was performed at the given frequencies.

The raw polymeric material is first quality polyethylene resin.

A database listing of all test values follows.

### GEOMEMERANE SPECIFICATIONS

Property	Tesit Method	Minimum Specification	Frequency
Avg Thickness	AST'M D 5994	57 mils	at least every Every Roll
Stress at Break	AS¶M D 638	90 ppi	at least every 50,000 ft <sup>2</sup>
Strain at Break	AS7M D 638	250 %	at least every 50,000 ft <sup>2</sup>
Carbon Black Dispersion	AST'M D 5596	1 or 2 Category	at least every 50,000 ft <sup>2</sup>
Carbon Black Content	ASTM D 4218	2.0 - 3.0 %	at least every 50,000 ft <sup>2</sup>
Density	ASTM D 1505	.939 g/cm³	at least every Resin Batch
Dimensional Stability 100°C	ASTM D 1204	± 1.5 % (Maximum)	at least every Resin Batch
Puncture Resistance - ASTM	ASTIM D 4833	102 lbs	at least every 50,000 ft 2
Tear Resistance	ASTM D 1004	45 lbs	at least every 50,000 ft 2

Jane Alle

Quality Control Manager

9-08-00

### SERROT INTERNATIONAL, INC

### **Resin Certificate of Analysis**

Customer: WMI of NY- Albion Project Name: McKenna Landfill

Project Number: 3176 Resin Type: LLDPE Bill of Ladings: 150458

We hereby certify that the polyethylene resin for the above identified shipment meets or exceeds Serrot International, Inc.'s specifications. Testing was performed on each resin blend.

Melt Flow Index was determined according to ASTM D 1238. Density was determined according to ASTM D 1505. Where appropriate, carbon black was determined according to ASTM D 4218. The average test results are listed below.

### **RESIN PROPERTIES**

Blend Number	Melt Flow Index (g/10 min)	Density (g/cm)	Carbon Black Content (%)
4208	0.375	0.916	
4218	0.350	0.919	

Quality Control Manager

Bills of Lading 150458

## Geomembrane Testing Results

TD Tear Resistanc e	48	47	48	49	48	48	48	48	48	48	49
MD Tear Resistanc F e	51	47	47	53	51	51	51	51	51	46	20
Puncture ASTM	118	117	116	120	120	120	120	120	120	117	116
TD 100° Dim Stab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MD 100° Dim Stab	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Density	0.931	0.931	0.931	0:630	0.928	0.928	0.928	0.928	0.928	0.928	0.931
Carbon Content 4218	2.58	2.49	2.63	2.56	2.46	2.46	2.46	2.46	2.46	2.46	2.47
Carbon Dispersion	-	-	-	<b>~</b>	-	-	-	-	_	_	-
TD Strain at Break	561	464	583	699	550	550	550	550	550	550	540
MD Strain at Break	633	612	594	673	603	603	603	603	603	603	583
TD Stress at Break	179	155	177	186	171	171	171	171	171	171	169
Avg MD Stress TD Thickness at Break at	210	193	191	231	193	193	193	193	193	193	191
Avg Thickness	29	69	63	71	65	63	29	29	99	64	89
	4105766-4208	4105771-4208	4105776-4208	4105787-4218	4105789-4218	4105790-4218	4105791-4218	4105793-4218	4105794-4218	4105799-4218	4105818-4218

Date

Jane Allen

Quality Control Manager

### **GAS VENT PIPES**

The pipes used for the gas vent system are 6-inch diameter schedule 80 poly-vinyl chloride (PVC) slotted gas collection pipes located within the gas venting trenches and 6-inch diameter schedule PVC solid gas venting standpies installed to allow gases within the landfill to escape to the atmosphere. The gas vent pipe was manufactured by Buffalo Well Products. Manufacturer's literature is included herein.

### **BUFFALO WELL PRODUCTS**

May 30,2000

10440 Main Street Clarence, New York 1405 (716) 759-2022 Fax: (716) 759-7823

Ciminelli Services Corp. 2760 Kenmore Avenue, Suite 200 Tonawanda, New York 14150

### **SUBMITTAL**

Buffalo Well products, Inc. (BWP) has been Slotting and threading PVC pipe for use in the environmental drilling industry for the past several years. BWP's PVC is made of Type 1, Gradel Polyvinyl Chloride. as specified in ASTM D1784. This material meets or exceeds ASTM Standard D2665 and D1785.

The slotting configuration of 6 inch Sch 80 PVC with .020 inch slots will be 6 rows of slots spaced .25" apart which will have an open area of approximately 6.5" square inches per foot.

The 6 inch Sch 80 is designed to handle 280 psi at 73 degrees.

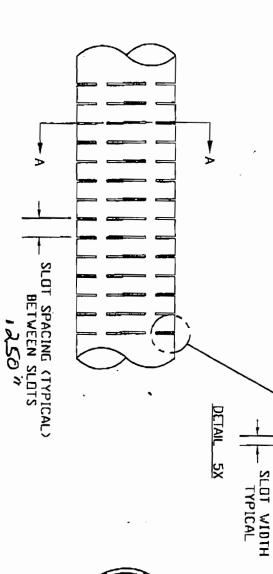
Sincerely yours,

Buffalo Well Products, Inc.

Paul W. Barron

President

, odo "



SLOT SPECIFICATIONS

SECTION A-A SLOT

6 Rows

NOMINAL PIPE SIZE: 6 In ch

NOMINAL O.D.: 6.675"1.D.: 5.761"

NOMINAL WALL THICKNESS: #32"
SLOT WIDTH: +020"

SPACING BETWEEN SLOTS:

UFFALO WELL PRODUCTS

# MANUFACTURER'S PRODUCT SPECIFICATION



Schedule 40 & 80 PVC Industrial Pipe

Scope:

This specification sheet covers the manufacturer's requirements for PVC Schedule 40 and Schedule 80 IPS pressure pipe. This pipe meets or exceeds the industry standards set forth by the American Society for Testing and Materials and NSF International, Standards 14/61.

All pipe and raw materials are manufactured in the USA.

PVC Materials:

Rigid PVC (polyvinyl chloride) used in the extrusion of Schedule 40 and 80 pipe is of Type i, Grade 1 compound as stated in ASTM D-1784. Raw material used in extrusion shall contain the specified amounts of color pigment, stabilizers, and other additives approved by NSF International.

Dimensions:

Physical dimensions and tolerances of PVC Schedule 40 and 80 pipe meet the requirements of ASTM standard specification D-1785. Socket dimensions of belled end pipe meet the requirements of ASTM D-267% or F-480.

Marking:

PVC Schedule 40 and 80 pipe is marked as prescribed in ASTM D-1785 to indicate the manufacturer's name or trademark, material designation code, the nominal pipe size, the Schedule size with the pressure rating in PSI for water at 73°F, the ASTM designation number D-1785, and the NSF seal for potable water.

Sample Specification:

All PVC Schedule 40 and 80 pipe shall conform to ASTM D-1785. Schedule 40 fittings shall conform to ASTM D-2466, Schedule 80 **socket** fittings to ASTM D-2467 and ASTM D-2464 for **threeded** Schedule 80 fittings. Belled end pipe socket dimensions shall conform to ASTM D-2672 or F-480. Both pipe and fittings shall be the product of one manufacturer, as manufactured by Esion Thermoplastics (or approved equal), Charlotte, North Carolina, USA, 1-800-578/7681.







# MANUFACTURER'S PRODUCT SPECIFICATION



### **▶** Schedule 80 PVC Fittings

### / Scope:

This specification sheet covers the manufacturer's requirements for PVC Schedule 80 pipe fittings. These fittings meet or exceed the standards set by the American Society for Testing and Materials and NSF International, Standards 14/61.

All fittings and raw materials are manufactured in the USA.

### PVC Materials:

Rigid PVC (polyvinyl chloride) used in the manufacture of Schedule 80 fittings is of Type I, Grade 1 compound as stated in ASTM D-1784. Raw material used in molding shall contain the specified amounts of color pigment, stabilizers, and other additives approved by NSF International.

#### Dimensions:

Physical dimensions and tolerances of PVC Schedule 80 IPS fittings meet the requirements of ASTM standard specification D-2467 for socket-type fittings and ASTM D-2464 for threaded fittings. Threaded fittings have Taper Pipe Threads in accordance with ANSI/ASME B1.20.1.

### Marking:

PVC Schedule 80 fittings are marked as prescribed in ASTM D-2464 and D-2467 to indicate the manufacturer's name or trademark, material designation, the NSF mark, size of fitting, and ASTM designation D-2464 (threaded) or D-2467 (socket).

### Sample Specification:

All Schedule 80 socket fittings shall conform to ASTM D-2467 and ASTM D-2464 for threaded fittings. Both pipe and fittings shall be the product of one manufacturer, as manufactured by Eslon Thermoplastics (or approved equal), Charlotte, North Carolina, USA, 1-800-578-7681.







### PRODUCT SPECIFICATION PVC FABRICATED FITTINGS

#### 1.0 SCOPE:

This specification covers requirements for Polyvinyl Chloride (PVC) Schedule 40 and Schedule 80 fabricated fittings.

#### 2.0 MATERIALS:

Fittings are to be manufactured from PVC material which meets or exceeds the raquirements of Type I, Grade I compound as stated in ASTM D-1784. All pipe used in fabrication must be PVC pressure tipe as stated in ASTM D-1785 and be NSF approved for portable water.

#### 3.0 FABRICATION:

Pressure fittings are to be Butt Fusion welded using New Plastic Welding model 8-14 Butt Fusion welding equipment. Fabricated pressure fittings which are manufactured using a filler weld technique must be overwrapped with fiberglass reinforced polyester (FRP).

All non-reducing concentric couplings, one-step reducer concentric couplings and long sweep elbows are to be manufactured from pipe using a single piece construction method.

All sockets to have internal triple tager for interference fit.

#### 4.0 MANUFACTURER:

All fabricated fittings to be manufactured by New Plastic Fittings, Inc.

### PRODUCT SPECIFICATION CPVC FABRICATED FITTINGS

#### 1.0 SCOPE:

This specification covers requirements for Chlorinated Polyvinyl Chloride (CFVC) Schedule 40, and Schedule 80 fabricated fittings.

#### 2.0 MATERIALS:

Fittings are to be manufactured from CPVC material which meats or exceeds the requirements of Type IV Grade I compound as stated in ASTM D-178/4. All pipe used in tabrication must be CPVC pressure pipe as stated in ASTM F-441 and be NSF approved for potable water.

#### 3.0 FABRICATION:

Pressure fittings are to be Butt Fusion welded using New Plastic Welding model 8-14 Butt Fusion welding equipment or by the fillet weld technique. All CPVC pressure fittings except couplings must be overwrapped with fiberglass reinforced polyester (FRP).

All non-reducing concentric couplings, one-step reducer concentric couplings and long sweep elbows are to be manufactured from pipe using a single piece opnstruction method.

All sockets to have internal triple tapes for interference fit.

#### 4.0 MANUFACTURER:

All fabricated fittings to be manufactured by New Plastic Fittings, Inc.

### FABRICATED PVC & CPVC SCHEDULE 80 CROSS

FOR DRAINAGE AND PRESSURE APPLICATIONS

#### PART HUMBERS

NOK	DIMENS	IONE AND	₩Z1GHTS			PVC DVV AND	621	PRESEURE	PSI	EPVC	PSI	CPVC	PSI
SIZE	<b>A</b>	8	C	D	. LBS		75 F		73 1	DEW	73 F	PRESSURE	73 F
5	16"	3 1/4"	Bu	3 1/4	9	\$805QCEL	130	S8059CRP	250	X.A.		H.A.	
Sa4	17 3/4	3 1/4	9	2 1/2	9	S&O5FERD	DW	\$805FCRF	250	K.A.		N.A.	
6	17 3/4	3 1/2	8 3/4	3 1/2	11	3806QERL	130	SBOSOCRP	250	CACCACAD	DHA	EB060 ERF	250
6 <b>x</b> 4	18 1/2	3 1/2	9 1/2	2 1/2	12	SBOGFCRD	DUV	S806FCRF	250	C806FCRD	DLV	CBOSFCRF	250
8	21.1/2	4 1/2	10 3/4	4 1/2	25	SBOSGCRL	DW	SBORGCRP	200	CBOSQCRD	DLV	C8080CRF	200
Azó	22 5/6	4 1/2	11 3/8	3 1/2	24	SECRICED	ישם	SAUSHCRF	500	CHONICRO	DEV	CB08HERF	200
824	20 1/2	4 1/2	10 1/2	2 1/2	19	SSORFCRD	שע	SACRECAF	200	CB08FCRD	DWV	CA08FCRF	200
10	27 1/4	5 1/4	13 1/2	5 1/4	43	\$\$100CRL	130	\$8100CRP	500	C8100CBD	000	Câ10QCRF	200
10g8	28 1/2	5 1/4	13 3/8	4 1/Z	40	\$2101CRD	DWV	SA1DJERF	500	C8101CRD	aw.	Câl UI CAF	200
10x6	26 1/4	5 1/4	12 1/2	3 1/2	3∠	SE TOHERO	אעם	SE10HCRF	500	CB10HCRD	DUV	C810HCAF	200
1014	23 1/4	5 1/4	11 1/2	2 1/2	27	5870FCRD	שש	S&10FCRF	200	CETOFCED	DUV	CS1DFCRF	200
12	35	6	17 1/2	6	65	S8T2QCRL	130	SB12QCRF	200	CB120CED	DWV	C8120CRF	200
12×10	31 1/4	6	15 3/4	\$ 1/4	er .	5812JCR0	DWA	SS12JCRF	₹00	2812JCRD	שת	E812JCR1	200
1228	28 1/2	6	14 3/8	4 1/2	54	58121CRD	DUV	\$8121CRF	200	CB121CRD	DW	CE121CE!	DÓS
12x6	27 1/4	6	13 3/6	3 1/2	49	5512HCR0	OFA	SB12HCRP	<b>≥</b> 00	CB12NCED	DUN	CB12HCHF	200
1224	25 1/4	6	12 1/2	2 1/2	39	S\$12FCR0	DWY	SEIZFERF	200	C512FCR0	DEV	CB12FCRF	500
14	37	6 1/2	18 1/2	6 1/2	84	\$\$149CRD	DUV	51140CF	500				
14x12	34 1/4	6 1/2	17 3/6	6	88	S814KERD	אמס	5814ECRF	500				
14x10	3Z 1/4	6 1/2	16 3/8	5 1/4	76	S814JCR0	שעע	SHILJORF	Soa	•			
1428	30 1/4	6 1/2	15	4 1/2	64	S8141CRD	DUV	58141CRF	\$00			C	
14 <b>z</b> 6	28 1/8	6 1/2	76	3 1/2	54	S&14HCRD	DWV	S&14HCRF	500		9	2	
1626	26	6 1/2	13 1/B	2 1/2	47	S814PCRD	DUV	2814FCRF	200	-	$\rightrightarrows$	1	-2-
16	40	61/2	20	6 1/2	178	58164CED	D₩V	SELECTE	200				
16214	36	6 1/2	18 3/4	6 1/2	116	SS16LCRD	DUV	S816LCR!	500	ÎÎ.	3		
10212	34 3/4	6 1/2	18 3/8	6	105	S&16KTRD	DLV	SB16KURF	500	-			
16x10	30 5/8	6 1/2	17 1/2	5 1/4	91	5816./000	DLV	SEINERF	200			11	Ē
16x8	30 5/B	6 1/2	16	4 1/2	79	58161020	DW	28161CRF	200			•	
1616	Z8 5/6	6 1/2	15	3 1/2	65	S816HCRD		SIMER	200				
1614	26 1/2	6 1/2	16 1/8	2 1/2	62	S\$16FCED		SB16FCBF	200				

Other sizes materials and configurations are available; please consult factory for specials and additional information.

New Plastic Fittings' fabricated sockets have an internal triple taper to assure proper fit and solvent cement joining, Internal taper aids in the successful joining of pipe with tolerance variations within ASTM D1785.

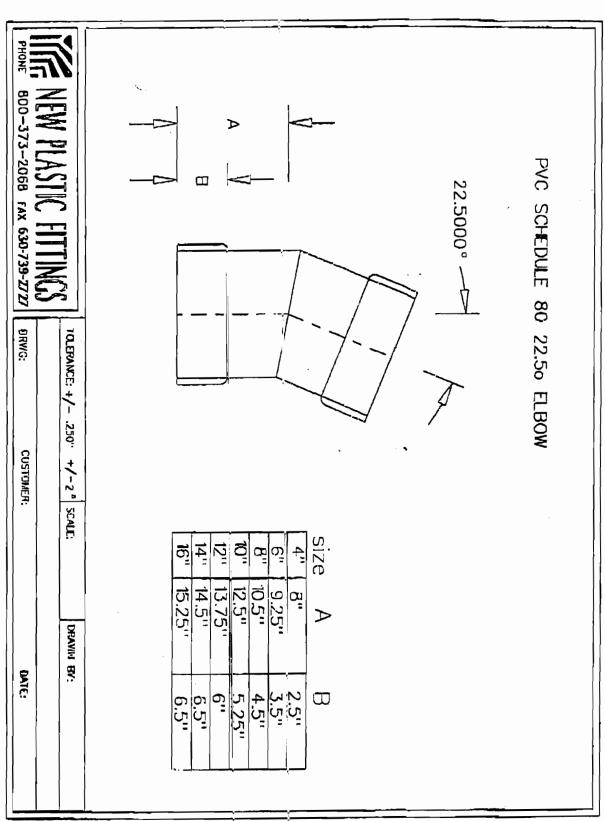
All daysensions in Inches. Toleranced: length dimensions 4/- 1/4" ungle dimensions -/- Zi. Dimensions are subject to change without notice.

Front Kethleen Okmark Parc +1(630)739-2727

Ta: |filler|ndustrie

Fac: +1(724)288-0535

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### LEACHATE COLLECTION PIPE

The pipe used for the leachate collection system was a perforated 6-inch or 8-inch diameter, SDR 17, high density polyethylene (HDPE) collection pipe and solid 6-inch or 8-inch, SDR 17, HDPE collection pipe. The leachate collection pipe was manufactured by Lee Supply Company, Inc. The pipe perforations are ½-inch diameter and are double row, 120 degrees apart with the perforations 6 inches on center. Manufacturer's literature is included herein.



### 1000 series Data Sheet



### **Customer Benefits**

High quality Driscopipe® 1000 is manufactured from extra high molecular weight, high density PE 3408 polyethylene pipe grade resin.

This black, weather-resistant pipe exhibits.....

- Outstanding Chemical & Corrosion Resistance
- High Environmental Stress Crack Resistance
- Excellent Flow Characteristics
- Toughness & Ductility
- Flexibility & Ease of Installation
- Non-Toxic
- Abrasion Endurance
- Fatigue Endurance
- Reliability
- Available Sizes: 1" through 54"

### Suggested Industries and Applications

- Acid / caustic lines
- Agriculture
- Aquaculture
- Brine
- Cement Plants
- Coal Slurry/ Coal Prep
- De-watering
- Dredging/Sand/ Gravel
- Dual containment
- Fertilizer
- Fly ash lines
- Golf courses
- Hard Rock Disposal

- Hazardous Wastes
- High purity processes
- Ice Rinks
- Industrial
- Inorganic Chemicals
- Irrigation
- Leachate collection
- Marinas
- Metal (Cu, Al, Fe, etc.)
- Mining
- Organic Chemicals
- Petrochemicals
- Pulp/Paper/ Wood

- River crossings
- Salt Mines
- Sludge piping
- Snow Melting/ Making
- Storage tank piping
- Sugar Mills
- Swimming Pools
- SX acid mining
- Tailings Slurry
- Temporary pipelines
- Utility/ process piping

.....and many others

### **Specification Data**

The resin, pipe, & fittings comply

ASTM F-714 (Pipe)

PPI - PE3408 Designation

with these accepted (and other)

ASTM D-3261 (Fittings)

Factory Mutual (by size per order)

industry standards . . . . .

Cell/Classification ASTM D3350- 345444C

### Typical Physical Properties of Driscopipe 1000 (PE 3408) Polyethylene Pipe Resin

Toperty		Test Method	Unit	Value
Material Designation		PPI / ASTM		PE 3408
Material Classification		ASTM D-3350	******	Type III; PE
Cell Classification		ASTM D-3350		345444C
Density	(3)	ASTM D-1505	gms/cm <sup>3</sup>	0.955
Melt Flow	(4)	ASTM D-1238(2.16/190)	gms/10 min.	0.11 ♦
Flex Modulus	(5)	ASTM D-790	psi	135,000
Tensile Strength	(4)	ASTM D-638	psi	3,200
ESCR	(4)	ASTM D-1693	F., Hours	>5,000
HDB @ 73°F	(4)	ASTM D-2837	psi	1,600
U-V Stabilizer	(C)	ASTM D-1603	% C	> 2
Hardness		ASTM D-2240	Shore D	65
Tensile Strength @		ASTM D-638	psl	3,200
Yield (Type IV Specim	en)	(2"/min.)		
Elongation at Yield		. ASTM D-638	%, minimum	8
Fensile Strength @			_	
Break (Type IV Specin	nen)	ASTM D-638	psi	5,000
Elongation at Break	•	ASTM D-638	%, minimum	750
Modulus of Elasticity (Yo	oung's Modulus)	ASTM D-638	psi	130,000
CR Cond A,B, C: Mold. Slab		ASTM D-1693	F <sub>o</sub> , Hours	>5,000
Compressed Ring - pipe		ASTM F-1248	F., Hours	>3,500
mpact Strength (IZOD) (.125" Thick)		ASTM D-256 (Method A)	In-lb/in. notch	42
inear Thermal Expansion Coeff.		ASTM D-696	in/ in/ °F	1.2 x 10 <sup>-4</sup>
hermal Conductivity		ASTM D-177	BTU-in/ft²/	2.7
Brittleness Temperature		ASTM D 746	hrs/°F °F	< -130
icat Softening Tempera	tire	ASTM D 1525	• <b>F</b>	257
		701m p 1020		
leat Fusion Condition			psi @ °F	75 @ 400°

<sup>&</sup>quot;This list of typical physical properties is intended for basic characterization of the material and does not represent specific determinations or specifications. The Physical properties values reported herein were determined on compression molded specimens prepared in accordance with Procedure C of ASTM D-1928 and may differ from specimens taken from the pipe.

### LEE SUPPLY CO., INC. P.O. BOX 35

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is document reports accurate and exemplar to making to the set of our knowledge but our suggestions and recommendations of cannot be guaranteed because the conditions of use are beyond our control. The user of such information assumes all risk connected with the use thereof. Phillips 66 Company and its subsidiaries assume no responsibility for the use of information presented herein and hereby expressly disclaim all liability in regards to such use.





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Fax: 1-972-669-5959



Effective: 5-16-97

Average Mett Index value with a standard deviation of 0.01

Tests were discontinued because of no failures and no indication of stress crack initiation

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3/4" (1.050	OD)			γ
SDR 11	160 psi	0.12 lbs./fL	0.860 <b>ID</b>	.095 <b>wa</b> ji
1" (1.315 (	OD)			
SDR 11	160 psi	0.19 lbs./ft.	1.075 <b>ID</b>	.120 waii
1-1/4" (1.6	60 OD)			
SDR 11	160 psi	0.31 lbs./ft.	1.358 ID	.151 <b>wall</b>
1-1/2" (1.9	00 OD)			
SDR 11	160 psi	0.41 lbs./fL	1.554 ID	.173 wall
2" (2.375	OD)			
SDR 7	267 psi	0.94 lbs/ft	1.697 ID	.339 <b>w</b> µ∐
SDR 9	200 psi	0.76	1.847	.264
SDR 11 ●	160 psi	0.64	1.943	.216
SDR 13.5	128 psi	0.53	2.023	.176
SDR 15.5	110 psi	0.47	2.069	.153
SDR 17	100 psi	0.43	2.095	.140
3" (3.500 (	OD)			
SDR 7	267 psi	2.05 lbs/ft.	2.500 ID	.500 wall
SDR 9	200 psi	1.66	2.722	.389
SDR 11 •	160 psi	1.39	2.864	.318
SDR 13.5	128 psi	1.15	2.982	.259
SDR 15.5	110 psi	1.02	3.048	.226
SDR 17 •	100 psi	0.93	3.088	.206
SDR 19	89 psi	0.84	3.132	.184
SDR 21	80 psi	0.77	3.166	.167
SDR 26	64 psi	0.62	3.230	.135
SDR 32.5	51 psi	0.50	3.284	.108
4" (4.500	0D)			
SDR 7	267 psi	3.39 lbs/ft.	3.214 ID	.643 wali
SDR 9	200 psi	2.74	3.500	.500
SDR11 ●	160 psi	2.29	3.682	.409
SDR 13.5	128 psi	1.90	3.834	.333
SDR 15.5	110 psi	1.68	3.920	.290
SDR 17 •	100 psi	1.54	3.970	.265
SDR 19	89 psi	1.39	4.026	.237
SDR 21	80 psi	1.26	4.072	.214
SDR 26 ●	64 psi	1.03	4.154	.173
SDR 32.5	51 psi	0.83	4.224	.138
5-3/8" (5.3	75 OD)			<del></del>
SDR 17	100 psi	2.20 lbs./ft.	4.743 II)	.31() wali
SDR 21	80 psi	1.80	4.863	.25(i
SDR 26	64 psi	1.47	4.961	.204
SDR 32.5	51 psi	1.18	5.045	.165
0011344		1.10	3.013	. 20,7

		_		
5" (5.563	OD)			
SDR 7	267 psi	5.17 lbs/ft.	3.973 ID	.795 wall
SDR 9	207 psi 200 psi	4.18	4.327	./93 <b>wau</b> .618
SDR 11	160 psi	3.51	4.551	.016 .506
SDR 13.5	128 psi	2.91	4.739	.412
SDR 15.5	110 psi	2.57	4.845	.359
SDR 17	100 psi	2.35	4.909	327
SDR 19	89 psi	2.12	4.977	.293
SDR 21	80 psi	1.93	5.033	.265
SDR 26	64 psi	1.57	5.135	.214
SDR 32.5	51 psi	1.27	5.221	.171
6" (6.625	OD)			
SDR 7	267 psi	7.33 lbs/ft.	4.733 ID	.946 wall
SDR 9	200 psi	5.93	5.153	.736
SDR 11 ●	160 psl	4.97	5.421	.602
SDR 13.5	128 psi	4.13	5.643	.491
SDR 15.5	110 psi	3.63	5.771	.427
SDR 17 ●	100 psl	3.34	5.845	.390
SDR 19	B9 psi	3.01	5.927	.349
SDR 21 ●	80 psl	2.73	5.995	.315
SDR 26 ●	64 psi	2.23	6.115	.255
SDR 32.5	51 psi	1.80	6.217	.204
T /T 400				
7" (7.125	•			
SDR 7	267 psi	8.49 lbs./ft.	5.089 ID	1.018 wall
SDR 9	200 psi	6.86	5.541	.792
SDR 11	160 psi	5.75	5.829	.648
SDR 13.5 SDR 15.5	128 psi	4.78	6.069 6.205	.528 .460
	110 psi	4.21		
SDR 17 SDR 19	100 psi 89 psi	3.86 3.48	6.287 6.375	.419 .375
SDR 17	80 psi	3.16	6.445	.340
SDR 26 ●	64 psi	2.58	6.577	.274
SDR 32.5	51 psi	2.08	6.685	.220
8" (8.625	•	19.45.11	(1/15	1 000 11
SDR 7	267 psi	12.43 lbs.fL	6.161 ID	1.232 wall
SDR 9	200 psi	10.05	6.709	.958
SDR 11 ●	160 psl	8.42	7.057	.784
SDR 13.5	128 psi	7.00	7.347	.639
SDR 15.5	110 psi	6.16	7.513	.556
SDR 17 ●	100 psi	5.65	7.611	.507
SDR 19	89 psi	5.10	7.717	.454
SDR 21 ●	80 psi	4.64	7.803	.411
SDR 26 ●	64 psl	3.79	7.961	.332
SDR 32.5	51 psi	3.05	8.095	.265

		1000 361	163	3
10" (10.75	50 OD)	• .		
SDR 7	267 psi	19.32 fbs.fL	7.678 ID	1.536 wall
SDR 9	200 psi	15.61	8.362	1.194
SDR11 ●	160 psi	13.09	8.796	.977
SDR 13.5	128 psi	10.87	9.158	.796
SDR 15.5	110 psi	9.58	9.362	.694
SDR 17 ●	100 psi	8.78	9.486	.632
SDR 19	89 psi	7.92	9.618	<i>5</i> 66
SDR 21 ●	80 psi	7.21	9.726	.512
SDR 26 ●	64 psi	5.87	9.924	.413
SDR 32.5	51 psi	4.75	10.088	.331
12" (12.75	io OD)			
SDR 7	267 psi	27.16 lbs./fL	9.108 ID	1.821 wall
SDR 9	200 psi	21.97	9.916	1.417
SDR 11 •	160 psi	18.41	10.432	1.159
SDR 13.5	128 psi	15.29	10.862	.944
SDR 15.5	110 psi	13.48	11.104	.823
SDR 17 ●	100 psi	12.36	11.250	<sup>-</sup> .750
SDR 19	89 psi	11.14	11.408	.671
SDR21•	80 psi	10.13	11.536	.607
SDR 26 ●	64 pai	8.26	11.770	.490
SDR 32.5	•	6.67	11.966	.392
13" (13.38				
SDR 7	267 psi	29.24 Be/fL	9.562 ID	1.912 wall
SDR 9	200 psi	23.62	10.412	1,487
SDR 11	160 psi	20.30	10.952	1.217
SDR 13.5	128 psi	16.87	11.402	.992
SDR 15.5	110 psi	14.85	11.658	.864
SDR 17	100 psi	13.62	11.812	.787
SDR 19	89 psi	12.28	11.976	.705
SDR 21	80 pei	11.16	12.112	.637
SDR 26	64 psi	9.12	12.356	515
SDR 32.5	51 pei	7.36	12.562	.412
14.000 O	D		•	
SDR7	267 pei	32.76 Bal/ft.	10. <b>00 ID</b>	2.000 wall
SDR9	200 pai	26.50	10.888	1.556
SDR 11 ●	160 psi	22.20	11.454	1.273
SDR 13.5	128 psi	18.44	11.926	1.037
	110 psi	16.24	12.194	.903
SDR 15.5				***
SDR 15.5 SDR 17 ●	100 psi	14.91	12.352	.824
	100 psi 89 psi	14.91 13.43	12.352 12.526	.824 .737
SDR 17 ●	•			
SDR 17 ● SDR 19	89 psi	13.43	12.526	.737

16.000 O	D			
SDR 9	200 psi	34.60 lbs/fL	12.444 ID	1.778 wall
SDR 11 ●	160 psi	29.00	13.090	1.455
SDR 13.5	129 psi	24.09	13.630	1.185
SDR 15.5	110 psi	21.21	13.936	1.032
SDR 17 ●	100 psi	19.46	14.118	.941
SDR 19	89 psi	17.54	14.316	.842
SDR 21 ●	80 psi	15.96	14.476	.762
SDR 26 ●	64 psi	13.01	14.770	.615
SDR 32.5	51 psi	10.50	15.016	.492
18.000 O	D			
SDR 9	200 psi	43.79 lbs/fL	14.000 ID	2.000 wall
SDR 11 ●	160 psi	36.69	14.728	1.636
SDR 13.5	128 psi	30.48	15.334	1.333
SDR 15.5	9 110 psi	26.84	15.678	1.161
SDR 17 ●	100 psi	24.64	15.882	1.059
SDR 19	89 psi	22.19	16.106	.947
SDR 21	80 psi	20.19	16.286	.857
SDR 26 ●	64 pai	16.47	16.616	.692
SDR 32.5	51 psi	13.30	16.892	.554
20.000 O	<u> </u>			
SDR 9	200 psi	54.05 lbs./ft.	15.556 ID	2.222 wall
SDR 11 ●	160 psi	45.30	16.364	1.818
SDR 13.5	128 psi	37.63	17.038	1.481
SDR 15.5-	110 psi	33.14	17.420	1.290
SDR 17 ●	100 psi	30.41	17.648	1.176
SDR 19	89 <b>ps</b> i	27.42	17.894	1.053
SDR 21	80 psi	24.93	18.096	.952
SDR 26 ●	64 psi	20.34	18.462	.769
SDR 32.5	9 51 pei	16.41	18.770	.615
21.500 O	D			
SDR9	200 psi	62.47 Be./ft.	16.722 LD	2.389 **44
SDR 11	160 psi	52.37	17.590	l 955
SDR 13.5	128 psi	43.51	18.314	1.593
SDR 15.5	110 <b>ps</b> i	38.30	18.726	1.387
SDR 17	100 psi	35.16	18.970	1 265
SDR 19	89 psi	31.68	19.236	1.132
SDR 21	80 pei	28.82	19.452	1 924
SDR 26	64 psi	23.51	19.846	927
SDR_32.5	51 psi	18.98	20.176	<u>462</u>
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	_			66			JIZC.	J C Dilli	.11210112
22.000 OD					30.000 OD	)	***		
SDR 9	200 psi	65.40 lbs/fL	17.112 ID	2.444 mail	SDR 11	160 psi	101.92 lbs./ft	24.546 ID	2.727 wa
SDR 11 •	160 psi	54.82	18.000	2.000	· SDR 13.5	128 psi	84.69	25.556	2.222
SDR 13.5	128 psi	45.56	18.740	1.630	SDR 15:5	110 psi	74.56	26.130	1.935
SDR 15.5	L10 psi	40.10	19.162	1.419	SDR 17	100 psi	68.45	26.470	1.765
SDR 17	100 psi	36.80	19.412	1.294	SDR 19	89 psi	61.67	26.842	1.579
SDR 19	89 psi	33.16	19.684	1.158	SDR 21 ●	80 psi	56.12	27.142	1.429
SDR 21	80 psi	30.18	19.904	1.048	SDR 26	64 psi	45.78	27.692	1.154
SDR 26 ●	64 psi	24.61	20.308	.846	SDR 32.5 •	51 psi	36.93	28.154	.923
SDR 32.5 •	51 psi	19.86	20.646	.67 <del>7</del>	800 mm (3	11 494	001		
24.000 OD			· · · · · · · · · · · · · · · · · · ·		SDR 13.5	128 psi	93.35 lbs/ft.	26.830 ID	2.333 wa
SDR 9	200 psi	77.85 lbs./fL	18.666 ID	2.66 wall	SDR 15.5	110 psi	82.20	27.432	2.032
	1 60 psi	65.24	19.636	2.18%	SDR 17	100 psi	75.45	27.790	1.853
	128 psi	54.21	20.444	1.778i	SDR 19	89 psi	67.98	28.180	1.658
	110 psi	47.72	20.904	1.543	SDR 21	80 psi	61.85	28.496	1.500
	L00 psi	43.8L	21.176	1.41/2	SDR 26	64 psi	50.44	29.074	1.211
SDR 19	89 psi	39.46	21.474	1.263	SDR 32.5	51 psi	40.71	29.558	.969
SDR 21 •	80 psi	35.9L	21.714	1.143	32.000 OD			*	
SDR 26 ●	64 psi	29.30	22.154	.97,3	SDR 13.5	128 psi	96.35 lbs./fL	27.260 ID	2.370 wa
SDR 32.5 •	51 psi	23.62	22.524	.7;48	SDR 15.5	110 psi	84.87	27.870	2.065
26.000 OD					SDR 17	100 psi	77.86	28.236	1.882
		2/ 52 5 /2	44 252 113		SDR 19.	89 psi	70.15	28.632	1.684
SDR 11	160 psi	76.57 lbs./fL	21.272 ID	2.3(4 wall	SDR 21	80 psi	63.84	28.952	1.524
SDR 13.5	128 psi	63.62	22.148	1.976	SDR 26	64 psi	52.10	29.538	1.231
SDR 15.5	110 psi	56.00	22.646	1.6#7	SDR 32.5 •	St pet	42.04	30.030	.985
SDR 17 SDR 19	100 psi 89 psi	51.39 46.30	22.942	1.5≱9 1.3≴8	34.000 OD				
SDR 21	80 psi	42.14	23.524	1.238	SDR 13.5	128 psi	108.81 Be./ft.	28.962 ID	2.519 wa
SDR 26	64 psi	34.39	24.000	1.000	SDR 15.5	110 pei	95.81	29.612	2.194
SDR 32.5 •	51 psi	27.74	24.400	.400	SDR 17	100 psi	87.91	30.000	2.000
			<del></del>		SDR 19	89 pei	79.17	30.422	1.789
28.000 OD				į	SDR 21	80 pei	72.06	30.762	1.619
SDR 11	160 pei		22.910 ID	2.45 wall	SDR 26	64 psi	58.81	31.384	1.308
	128 pei	73.78	23.852	2.474	SDR 32.5	51 psi	47.43	31.908	1.046
	110 pei	64.95	24. <b>388</b> ,	1.406	36.000 OD				
SD <b>R</b> 17 ●	LOO pel	39.42	- 24.706	1.4647	SDR 13.5	128 psi	121.98 Ba/fL	30.666 ID	2.667 wa
SDR 19	89 pei	53.73	25.052	1,474	SDR 13.5	110 psi	107.41	31.354	2.323
SDR 21	80 pei	46.26	25.334	1,333	SDR 17	100 psi	98.57	31.764	2.118
SDR 26	64 pei	39.88	25.846	1/077	SDR 19	89 psi	88.81	32.210	1.895
SDR 32.5 •	51 pei	32.19	26.274	.#62	SDR 21 ◆	SO per	80.78	32.572	1.714
JD11.JD2									
			,	,	SDR 26 ●	64 pei	65.94	33.230	1.385

LEE SUPPLY CO., INC. P.O. BOX 35 305 FIRST & LINCOLN AVE.

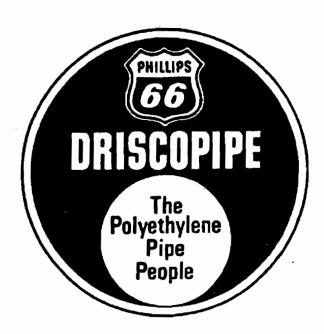
 $1\ 0\ 0\ 0\ /\ 6\ 4\ 0\ 0$  series

Molded and Fabricated

**Fittings** 

**Sizes** and **Dimensions** 

**Effective: 11-1-94** 



Distributed by:



### 90 DEGREE ELBOWS

NOM	1 N	_	Type	ps i :			ions,			WT. LES.
			ļ		Α :		C :		R	
3/4"	SDR	11_	molded	160	1.8	3.2	3.8		1.4	. 1 —.—
1	SDR	11	molded	160	1.8	3.2	3.8		1.4	. 1
1-1/4	SDR	11	molded	160	1.8	3.2	3.8	•,• •	1.4	1
1-1/2	SDR	11	molded	160	1.8	3.2	3.8		1.4	1
	SOR	9.3 11	molded	190 160	<b></b>	4.5	5.7		2.0	1
2"	SDR	7 11	fabbed	200 120	3.0	10.2	11.4	1.5	8.7	1
7.1	SDR	9.3 11 17	molded	190 160 100	3.0	5.1	6.9	`	2.5	2
3"	SDR	7 11 17	fabbed	200 120 75	3.0	10.8	12.5	.5	9.3	3 2 2
	SDR	9.3 11 17	molded	190 160 100	3.0	5.8	8.0		3.0	3
4"	SDR	7 11 17	fabbed	200 120 100	5.0	16.8	19.1	2.5	14.2	8 6 5
5"	SDR	11	fabbed	120	5.0	17.9	20.7	2.5	16.0	8
	SOR	9.3 11 17	molded	190 160 100	3.0	7.0	10.8		4.4	9
6"	SDR	7 11 17	fabbed	200 120 75	6.0	21.4	24.7	3.0	18.3	21 14 10
	SDR	11	molded	160	6.0	12.0	16.5		6.0	25
8"	SDR	7 11 17 26	fabbed	200 120 75 48	6.0	22.4	26.7	3.0	19.4	37 23 17 12
	SDR	11	molded	160	6.0	13.3	18.6		7.3	41
10"	SDR	7 11 17 26	fabbed	200 120 75 48	6.0	23.5	28.8	3.0	20.4	61 41 28 19
	SDR	11	molded	160	7.5	15.8	22.3		8.3	70
12"	SDR	7 11 17 26	fabbed	200 120 75 48	8.0	30.5	36.8	4.0	26.5	111 75 51 34
14"	SDR	7 11 17 26	fabbed	200 120 75 48	8.0	31.0	38.0	4.0	27.1	137 93 62 42
16"	SDR	7 11 17 26	fabbed	200 120 75 48	10.0	38.1	46.1	5.0	33.1	219 148 99 66



NOMENAL Type psi Dimensions, inches 18.000 SDR 17 fab'd 75 10.0 39.1 48.1 5.0 34.1 122 20.000 SDR 17 fab'd 75 11.0 43.2 53.2 5.5 37.7 175 21.500 SDR 17 fab'd 75 11.0 44.0 54.7 5.5 38.4 307 22.000 SDR 17 fab'd 75 11.0 44.2 55.2 5.5 38.7 263 22.000 SDR 17 fab'd 75 11.0 44.2 55.2 5.5 38.7 263 24.000 SDR 17 fab'd 75 11.0 44.2 55.2 5.5 39.7 393 26.000 SDR 17 fab'd 75 11.0 44.1 58.1 5.0 39.0 521 28.000 SDR 17 fab'd 75 10.0 44.1 58.1 5.0 39.0 521 30.000 SDR 17 fab'd 75 10.0 44.1 58.1 5.0 39.0 521 31.496 SDR 17 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 28.000 SDR 17 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 28.000 SDR 17 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 28.000 SDR 17 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 28.000 SDR 17 fab'd 75 10.0 45.9 61.6 5.0 40.9 460 31.496 SDR 17 fab'd 75 10.0 46.1 62.1 5.0 41.1 477 31.496 SDR 17 fab'd 75 10.0 46.1 62.1 5.0 41.1 477 31.496 SDR 17 fab'd 75 10.0 46.1 62.1 5.0 41.1 477 31.496 SDR 17 fab'd 75 10.0 46.1 62.1 5.0 41.1 477 31.496 SDR 17 fab'd 75 10.0 48.1 66.1 5.0 43.1 629 42.000 SDR 17 fab'd 75 10.0 49.9 69.7 5.0 44.9 521 32.000 SDR 17 fab'd 75 10.0 51.1 72.1 5.0 46.1 908 39.370 32.5 fab'd 48 10.0 54.1 78.1 5.0 49.1 803 54.000 SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803					_			_		
18.000 SDR 11 fab'd 120 10.0 44.1 58.1 5.0 38.1 440  28.000 SDR 17 fab'd 75 10.0 44.1 58.1 5.0 38.1 440  28.000 SDR 17 fab'd 75 10.0 44.1 58.1 5.0 38.1 440  28.000 SDR 17 fab'd 75 10.0 44.1 58.1 5.0 38.1 440  28.000 SDR 17 fab'd 75 10.0 44.1 58.1 5.0 39.0 521 75 75 75 75 75 75 75 75 75 75 75 75 75	NOM	N A	L: Type	psi		imens	sions,	inche		WT.
18.000 SDR 17 fab'd 75 10.0 39.1 48.1 5.0 34.1 129 86  20.000 SDR 17 fab'd 75 11.0 43.2 53.2 5.5 37.7 175 117  21.500 SDR 17 fab'd 75 11.0 44.0 54.7 5.5 38.4 206 138  22.000 SDR 17 fab'd 75 11.0 44.2 55.2 5.5 38.7 216 145  24.000 SDR 17 fab'd 120 10.0 43.1 56.1 5.0 38.1 440  28.000 SDR 17 fab'd 75 10.0 44.1 58.1 5.0 39.0 521 350 31.4 96  28.000 SDR 17 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 274  800mm SDR 26 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 274  800mm SDR 17 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 274  8100mm SDR 17 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 274  82.000 SDR 17 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 274  82.000 SDR 17 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 274  800mm SDR 26 fab'd 75 10.0 48.1 66.1 5.0 41.1 477 319  36.000 SDR 26 fab'd 48 10.0 48.1 66.1 5.0 43.1 629 421  1000mm SDR 26 fab'd 48 10.0 54.1 72.1 5.0 46.1 908 607  24.000 SDR 27 fab'd 75 10.0 51.1 72.1 5.0 46.1 908 607			**	: <i>7</i> 3°						LBS
18.000 SDR 17 fab'd 75 10.0 39.1 48.1 5.0 34.1 129 86  20.000 SDR 17 fab'd 75 11.0 43.2 53.2 5.5 37.7 175 117  21.500 SDR 17 fab'd 75 11.0 44.0 54.7 5.5 38.4 206 138  22.000 SDR 17 fab'd 75 11.0 44.2 55.2 5.5 38.7 216 145  24.000 SDR 17 fab'd 120 10.0 43.1 56.1 5.0 38.1 440  28.000 SDR 17 fab'd 75 10.0 44.1 58.1 5.0 39.0 521 350 31.4 96  28.000 SDR 17 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 274  800mm SDR 26 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 274  800mm SDR 17 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 274  8100mm SDR 17 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 274  82.000 SDR 17 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 274  82.000 SDR 17 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 274  800mm SDR 26 fab'd 75 10.0 48.1 66.1 5.0 41.1 477 319  36.000 SDR 26 fab'd 48 10.0 48.1 66.1 5.0 43.1 629 421  1000mm SDR 26 fab'd 48 10.0 54.1 72.1 5.0 46.1 908 607  24.000 SDR 27 fab'd 75 10.0 51.1 72.1 5.0 46.1 908 607			1	120	1	:				103
20.000 SDR 17 fab'd   120   1.0   43.2   53.2   5.5   37.7   175   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117   117	18.000					39.1	1 48 1 I	5.0	34 1	
20.000   SDR 17   fab'd   120   75   11.0   43.2   53.2   5.5   37.7   175   117    21.500   SDR 17   fab'd   120   75   11.0   44.0   54.7   5.5   38.4   206   138    22.000   SDR 17   fab'd   120   75   11.0   44.2   55.2   5.5   38.7   216   145    24.000   SDR 11   fab'd   120   10.0   43.1   56.1   5.0   38.1   440    28.000   SDR 17   fab'd   120   10.0   44.1   58.1   5.0   39.0   350   234    30.000   SDR 17   fab'd   75   10.0   45.1   60.1   5.0   40.1   410   274    800mm   SDR 17   fab'd   75   10.0   45.9   61.6   5.0   40.9   460   307    32.000   SDR 17   fab'd   75   48   10.0   46.1   62.1   5.0   41.1   477   319    36.000   SDR 17   fab'd   75   48   10.0   46.1   62.1   5.0   41.1   477   319    36.000   SDR 17   fab'd   75   48   10.0   46.1   66.1   5.0   44.9   521   420    42.000   SDR 26   fab'd   48   10.0   54.1   72.1   5.0   46.1   908   607    42.000   SDR 26   fab'd   48   10.0   54.1   78.1   5.0   49.1   803    54.000   SDR 26   fab'd   48   10.0   54.1   78.1   5.0   49.1   803    54.000   SDR 26   fab'd   48   10.0   54.1   78.1   5.0   49.1   803    54.000   SDR 26   fab'd   48   10.0   54.1   78.1   5.0   49.1   803    54.000   SDR 26   fab'd   48   10.0   54.1   78.1   5.0   49.1   803	,	2		48		37.	70	3.5	34.1	
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22.000 SDR 17 fab'd 75 11.0 44.2 55.2 5.5 38.7 216 145  24.000 SDR 11 fab'd 120 10.0 45.2 57.2 5.5 39.7 393 263 176  26,000 SDR 11 fab'd 120 10.0 43.1 56.1 5.0 38.1 440  28.000 SDR 17 fab'd 75 10.0 44.1 58.1 5.0 39.0 521 350 234  30.000 SDR 17 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 274  800mm SDR 17 fab'd 75 10.0 45.9 61.6 5.0 40.9 460 307  32.000 SDR 17 fab'd 75 10.0 46.1 62.1 5.0 41.1 477 319  36.000 SDR 17 fab'd 75 10.0 48.1 66.1 5.0 43.1 629 421  1000mm SDR 26 fab'd 48 10.0 49.9 69.7 5.0 44.9 521 39.370  32.000 SDR 17 fab'd 75 10.0 51.1 72.1 5.0 46.1 908 607  1200mm SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803  54.000 SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803									<u> </u>	
22.000 SDR 17 fab'd 75 11.0 44.2 55.2 5.5 38.7 216 145  24.000 SDR 11 fab'd 120 10.0 45.2 57.2 5.5 39.7 393 263 176  26,000 SDR 11 fab'd 120 10.0 43.1 56.1 5.0 38.1 440  28.000 SDR 17 fab'd 75 10.0 44.1 58.1 5.0 39.0 521 350 234  30.000 SDR 17 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 274  800mm SDR 17 fab'd 75 10.0 45.9 61.6 5.0 40.9 460 307  32.000 SDR 17 fab'd 75 10.0 46.1 62.1 5.0 41.1 477 319  36.000 SDR 17 fab'd 75 10.0 48.1 66.1 5.0 43.1 629 421  1000mm SDR 26 fab'd 48 10.0 49.9 69.7 5.0 44.9 521 39.370  32.000 SDR 17 fab'd 75 10.0 51.1 72.1 5.0 46.1 908 607  1200mm SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803  54.000 SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803				120						727
24.000 SDR 17 fab'd 75 10.0 45.1 5.0 40.1 410 274  800mm 31.496 SDR 17 fab'd 75 10.0 45.9 61.6 5.0 40.9 460 307  32.000 SDR 17 fab'd 75 10.0 46.1 62.1 5.0 41.1 477 319  36.000 SDR 17 fab'd 75 10.0 48.1 66.1 5.0 41.1 477 319  36.000 SDR 17 fab'd 75 10.0 48.1 66.1 5.0 41.1 477 319  36.000 SDR 17 fab'd 75 10.0 48.1 66.1 5.0 41.1 477 319  36.000 SDR 17 fab'd 75 10.0 48.1 66.1 5.0 40.9 521 48 10.0 49.9 69.7 5.0 44.9 521 480 48 10.0 51.1 72.1 5.0 46.1 908 607	22 000				11.0	44.2	55.2	5.5	38.7	
24.000 SDR 17 fab'd 75   11.0   45.2   57.2   5.5   39.7   263   176   26,000 SDR 11 fab'd   120   10.0   43.1   56.1   5.0   38.1   440   28.000 SDR 17 fab'd   75   10.0   44.1   58.1   5.0   39.0   350   234   30.000 SDR 17 fab'd   75   10.0   45.1   60.1   5.0   40.1   410   274   800mm   SDR 17   26   fab'd   75   48   10.0   45.9   61.6   5.0   40.9   460   307   32.000 SDR 17   6ab'd   75   10.0   46.1   62.1   5.0   41.1   477   319   36.000 SDR 17   6ab'd   75   10.0   48.1   66.1   5.0   43.1   629   421   1000mm   SDR 26   6ab'd   48   10.0   49.9   69.7   5.0   44.9   521   420   42.000 SDR 17   6ab'd   75   10.0   51.1   72.1   5.0   46.1   908   607   1200mm   SDR 26   6ab'd   48   10.0   54.1   78.1   5.0   49.1   803   54.000 SDR 26   6ab'd   48   10.0   54.1   78.1   5.0   49.1   803		_	1			****	,,,,		30	1
24.000 SDR 17 fab'd 75   11.0   45.2   57.2   5.5   39.7   263   176   26,000 SDR 11 fab'd   120   10.0   43.1   56.1   5.0   38.1   440   28.000 SDR 17 fab'd   75   10.0   44.1   58.1   5.0   39.0   350   234   30.000 SDR 17 fab'd   75   10.0   45.1   60.1   5.0   40.1   410   274   800mm   SDR 17   26   fab'd   75   48   10.0   45.9   61.6   5.0   40.9   460   307   32.000 SDR 17   6ab'd   75   10.0   46.1   62.1   5.0   41.1   477   319   36.000 SDR 17   6ab'd   75   10.0   48.1   66.1   5.0   43.1   629   421   1000mm   SDR 26   6ab'd   48   10.0   49.9   69.7   5.0   44.9   521   420   42.000 SDR 17   6ab'd   75   10.0   51.1   72.1   5.0   46.1   908   607   1200mm   SDR 26   6ab'd   48   10.0   54.1   78.1   5.0   49.1   803   54.000 SDR 26   6ab'd   48   10.0   54.1   78.1   5.0   49.1   803										;
24.000 SDR 17 fab'd 75   11.0   45.2   57.2   5.5   39.7   263   176   26,000 SDR 11 fab'd   120   10.0   43.1   56.1   5.0   38.1   440   28.000 SDR 17 fab'd   75   10.0   44.1   58.1   5.0   39.0   350   234   30.000 SDR 17 fab'd   75   10.0   45.1   60.1   5.0   40.1   410   274   800mm   SDR 17   26   fab'd   75   48   10.0   45.9   61.6   5.0   40.9   460   307   32.000 SDR 17   6ab'd   75   10.0   46.1   62.1   5.0   41.1   477   319   36.000 SDR 17   6ab'd   75   10.0   48.1   66.1   5.0   43.1   629   421   1000mm   SDR 26   6ab'd   48   10.0   49.9   69.7   5.0   44.9   521   420   42.000 SDR 17   6ab'd   75   10.0   51.1   72.1   5.0   46.1   908   607   1200mm   SDR 26   6ab'd   48   10.0   54.1   78.1   5.0   49.1   803   54.000 SDR 26   6ab'd   48   10.0   54.1   78.1   5.0   49.1   803			1	120		_				707
26	24 .000	-			11.0	45.2	57.2	5.5	39.7	
28.000 SDR 17 fab'd 75 10.0 44.1 58.1 5.0 39.0 521 350 234  30.000 SDR 17 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 274  800mm 5DR 17 fab'd 75 10.0 45.9 61.6 5.0 40.9 460 307  32.000 SDR 17 fab'd 75 10.0 46.1 62.1 5.0 41.1 477 319  36.000 SDR 17 fab'd 75 48 10.0 48.1 66.1 5.0 43.1 629 421  1000mm SDR 26 fab'd 48 10.0 49.9 69.7 5.0 44.9 521 420  42.000 SDR 17 fab'd 75 48 10.0 51.1 72.1 5.0 46.1 908 607  1200mm 5DR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803						,,,,,				
28.000 SDR 17 fab'd 75 10.0 44.1 58.1 5.0 39.0 521 350 234  30.000 SDR 17 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 274  800mm 5DR 17 fab'd 75 10.0 45.9 61.6 5.0 40.9 460 307  32.000 SDR 17 fab'd 75 10.0 46.1 62.1 5.0 41.1 477 319  36.000 SDR 17 fab'd 75 48 10.0 48.1 66.1 5.0 43.1 629 421  1000mm SDR 26 fab'd 48 10.0 49.9 69.7 5.0 44.9 521 420  42.000 SDR 17 fab'd 75 48 10.0 51.1 72.1 5.0 46.1 908 607  1200mm 5DR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803						L				
28.000 SDR 17 fab'd 75 10.0 44.1 58.1 5.0 39.0 521 350 234  30.000 SDR 17 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 274  800mm 5DR 17 fab'd 75 10.0 45.9 61.6 5.0 40.9 460 307  32.000 SDR 17 fab'd 75 10.0 46.1 62.1 5.0 41.1 477 319  36.000 SDR 17 fab'd 75 48 10.0 48.1 66.1 5.0 43.1 629 421  1000mm SDR 26 fab'd 48 10.0 49.9 69.7 5.0 44.9 521 420  42.000 SDR 17 fab'd 75 48 10.0 51.1 72.1 5.0 46.1 908 607  1200mm 5DR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803	24 000			T.20	10.0	/7.1	5/ 1		70.1	
28.000 SDR 17 fab'd 75 10.0 44.1 58.1 5.0 39.0 350 234  30.000 SDR 17 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 274  800mm 31.496 SDR 17 fab'd 75 48 10.0 45.9 61.6 5.0 40.9 460 307  32.000 SDR 17 fab'd 75 10.0 46.1 62.1 5.0 41.1 477 319  36.000 SDR 17 fab'd 75 10.0 48.1 66.1 5.0 43.1 629 421  1000mm SDR 26 fab'd 48 10.0 49.9 69.7 5.0 44.9 521 420  42.000 SDR 17 fab'd 75 48 10.0 51.1 72.1 5.0 46.1 908 607  1200mm 47.244 SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803	26,000	SUK 1	I Tab'd	120	10.0	43.1	30.1	5.0	30.1	440
28.000 SDR 17 fab'd 75 10.0 44.1 58.1 5.0 39.0 350 234  30.000 SDR 17 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 274  800mm 31.496 SDR 17 fab'd 75 48 10.0 45.9 61.6 5.0 40.9 460 307  32.000 SDR 17 fab'd 75 10.0 46.1 62.1 5.0 41.1 477 319  36.000 SDR 17 fab'd 75 10.0 48.1 66.1 5.0 43.1 629 421  1000mm SDR 26 fab'd 48 10.0 49.9 69.7 5.0 44.9 521 420  42.000 SDR 17 fab'd 75 48 10.0 51.1 72.1 5.0 46.1 908 607  1200mm 47.244 SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803				_						
30.000 SDR 17 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 274  800mm 31.496 SDR 17 fab'd 75 10.0 45.9 61.6 5.0 40.9 460 307  32.000 SDR 17 fab'd 75 10.0 46.1 62.1 5.0 41.1 477 319  36.000 SDR 17 fab'd 75 48 10.0 48.1 66.1 5.0 43.1 629 421  1000mm SDR 26 fab'd 48 10.0 49.9 69.7 5.0 44.9 521 420  42.000 SDR 17 fab'd 75 48 10.0 51.1 72.1 5.0 46.1 908 607  1200mm 47.244 SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803		1		120						
30.000 SDR 17 fab'd 75 10.0 45.1 60.1 5.0 40.1 410 274  800mm SDR 17 fab'd 75 48 10.0 45.9 61.6 5.0 40.9 460 307  32.000 SDR 17 fab'd 75 48 10.0 46.1 62.1 5.0 41.1 477 319  36.000 SDR 17 fab'd 75 48 10.0 48.1 66.1 5.0 43.1 629 421  1000mm SDR 26 fab'd 48 10.0 49.9 69.7 5.0 44.9 521 420  42.000 SDR 17 fab'd 75 48 10.0 51.1 72.1 5.0 46.1 908 607  1200mm 47.244 SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803	28.000				10.0	44.1	58.1	5.0	39.0	
800mm SDR 17 fab'd 75 10.0 45.9 61.6 5.0 40.9 460 307  32.000 SDR 17 fab'd 75 10.0 46.1 62.1 5.0 41.1 477 319  36.000 SDR 17 fab'd 75 10.0 48.1 66.1 5.0 43.1 629 421  1000mm SDR 26 fab'd 48 10.0 49.9 69.7 5.0 44.9 521 420  42.000 SDR 17 fab'd 75 10.0 51.1 72.1 5.0 46.1 908 607  1200mm 77.244 SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803				48						234
800mm SDR 17 fab'd 75 10.0 45.9 61.6 5.0 40.9 460 307  32.000 SDR 17 fab'd 75 10.0 46.1 62.1 5.0 41.1 477 319  36.000 SDR 17 fab'd 75 10.0 48.1 66.1 5.0 43.1 629 421  1000mm SDR 26 fab'd 48 10.0 49.9 69.7 5.0 44.9 521 420  42.000 SDR 17 fab'd 75 10.0 51.1 72.1 5.0 46.1 908 607  1200mm 77.244 SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803			_	т					· ·	
800mm SDR 17 fab'd 75 10.0 45.9 61.6 5.0 40.9 460 307  32.000 SDR 17 fab'd 75 10.0 46.1 62.1 5.0 41.1 477 319  36.000 SDR 17 fab'd 75 10.0 48.1 66.1 5.0 43.1 629 421  1000mm SDR 26 fab'd 48 10.0 49.9 69.7 5.0 44.9 521 420  42.000 SDR 17 fab'd 75 10.0 51.1 72.1 5.0 46.1 908 607  1200mm 77.244 SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803	30.000	SDR 1	7 fab'd		10.0	45.1	60.1	5.0	40.1	
31.496		2	5	48						2/4
31.496										
31.496	800mm	SDR 1	7 fabid	75	10.0	45.9	61.6	5.0	40.9	460
36.000 SDR 17 fab'd 75 10.0 48.1 66.1 5.0 43.1 629 421  1000mm SDR 26 fab'd 48 10.0 49.9 69.7 5.0 44.9 521 420  42.000 SDR 17 fab'd 75 10.0 51.1 72.1 5.0 46.1 908 607  1200mm 47.244 SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803	31.496	2		48	, , , , ,					307
36.000 SDR 17 fab'd 75 10.0 48.1 66.1 5.0 43.1 629 421  1000mm SDR 26 fab'd 48 10.0 49.9 69.7 5.0 44.9 521 420  42.000 SDR 17 fab'd 75 10.0 51.1 72.1 5.0 46.1 908 607  1200mm 47.244 SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803			<u> </u>		<u> </u>			-		
36.000 SDR 17 fab'd 75 10.0 48.1 66.1 5.0 43.1 629 421  1000mm SDR 26 fab'd 48 10.0 49.9 69.7 5.0 44.9 521 420  42.000 SDR 17 fab'd 75 10.0 51.1 72.1 5.0 46.1 908 607  1200mm 47.244 SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803	73.000	con 1	7 6-51-4	75	10.0	/4 1	42 1	5.0	41 1	477
1000mm SDR 26 fab'd 48 10.0 49.9 69.7 5.0 44.9 521 420  42.000 SDR 17 26 fab'd 75 10.0 51.1 72.1 5.0 46.1 908 607  1200mm 47.244 SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803	32.000	SUK .	6 Fabro		10.0	40.1	02.1	7.0	*'''	
1000mm SDR 26 fab'd 48 10.0 49.9 69.7 5.0 44.9 521 420  42.000 SDR 17 26 fab'd 75 10.0 51.1 72.1 5.0 46.1 908 607  1200mm 47.244 SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803			<u> </u>							
1000mm SDR 26 fab'd 48 10.0 49.9 69.7 5.0 44.9 521 420  42.000 SDR 17 26 fab'd 75 10.0 51.1 72.1 5.0 46.1 908 607  1200mm 47.244 SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803			7	75						629
1000mm   SDR 26   fab'd   48   10.0   49.9   69.7   5.0   44.9   521   420    42.000   SDR 17   26   fab'd   75   48   10.0   51.1   72.1   5.0   46.1   908   607    1200mm   47.244   SDR 26   fab'd   48   10.0   54.1   78.1   5.0   49.1   803    54.000   SDR 26   fab'd   48   16.5   76.7   103.7   8.3   68.5	36.000			48	10.0	48.1	66.1	5.0	45.1	
39.370 32.5 7ab'd 38 10.0 47.7 57.7 3.0 420  42.000 SDR 17 26 7ab'd 75 48 10.0 51.1 72.1 5.0 46.1 908 607  1200mm 47.244 SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803  54.000 SDR 26 fab'd 48 16.5 76.7 103.7 8.3 68.5									<u>.                                    </u>	
39.370 32.5 7ab'd 38 10.0 47.7 57.7 3.0 420  42.000 SDR 17 26 7ab'd 75 48 10.0 51.1 72.1 5.0 46.1 908 607  1200mm 47.244 SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803  54.000 SDR 26 fab'd 48 16.5 76.7 103.7 8.3 68.5						ſ				
42.000 SDR 17 26 fab'd 75 10.0 51.1 72.1 5.0 46.1 908 607  1200mm 47.244 SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803  54.000 SDR 26 fab'd 48 16.5 76.7 103.7 8.3 68.5					10.0	49.9	69.7	5.0	44.9	
1200mm 47.244 SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803 54.000 SDR 26 fab'd 48 16.5 76.7 103.7 8.3 68.5	39.370	32.		38	<u></u>					420
1200mm 47.244 SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803 54.000 SDR 26 fab'd 48 16.5 76.7 103.7 8.3 68.5								_		
1200mm 47.244 SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803 54.000 SDR 26 fab'd 48 16.5 76.7 103.7 8.3 68.5	42.000	SDR 1	7 fabid		10.0	51.1	72.1	5.0	46.1	
47.244 SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803  54.000 SDR 26 fab'd 48 16.5 76.7 103.7 8.3 68.5		301	1.00	48						607
47.244 SDR 26 fab'd 48 10.0 54.1 78.1 5.0 49.1 803  54.000 SDR 26 fab'd 48 16.5 76.7 103.7 8.3 68.5		, <u>'</u>								
54.000 SDR 26 fab'd 48 16.5 76.7 103.7 8.3 68.5		SDP 2	6 fabid	48	10.0	54.1	78.1	5.0	49.1	803
	77.244	30% 2	- 30 3							
th Eabhad Elle are not fully pressure rated	54.000	SDR 2	6 fab'd	48	16.5	76.7	103.7	7 8.3	68.5	
	** * *			200	ful by	DCAC	SIICA I	rated		

\*\* Fabbed Ells are not fully pressure rated, see "Technical Considerations".

See drawings on page 1A

#### 60 DEGREE ELBOWS

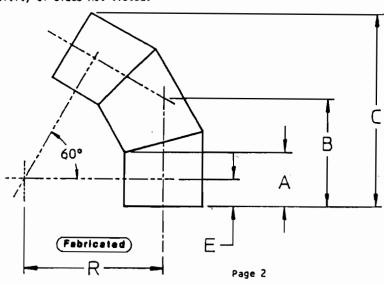
N O N				ps i		) imen	sions	inch	es	Wt.
S	1 Z E		**	73°	A	. в	, с	. E	. R	lbs.
2"	SDR	7 11	fab'd	200 120	3.0	5.4	9.2	1.5	6.8	.5
3"	SDR	7 11 17		200 120 75		5.7	10.1	1.5	7.4	2 1 1
411	SDR	7 11 17	fab'd	200 120 75		9.2	15.7	2.5	11.6	5 3 2
5"	SDR	11	fab'd	120	5.0	9.5	16.7	2.5	12.1	5
6"	SDR	7 11 17	fab'd	200 120 75	6.0	5.7	19.9	3.0	14.5	13 9 6
8"	SDR	7 11 17 26	fab¦d	200 120 75 48	6.0	12.0	21.7	3.0	15.5	23 16 11 7
10"	SDR	7 11 17 26	fabid	200 120 75 48	6.0	12.6	23.5	3.0	16.6	38 26 17 12
12"	SDR	7 11 17 26	fab¹d	200 120 75 48	8.0	16.3	30.0	4.0	21.3	68 40 31 21
14"	SDR	7 11 17 26	fab'd	200 120 75 48		16.7	31.1	4.0	22.0	84 57 38 26
16"	SDR	7 11 17 26	fab¹d	200 120 75 48	10.0	20.4	37.5	5.0	26.9	135 91 61 41
18"	SDR	11 17 26	fab¹d	120 75 48	10.0	21.0	39.3	5.0	27.7	118 80 53

Contact your DRISCOPIPE representative for possible delivery and availability of sizes not listed.



										_
NOM	I N A	L	Type	ps i	(	imen	sions	inche	es	WT.
S I	ΖE		**	73°	A	В	С	E	R	LBS
20.000	SDR	11 17 26	fab'd	120 75 48	11.0	23.1	43.4	5.5	30.5	161 108 73
21.500	SOR	11 17 26	fab'd	120 75 48	11.0	23.6	44.7	5.5	31.3	190 127 85
22.000	SDR	11 17 26	•	120 75 48	11.0	23.7	45.1	5.5	31.5	200 134 90
24.000		11 17 26	fab'd	120 75 48	11.0	24.3	46.8	5.5	32.5	243 163 109
26.000	SDR	11	fab'd	120	10.0	23.3	46.2	5.0	31.7	274
<b>28.</b> 0 <b>0</b> 0	SDR	11 17 26	fab'd	120 75 48	10.0	23.9	47.9	5.0	32.7	325 218 146
30.000	SDR	17 26	fab'd	75 48	10.0	24.4	49.6	5.0	33.7	256 171
800mm 31.496	SDR	17 26	fab'd	75 48	10.0	24.9	50.9	5.0	34.4	287 192
32.000	300	17 26	fabʻd	75 48	10.0	25.0	51.4	5.0	34.7	298 199
36.000		17 26	fabʻd	75 48	10.0	26.2	54.8	5.0	36.7	394 264
1000mm 39.370	SDR 32		fab'd	48 38	10.0	27.2	57.9	5.0	38.4	328 264
42.000	SDR	17 26	fab'd	75 48	10.0	27.9	60.0	5.0	39.7	572 382
1200mm 47.244	SDR	26	fab'd	48	10.0	29.5	64.8	5.0	42.4	511

<sup>\*\*</sup> FAB'D Ells are not fully pressure rated, see TECHNICAL CONSIDERATIONS".



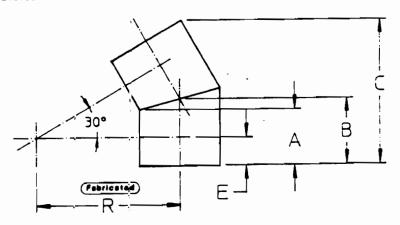
### 30 DEGREE ELBOWS

NOMINAL		Type	ps i	Dimensions, irches						
	IZE	į	**	73°	Α.	В	С	Ę	R	1.85
2" !	SDR	7 <sup>3</sup>	fab'd	200 120	3.0	3.3	6.8	1.5	6.8	<b>5</b> .5
3" ;	SDR	7 11 17	fab'd	200 120: 75		3.5	7.4	٠.5	7.4	1 1 .5
4"	SDR	7 11 17	fab¹d	200 1 <b>20</b> 75	5.0	5.6	11.6	₽.5	11.6	3 2 2
5"	SDR	11	fab'd	120	5.0	5.8	12.1	2.5	12.1	3
6"	SDR	7 11 17	fab'd	200 120 75	6.0	6.9	14.5	3.0	14.5	8 5 4
8"	SDR	7 11 17 26	fab¹d	200 120 75 48	6.0	7.1	15.5	\$.0	15.5	13 9 6 4
10"	SDR	7 11 17 26	fab'd	200 120 75 48	6.0	7.4	16.6	3.0	16.6	19 13 9 6
12"	SDR	7 11 17 26	fabid	200 120 75 48	8.0	9.7	21.3	4.0	21.3	36 24 16 11
14"	SDR	7 11 17 26	fab'd	200 120 75 48	8.0	9.9	22.0	4.0	22.0	43 29 20 13
16"	SDR	7 11 17 26	fab'd	200 120 75 48	10.0	12.1	26.7	5.0	26.7	70 48 32 22
18"	SDR	11 17 26	fab'd	120 75 48	10.0	12.4	27.7	5.0	27.7	60 40 27

H O H	N A	۱ ۱			Dimensions, inches						
s I	Zξ		**	ر22	A	8 j	С	E	R	LBS	
20.000	SDR	11: 17: 26	fab'd	120 75 48	11.0	13.7	30.5	5.5	30.5	81 55 37	
21.500	SDR	11 17 26		120 75 48		13.9	31.3	5.5	31.3	94 63 42	
22.000	SDR	11 17 26		120 75 48	11.0	14.0	31.5	5.5	31.5	98 66 44	
24.000	SDR	11 17 26	fab'd	120 75 48	11.0	14.2	32.5	5.5	32.5	117 79 53	
26.000	SDR	1,1	fab'd	120	10.0	13.5	31.7	5.0	31.7	125	
28.000	SDR	11 17 26	fabid	120 75 48	10.0	13.8	32.7	5.0	32.7	145 97 65	
30.000	SDR	17 26	fab¹d	75 48	10.0	14.0	33.7	5.0	33.7	111 75	
800mm 31.496	SDR	17 26	fab'd	75 48	10.0	14.2	34.4	5.0	34.4	123 82	
32.000	SDR	17 26	fab'd	75 48	10.0	14.3	34.7	5.0	34.7	127 85	
36.000	SDR	17 26	fab'd	75 48	10.0	14.8	36.7	5.0	36.7	160 107	
1000mm 39.3,70		26 2.5	fab'd	48 38	10.0	15.3	38.4	5.0	38.4	128 103	
42.000	SDR	17 26	fabid	75 48	10.0	15.6	39.7	5.0	39.7	218 146	
1200mm 47.244		26	fab'd	48	10.0	16.4	42.4	5.0	42.1	184	

Contact your DRISCOPIPE representative for delivery and availability of sizes not listed.

\*\* FAB'D Ells are not fully pressure rated, see "TECHNICAL CONSIDERSTIONS"

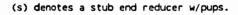


### REDUCERS

NOMINAL	Type	psi	D i me	nsions,	inches	WT.
SIZE	**	73°	A	В	Ĺ.	LBS:

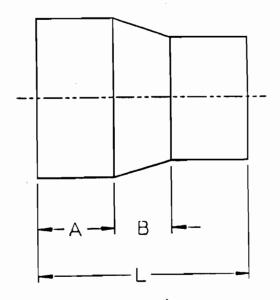
1 x 3/4   SDR 9.3   Molded   190   1.5   0.5   4.5   .3    -1/4 x 1   SDR 11   Molded   160   2.5   1.0   6.0   .3    -1/2 x 1   SDR 11   Molded   160   2.5   1.0   6.0   .3					<u> </u>					
1-1/2 x 1   SDR 11	1	x 3/4	SDR	9.3	Molded	190	1.5	0.5	4.5	.3
2 x 1-1/4 SDR 11   Molded   160, 2.0   0.6   4.8   .5   2 x 1-1/2 SDR 11   Molded   160, 2.5   1.0   6.0   .5    3x2 SDR 9.3   Molded   190, 3.0   2.9   8.9   .5    4x2 SDR 9.3   Molded   190, 3.0   5.5   11.5   1    4x3 SDR 11   Molded   160, 3.0   5.5   11.5   1    4x3 SDR 11   Molded   160, 3.0   2.6   8.6   1    SDR 7 s   fab'd   267   3.5   4.0   11.0   7    6x4   9.3   Molded   160, 3.5   4.0   11.0   7    6x5 SDR 11   fab'd   160, 3.5   4.0   11.0   5    SDR 7 s   fab'd   267   4.0   4.0   12.0   15    8x6   SDR 11   Molded   160, 3.5   4.0   11.0   5    SDR 7 s   fab'd   267   4.0   4.0   12.0   15    8x6   SDR 11   fab'd   160, 4.0   3.0   12.0   9    Toxal SDR 11   fab'd   160, 4.0   4.0   13.0   6    10x8   SDR 11   fab'd   160, 6.0   4.0   16.0   10    12x8   SDR 11   fab'd   160, 6.0   4.0   16.0   25    12x10   SDR 11   fab'd   160, 6.0   4.0   16.0   25    14x12   SDR 11   fab'd   160   6.0   4.0   16.0   22    14x12   SDR 11   fab'd   160   6.0   4.0   16.0   22    15x8   11   fab'd   160   7.0   4.0   18.0   29    16x14   SDR 17   fab'd   160   7.0   4.0   18.0   39    18x16   SDR 17   fab'd   160   7.0   4.0   18.0   39    18x16   SDR 17   fab'd   160   7.0   4.0   18.0   50    18x16   SDR 17   fab'd   160   7.0   4.0   18.0   50    18x16   SDR 17   fab'd   160   7.0   4.0   18.0   50    18x16   SDR 17   fab'd   160   7.0   4.0   18.0   50    18x16   SDR 17   fab'd   160   7.0   4.0   18.0   62    20x18   SDR 17   fab'd   160   7.0   4.0   18.0   62    20x18   SDR 17   fab'd   160   7.0   4.0   18.0   62    20x18   SDR 17   fab'd   160   7.0   4.0   18.0   62    20x18   SDR 17   fab'd   160   7.0   4.0   18.0   62	1-	1/4 x 1	SDR	11	Moided	160	2.5	1.0	: 4.5	3
2 x 1-1/2   SDR 11	1-	1/2 x 1	SDR	11	Molded	160	2.5	1.0	6.0	.3
3x2 SDR 9.3   Molded   190   3.0   2.9   8.9   .5   4x2   SDR 9.3   Molded   190   3.0   5.5   11.5   1   4x3   SDR 11   Molded   190   3.0   2.6   8.6   1   5DR 7   Fab'd   160   3.5   4.0   11.0   7   5XR   7   Fab'd   160   3.5   4.0   11.0   5   5XR   7   Fab'd   160   3.5   4.0   11.0   5   5XR   7   Fab'd   160   3.5   4.0   11.0   5   5XR   7   Fab'd   160   3.5   4.0   11.0   5   5XR   7   Fab'd   160   3.5   4.0   11.0   5   5XR   7   Fab'd   160   4.0   3.0   12.0   9   7   SDR   26   Fab'd   64   4.0   4.0   13.0   6   5XR   11   Fab'd   160   6.0   4.0   16.0   15   5XR   11   Fab'd   160   6.0   4.0   16.0   25   5XR   17   Fab'd   160   6.0   4.0   16.0   25   5XR   17   Fab'd   160   6.0   4.0   16.0   27   5XR   17   17   180   267   160   5XR   17   180   267   160   6.0   4.0   16.0   27   5XR   11   17   180   267   160   5XR   11   17   180   267   5XR   11   17   180   267   5XR   11   17   180   267   5XR   11   17   180   267   5XR   11   17   180   267   5XR   11   17   180   267   5XR   11   17   180   267   5XR   11   17   180   267   5XR   11   17   180   267   5XR   11   17   180   267   5XR   11   17   180   267   5XR   11   18.0   27   5XR   11   18.0   27   5XR   18   17   180   180   5XR   17   180   180   180   5XR   17   180   180   5XR   17   180   180   5XR   17   180   180   5XR   17   180   180   5XR   17   180   180   5XR   17   180   180   5XR   17   180   180   5XR   18   17   180   180   5XR   18   17   180   180   5XR   18   17   180   180   5XR   18   17   180   180   5XR   18   18   18   18   5XR   18   17   180   180   5XR   18   18   18   18   5XR   18   17   180   180   5XR   18   18   18   18   5XR   18   18   18   18   5XR   18   18   18   18   5XR   18   18   18   18   5XR   18   18   18   18   5XR   18   18   18   18   5XR   18   18   18   18   5XR   18   18   18   18   5XR   18   18   18   18   5XR   18   18   18   18   5XR   18   18   18   18   5XR   18   18   18   18   5XR   18   18   18   18   5XR   18   18   18   5XR   18   18   18   5XR   18   18   18	2	x 1-1/4	SDR	11	Molded	160	2.0	0.6	4.8	.5
11	2	x 1-1/2	SDR	11	Molded	160	2.5	1.0	6.0	.5
Ax3   SDR   11   Molded   190   3.0   2.6   8.6   1		3×2	SDR	9.3 11	Molded	190 160	3.0	2.9	8.9	.5
SDR 7 s   fab'd   160   3.0   2.6   8.6   1		4x2	SDR	9.3 11	Molded	1	3.0	5.5	11.5	1
6x4       SDR 11 17       Molded 160 160 160 160 160 160 160 160 160 160		4x3	SDR	11		160	3.0	2.6	8.6	1
SDR 11   Molded   160   3.5   2.3   7.5   3    6x5   SDR 11   fab'd   160   3.5   4.0   11.0   5    SDR 7s   fab'd   267   4.0   4.0   12.0   15    8x6   SDR 11   Molded   160   4.0   3.0   12.0   9   7    SDR 26   fab'd   64   4.0   4.0   13.0   6    10x8   SDR 11   17   fab'd   160   6.0   4.0   16.0   15    10x8   SDR 11   17   fab'd   160   6.0   4.0   16.0   25    12x8   SDR 11   17   fab'd   160   6.0   4.0   16.0   25    12x10   SDR 11   17   7   160   100   64    14x12   SDR 11   17   7   160   100   64    16x14   SDR 17   fab'd   160   6.0   4.0   18.0   18    16x14   SDR 17   7   7   7   7   7   7   7   7   7			SDR	7 s	fab'd	267	3.5	4.0	11.0	7
SDR 7s fab'd 267 4.0 4.0 12.0 15  SDR 11   Molded   160 4.0 3.0 12.0 9 7  SDR 26 fab'd 64 4.0 4.0 13.0 6  10x8 SDR 11 17		6x4	SDR	11		160	3.5	2.3	7.5	3
8x6 SDR 11   Molded   160   4.0   3.0   12.0   9   7    SDR 26   fab'd   64   4.0   4.0   13.0   6    10x8   SDR 11   fab'd   160   6.0   4.0   16.0   15   10    12x8   SDR 11   fab'd   160   6.0   4.0   16.0   25   17    12x10   SDR 11   fab'd   160   6.0   4.0   16.0   25   17    14x12   SDR 11   17   726   7   160   7.0   4.0   18.0   27    16x14   SDR 17   Fab'd   160   7.0   4.0   18.0   29    18x16   SDR 17   fab'd   160   7.0   4.0   18.0   33    18x16   SDR 17   fab'd   160   7.0   4.0   18.0   33    18x16   SDR 17   fab'd   160   7.0   4.0   18.0   33    20x18   SDR 17   fab'd   160   7.0   4.0   18.0   42    20x18   SDR 17   fab'd   160   7.0   4.0   18.0   42    20x18   SDR 17   fab'd   100   7.0   4.0   18.0   42    20x18   SDR 17   fab'd   100   7.0   4.0   18.0   42    20x18   SDR 17   fab'd   100   7.0   4.0   18.0   42    20x18   SDR 17   fab'd   100   7.0   4.0   18.0   42    20x18   SDR 17   fab'd   100   7.0   4.0   18.0   42    20x18   SDR 17   fab'd   100   7.0   4.0   18.0   42    20x18   SDR 17   Fab'd   100   7.0   4.0   18.0   42    20x18   SDR 17   Fab'd   100   7.0   4.0   18.0   42    20x18   SDR 17   Fab'd   100   7.0   4.0   18.0   42    20x18   SDR 17   Fab'd   100   7.0   4.0   18.0   42    20x18   SDR 17   Fab'd   100   7.0   4.0   18.0   42    20x18   SDR 17   Fab'd   100   7.0   4.0   18.0   42    20x18   SDR 17   Fab'd   100   7.0   4.0   18.0   42    20x18   SDR 17   7   7   7   7   7   7   7    20x18   SDR 17   7   7   7   7   7   7   7   7   7		6 <b>x</b> 5	SDR	11	fabid	160	3.5	4.0	11.0	5
SDR 26 fab'd 64 4.0 4.0 13.0 6  TOXB SDR 11 fab'd 160 100 64  12x8 SDR 11s fab'd 160 6.0 4.0 16.0 15 10 7 7 12x10 SDR 11 17 26 160 100 64  TOXB SDR 11s fab'd 160 6.0 4.0 16.0 25 17 160 100 64  TOXB SDR 11 fab'd 160 7.0 4.0 18.0 27 19 13 13 18x16 SDR 17 fab'd 160 100 64  TOXB SDR 11 fab'd 160 7.0 4.0 18.0 29 18 11 17 26 160 100 64  TOXB SDR 11 fab'd 160 7.0 4.0 18.0 50 18 18 18 18x16 SDR 17 fab'd 160 100 64  TOXB SDR 11 fab'd 160 100 7.0 4.0 18.0 50 33 32 22 15 15 160 100 64  TOXB SDR 17 fab'd 160 100 7.0 4.0 18.0 62 18 18 11 160 160 160 160 160 160 160 160 160			SDR	7s	fab'd	267	4.0	4.0	12.0	15
10x8 SDR 11 17 26	<b>"</b>	8x6	SDR		Molded		4.0	3.0	12.0	
10x8 SDR 11 17 26			SDR	26	fab'd	64	4.0	4.0	13.0	6
17s 100 100 17 17 17 17s 100 100 17s 17s 17s 100 100 17s 17s 17s 160 100 100 16.0 16.0 16.0 16.0 16.0 16	746.4	10x8	SDR	11 17	fabid	160 100	6.0	4.0	16.0	15 10
12x10 SDR 11 17 26		12x8	SDR		fab'd		6.0	4.0	16.0	
14x12 SDR 11 17 26 fab'd 160 7.0 4.0 18.0 27 19 13    7s 16x14 SDR 17 26 fab'd 100 7.0 4.0 18.0 29 18    7s 11 160 7.0 4.0 18.0 29 18    7.3s 18x16 SDR 17 fab'd 160 100 7.0 4.0 18.0 50 33 22    20x18 SDR 17 fab'd 160 7.0 4.0 18.0 62 22		12x10	SDR	11 17	fab'd	160 100	6.0	4.0	16.0	22 15
16x14 SDR 17		14x12	SDR	11 17	fab'd	160 100	7.0	4.0	18.0	27 19
18x16   SDR 17   fab'd   160   7.0   4.0   18.0   50   33   22		16x14	SDR	11 17	fab¹d	160 100	7.0	4.0	18.0	39 29
20x18 SDR 17   fab'd   100   7.0   4.0   18.0   42		18×16	SDR	11 17	fab'd	160 100	7.0	4.0	18.0	50 33
	•	20×18	SDR	17	fabʻd	100	7.0	4.0	18.0	42

Contact your DRISCOPIPE representative for delivery or availability of other sizes.

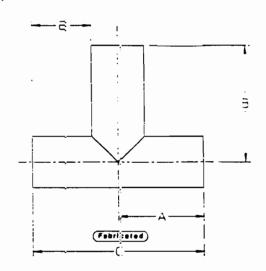




N O M	INAL	Type	psi	Dime	nsions	, inches	WT.
	IZE		73,		В	l L	LBS
21.5 x 20	SDR 1	1 7 fab'd	160 100 64	8.0	4.0	20.0	81 54 36
22 x 20	SDR 1	1 7 fab'd	160 100 64	:	4.0	20.0	83 56 38
24 x 21.5	SDR 1	1 7 fab'd 86	160 100 64	9.0	4.0	22.0	108 72 48
24 x 22	SDR 1	1 7 fab'd	160 100 64	9.0	4.0	22.0	109 73 49
. 26 x 24	SDR 15	1 5.5 fab'd	160 110 51	9.0	4.0	22.0	129 94 47
28 x 24	SDR 1	1 7 fab'd 6	160 100 64	9.0	4.0	22.0	142 95 64
800mm ×28 (31.496)		7 fab'd	100 64	9.0	4.0	22.0	124 83
800mm x30 (31.496)	300	7 fab'd	100 64	9.0	4.0	22.0	130 87
32 x 28		7 fab'd	100 64	9.0	4.0	22.0	126 84
32 x 30	30 6	7 fab'd	100 64	9.0	4.0	22.0	132 89
36x800mm (31.496)		7 fab'd	100 64	9.0	4.0	22.0	159 107
36 x 32	30.0	7 fab'd	100 64	9.0	4.0	22.0	161 108





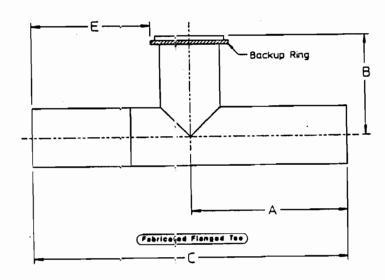


#### T E E S with Flanges

	NOMINAL	Туре	psi	Di	nens i d	ons, 🖟	nches	WT.
	SIZE	**	73°	_ A	8	Ċ	E	LBS
	26.000 SDR 11	fab'd	120	74.0	48.0	148	56.9	1226
	28.000 SDR 11	fab'd		74.0	48.0	14840	55.8	1424
F	17		75					1001
i	30.000 SDR 17	fab'd	75	74.0	48.0	148	54.6	1147
n g e	800mm SDR 17 (31.496)	fab'd	75	74.0	48.0	148,	53.1	1270
à	32.000 SDR 17	fab¹d	75	74.0	48.0	148	53.1	1450
0	36.000 SDR <sup>17</sup>	fabid	75	78.0	48.0	156	55.0	1634
t	1000mm <sub>SDR</sub> 21 (39.370)	fab'd	48	65.0	48.0	130	39.6	1437
e t	42.000 SDR 21	fab'd	48	65.Q	48.0	130	38.5	1396
s	1200mm SDR 21 (47.244)	fab'd	48	65.Q	48.0	130	35.3	1731

Contact your Driscopipe representative for delivery and availability of sizes not listed.

\*\* FAB'D Tees not fully pressure rated, see "TECHNICAL CONSIDERATIONS".



#### 45 DEGREE WYES

No m i n al psi   Type   Dimensions, inches   WI.												
SDR 7   200   TrueLat   18.5   na   25.0   14.6   17.5   2				al		Type	D	imens	ons,	inches		
SDR 11   120   TrueLat   17.3   na   25.0   14.5   18.7   5   7   7   11   120   Phillips   11.0   8.0   18.0   11.8   25.5   7   5   7   200   Phillips   14.0   7.7   22.0   12.3   30.1   8   28.8   11   120   Phillips   14.0   7.7   22.0   12.3   30.1   8   28.8   19   27.6   na   35.5   19.9   27.9   26   26   27   200   Phillips   16.0   7.9   24.8   12.8   28.8   19   28   28   19   29   29   29   29   29   29   29	<u> </u>	1	z e		73*		A	В	Ç	. ٤	F	LBS
SDR 71   120   Phillips   11.0   8.0   18.0   11.8   25.5   7   5	2"		SDR	7	200	TrueLat	18.5	na	25.0	14.6	17.5	2
SDR 71   120   Phillips   11.0   8.0   18.0   11.8   25.5   7   5		Ţ								,		
SDR 11   120   Phillips   11.0   8.0   18.0   11.8   25.5   5	į		SDR	11	120	TrueLat	17.3	na	25.0	14.5	18.7	5
SDR 11 120 TrueLat 30.4 na 40.2 20.0 30.4 49  SDR 11 120 TrueLat 30.4 na 40.2 20.0 30.4 49  SDR 11 120 TrueLat 30.4 na 40.2 20.0 30.4 49  SDR 11 120 TrueLat 30.4 na 40.2 20.0 35.0 81  10" SDR 11 120 TrueLat 33.0 na 43.2 20.0 35.0 81  10" SDR 11 120 TrueLat 33.0 na 43.2 20.0 35.0 81  10" SDR 11 120 TrueLat 35.4 na 46.0 20.0 35.4 122  SDR 11 120 TrueLat 35.4 na 46.0 20.0 35.4 122  12" SDR 11 120 TrueLat 35.4 na 46.0 20.0 35.4 122  12" SDR 11 120 TrueLat 39.1 na 50.0 22.0 38.9 161  14" 77 200 SDR 11 120 Phillips 23.0 19.4 41.0 24.5 57.8 150 101  16" SDR 11 120 Phillips 24.0 19.4 43.0 24.3 58.5 200 134  18" SDR 11 120 Phillips 25.0 31.1 46.0 23.8 76.9 298 200	3"		SDR		200 120	Phillips	11.0	8.0	18.0	11.8	25.5	
SDR 11 120 TrueLat 30.4 na 40.2 20.0 30.4 49  SDR 11 120 TrueLat 30.4 na 40.2 20.0 30.4 49  SDR 11 120 TrueLat 30.4 na 40.2 20.0 30.4 49  SDR 11 120 TrueLat 30.4 na 40.2 20.0 35.0 81  10" SDR 11 120 TrueLat 33.0 na 43.2 20.0 35.0 81  10" SDR 11 120 TrueLat 33.0 na 43.2 20.0 35.0 81  10" SDR 11 120 TrueLat 35.4 na 46.0 20.0 35.4 122  SDR 11 120 TrueLat 35.4 na 46.0 20.0 35.4 122  12" SDR 11 120 TrueLat 35.4 na 46.0 20.0 35.4 122  12" SDR 11 120 TrueLat 39.1 na 50.0 22.0 38.9 161  14" 77 200 SDR 11 120 Phillips 23.0 19.4 41.0 24.5 57.8 150 101  16" SDR 11 120 Phillips 24.0 19.4 43.0 24.3 58.5 200 134  18" SDR 11 120 Phillips 25.0 31.1 46.0 23.8 76.9 298 200		Т	SOP	11	120	Truelat	10 5		26.5	1/ 1	10 5	
SDR 11 120 Phillips 14.0 7.7 22.0 12.3 30.1 8    SDR 11 120 TrueLat   27.6 na 35.5 19.9 27.9 26	4"	-	301	_		Truetat	17.5	, ,,,,	20.5	14.1	17.5	
6" SDR 11 120 Phillips 16.0 7.9 24.8 12.8 28.8 19  SDR 11 120 TrueLat 30.4 na 40.2 20.0 30.4 49  8" 7 200			SDR	11		Phillips	14.0	7.7	22.0	12.3	30.1	
6" SDR 11 120 Phillips 16.0 7.9 24.8 12.8 28.8 19  SDR 11 120 TrueLat 30.4 na 40.2 20.0 30.4 49  8" 7 200		Т										-
SOR 11 120 Phillips 16.0 7.9 24.8 12.8 28.8 19    SOR 11 120 TrueLat   30.4 na	<b>,</b>	L	SUR	_		irueLat	27.6	na	33.5	19.9	27.9	
8" 7 200 Phillips 18.0 15.2 31.0 15.8 41.7 43 29    SDR 11 120 TrueLat   33.0 na 43.2 20.0 35.0 81			SDR	7 11	200 120	Phillips	16.0	7.9	24.8	12.8	28.8	
8" 7 200 Phillips 18.0 15.2 31.0 15.8 41.7 43 29    SDR 11 120 TrueLat   33.0 na 43.2 20.0 35.0 81		1										
SDR 11 120 Phillips 18.0 15.2 31.0 15.8 41.7 43 29    SDR 11 120 TrueLat   33.0 na		L	SDR	11	120	TrueLat	30.4	na	40.2	20.0	30.4	49
10" 7 200	8"		SDR	11	120	Phillips	18.0	15.2	31.0	15.8	41.7	43
10" 7 200		_		_								
SDR 11 120 Phillips 21.0 17.1 35.0 15.3 44.7 71 48  SDR 11 120 TrueLat 35.4 na 46.0 20.0 35.4 122  TO SDR 11 120 Phillips 22.0 20.2 36.8 17.5 52.3 111 74  SDR 11 120 TrueLat 39.1 na 50.0 22.0 38.9 161  TO SDR 11 120 Phillips 23.0 19.4 41.0 24.5 57.8 150 101  SDR 11 120 Phillips 24.0 19.4 43.0 24.3 58.5 200 134  SDR 11 120 Phillips 25.0 31.1 46.0 23.8 76.9 298 200			SDR	11	120	TrueLat	<b>3</b> 3.0	∩a	43.2	20.0	35.0	81
12" 7 200 Phillips 22.0 20.2 36.8 17.5 52.3 163 111 74  SDR 11 120 TrueLat 39.1 na 50.0 22.0 38.9 161 75 SDR 11 120 Phillips 23.0 19.4 41.0 24.5 57.8 150 101  16" SDR 11 120 Phillips 24.0 19.4 43.0 24.3 58.5 200 134  18" SDR 17 75 Phillips 25.0 31.1 46.0 23.8 76.9 298 200	10"		SDR	11	120	Phillips	21.0	17.1	35.0	15.3	44.7	71
12" 7 200 Phillips 22.0 20.2 36.8 17.5 52.3 163 111 74  SDR 11 120 TrueLat 39.1 na 50.0 22.0 38.9 161 75 SDR 11 120 Phillips 23.0 19.4 41.0 24.5 57.8 150 101  16" SDR 11 120 Phillips 24.0 19.4 43.0 24.3 58.5 200 134  18" SDR 17 75 Phillips 25.0 31.1 46.0 23.8 76.9 298 200												
SDR 11 120 Phillips 22.0 20.2 36.8 17.5 52.3 111 74  SDR 11 120 TrueLat 39.1 na 50.0 22.0 38.9 161  14" 7 200 SDR 11 120 Phillips 23.0 19.4 41.0 24.5 57.8 150 101  16" SDR 11 120 Phillips 24.0 19.4 43.0 24.3 58.5 200 134  18" SDR 17 75 Phillips 25.0 31.1 46.0 23.8 76.9 298 200			SDR	11	120	TrueLat	35.4	na	46.0	20.0	35.4	122
SOR 11 120 TrueLat 39.1 na 50.0 22.0 38.9 161  14" 7 200	12'	- 1	SDR	11	120	Phillips	22.0	20.2	36.8	17.5	52.3	111
14" 7 200 Phillips 23.0 19.4 41.0 24.5 57.8 222 150 101  16" SDR 11 120 Phillips 24.0 19.4 43.0 24.3 58.5 200 134  18" SDR 17 75 Phillips 25.0 31.1 46.0 23.8 76.9 298 200				11	,,							′-
14" 7 200 Phillips 23.0 19.4 41.0 24.5 57.8 222 150 101  16" SDR 11 120 Phillips 24.0 19.4 43.0 24.3 58.5 200 134  18" SDR 17 75 Phillips 25.0 31.1 46.0 23.8 76.9 298 200		Т			465					22.5		
SOR 11 120 Phillips 23.0 19.4 41.0 24.5 57.8 150 101  16" SOR 11 120 Phillips 24.0 19.4 43.0 24.3 58.5 200 134  18" SOR 17 75 Phillips 25.0 31.1 46.0 23.8 76.9 298 200		$\vdash$	SDR	11	120	TrueLat	39.1	na	50.0	22.0	38.9	
16" SDR 11 120 Phillips 24.0 19.4 43.0 24.3 58.5 200 134  18" SDR 17 75 Phillips 25.0 31.1 46.0 23.8 76.9 298 200	14'		SDR	11	120	Phillips	23.0	19.4	41.0	24.5	57.8	150
16" SDR 11 120 Phillips 24.0 19.4 43.0 24.3 58.5 200 134  18" SDR 17 75 Phillips 25.0 31.1 46.0 23.8 76.9 298 200		_										
18" SDR 17 75 Phillips 25.0 31.1 46.0 23.8 76.9 200	16'		SDR	11	120	Phillips	24.0	19.4	43.0	24.3	58.5	200
18" SDR 17 75 Phillips 25.0 31.1 46.0 23.8 76.9 200		_										
20" SDR 17 75 Phillips 26.0 35.1 47.0 23.5 83.2 258	18'		SDR			Phillips	25.0	31.1	46.0	23.8	76.9	
20" SDR 17 75 Phillips 26.0 35.1 47.0 23.5 83.2 258		_										
	201	•	SDR	11 17		Phillips	26.0	35.1	47.0	23.5	83.2	

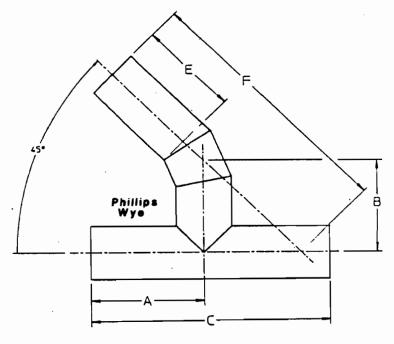
Contact your DRISCOPIPE representative for delivery and/or availability of other items.

45° Wyes are de-rated, see TECHNICAL CONSIDERATIONS.

Reducing wyes may be available on special quotes.



	Nomi	_	l	psi	Type		imens	sions,	inches	<u>.                                    </u>	WT.
	S i	z e		73.		A	8	C	E	F	LBS
	21.5	SOR	11 17	120 75	Phillips	27.0	35.4	49.0	23.3	83.8	452 303
	22"	SDR	11 17	120 75	Phillips	27.0	<b>35.</b> 5	49.0	23.3	84.0	473 317
	24"	SDR	11 17	120 75	Phillips	28.0	35.1	51.0	22.8	83.0	564 378
_											
_	26"	SDR	11	120	Phillips	74.0	47.8	148.0	na	92.4	1372
F	28"	SDR	11 17	120 75	Phillips	74.0	50.2	148.0	na	96.2	1598 1109
a	30"	SDR	17	75	Phillips	74.0	50.6	148.0	na	97.2	1275
n g e d	800mm (31.496	SDR 5)	17	75	Phillips	74.0	51.7	148.0	na	98.9	1418
1	32"	SDR	17	75	Phillips	74.0	52.1	148.0	па	100.0	1460
_	36"	SDR	17	75	Phillips	78.0	55.4	156.0	na	105.3	1914



See drawing of True Laterals on page 9

STRAIGHT REDUCING TEES

36x12

SDR 17

75 25

	REDUCT	KEDOCING TEES					Effec	ffective: 11-1-9		
	NON	INA	Ĺ	os i	D i <sub>l</sub> ner	ns i ons	s,in.	WT.	UPS	
	s	ΙΖΕ		73,	A	8		LBS		
			·—		— <u>; —                                  </u>					
g " outlet	10x8	SDR	[1 [7	120 75	1;4	16	28	38	no	
outter	12x8	SDR	1  7	120 75	1;4	16	28	50	no	
-	24×8	SDR	1   7	120 75	2;5	25	50	273	no	
	32×8	SDR	17	75	25	26	50	324	no	
	36×8	SDR	17	75	25	28	50	408	no	
10 "	12×10	SDR	1   7	120 75	1:4	16	28	55	no	
outlet	14×10	SDR	1   7	120 75	1:5	17	30	67	no	
	16×10	SDR	1   7	120 75	1:6	18	32	90	ne	
	18x10	SDR	1  7	120 75	1;9	21	38	126	no	
	24×10	SDR	1  7	120 75	25	25	50	278	no	
			•		-:					
12 "	14x12	SDR	11 17	120 75	15	17	30	72	no	
outlet	16x12	SDR	11 17	120 75	16	18	32	95	no	
	18x12	SDR	11 17	120 75	19	21	38	131	no	
	24x12	SDR	11 17	120 75	25	25	50	283	no	

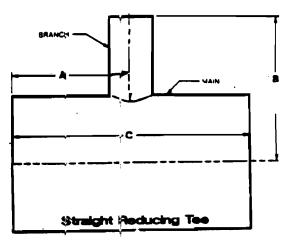
Contact your Driscopipe representative for delivery and/or availability of other sizes.

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по



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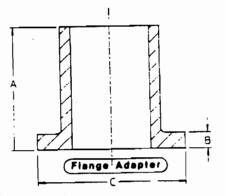
### Flange Connectors

NON	1 1 N	A 1	Γ.	ps i	Dimens	ions,	inches	WT.
	ı Z E		Туре	73.		В	С	LBS
1"	SDR	9.3 11	Molded	190 160	4.0	0.2	2.4	.5
1-1/4	SDR	9.3 11	Molded	190 160	4.0	0.3	2.8	.5
1-1/2	SDR	9.3 11	Molded	190 160	4.0	0.3	3.1	.5
2"	SDR	7 11	Molded	267 160	6.0	0.4	4.0	1
3"	SDR	7 11 17	Molded	267 160 100	6.0	0.6	5.0	2
4"	SDR	7 11 17	Mol ded	267 160 100	6.0	0.8	6.6	3
		7	1	267		1.2		8
6"	SDR	11 17 26	Mol ded	160 100 64	8.0	0.8	8.5	7
		7	1	267		1.6		11
8"	SDR	11 17 26	Molded	160 100 64	9.0	0.8	10.6	10
10*	SDR	7 11 17 26	Molded	267 160 100 64	9.0	1.9 1.3 0.9 0.8	12.8	19 18 17 17
12"	SDR	7 11 17 26	Molded	267 160 100 64	10.8	2.3 1.5 1.0 0.8	15.0	25 24 23 22
14"	SDR	7 11 17	Molded	267 160 100	11.0	2.6 1.7 1.1	17.5	55 40 38
16"	SDR	7 11 17 26	Molded	267 160 100 64	12.0	3.0 1.9 1.2 0.8	20.0	80 60 45 43
18"	SDR	7 11 17 26	Molded	267 160 100 64	12.0	3.3 2.1 1.4 1.0	21.1	95 68 55 50
20"	SDR	11 17 26	Molded	160 100 64		2.3 1.5 1.0	23.5	66 64 62

NOM	1 L N	AL	TYPE	IZQ	Dimens	sions, i	nches	WT.
s	1 Z E		**	73°	Α	В	С	LBS
21.500	SDR	11 17 26	Molded	160 100 64	12.0	2.4 1.6 1.0	25.6	68 66 64
22.000	SDR	11 17 26	Molded	160 100 64	12.0	2.5 1.6 1.1	25.6	67 65 63
24.000	SDR	9 17 32.5	Molded	200 100 51	14.0	3.5 1.8 1.0	27.9	113 65 <b>3</b> 5
26.000	SDR	32.5	E/M	51	14.0	1.2	30.0	35
28.000	SDR	15.5 32.5	E/M	110 51	14.0	2.7	32.3	94 46
30.000	SDR	11 21 <b>3</b> 2.5	E/M	160 80 51	14.0	4.1 2.2 1.4	34.3	148 80 53
32.000	SDR	21 32 <sub>.</sub> 5	E/M	80 51	14.0	2.3	36.5	92 61
36.000	SDR	17 21 26 32.5	E/M	100 80 64 51	14.0	3.2 2.6 2.1 1.7	40.8	143 117 95 79
42.000	SDR	26 32.5	E/M	64 51	14.0	2.4	47.5	132 107
1200mm 47.244	SDR	21 26 32.5	E/M	80 64 51	14.0	3.4 2.7 2.2	54.0	220 170 144
54.000	SDR	26 <b>32.</b> 5	E/M	64 51	14.0	3.1 2.5	60.5	231 186

### \*\* E/M denotes Extruded/Machined

If used with butterfly valves, check with their mfg.for space/clearance requirements.

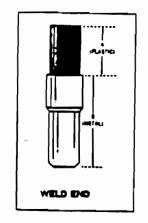


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Weld-End	Transition	Fit:ings

	m i n I Z E	al	psi 73°	TYPE	Dimer	B.,inch	WT. Lbs.
2"	SDR	7	267 160	Weld-end	12	14.3	7
3"	SDR	7	267 160	Weld-end	12	1;5.5	15 14
411	SDR 1	7	267 160	Weld-end	12	1,5.4	24 23
6"	SDR 1	11	160	Weld-eng	18	18.2	52



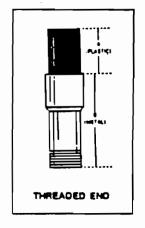
w/external epoxy coating

Nomin		al	psi	TYPE	TYPE Di		imen.,inch		
s			73*			A	В	Lbs	
1-1,	4 SDR	11	160	Threaded	1	12	6.0	3	
2"	SDR	7 11	267 160	Threades	·	12	6.2	5 4	
			-	•					

Transition Fittings

Threaded

3"	SDR 7	267 160 Threaded	12	7.0	11 10
4"	SDR 7	267 Threaded	12	7.8	18 17
6"	SDR 11	160 Threaded	18	12.1	42



w/internal coating

Contact your DRISCOPIPE Representative for delivery or availability of other sizes.

11-1-94



### Ductile Iron Back-Up Rings

#### (dimensions are in inches)

	0	Q	w	Y / Y1	n	С	D	
Nominal Pipe Size (inches)	Nominal Outside Dia.of Ring	Minimum Thickness of ring	Minimum Diameter of Bore	Nomimal Length thru Hub	Num.of bolt holes	Min.Dia. of bolt holes	Dia.of bolt circle	Approx. Weight (lbs.)
2	6.00	0.75	2.63	0.23	4	0.750	4.75	2.4
3	7.50	0.94	3.75	0.25	4	0.750	6.00	3.9
4	9.00	0.94	4.75	0.25	8	0.750	7.50	5.2
5	10.00	0.94	5.81	0.27	8	0.875	8.50	6.4
6	11.00	1.00	6.88	0.28	8	0.875	9.50	7.3
8	13.50	1.12	8.88	0.32	8	0.875	11.75	11.1
10	16.00	1.19	11.00	0.49	12	1.000	14.25	18.7
12	19.00	1.25	13.13	0.63	12	1.000	17.00	27.3
14	21.00	1.38	14.38	0.70	12	1.125	18.75	30.3
16	23.50	1.44	16.38	0.70	16	1.125	21.25	36.6
18	25.00	1.56	18.38	0.75	16	1.250	22.75	46.0
20	27.50	1.69	20.38	0.88	20	1.250	25.00	58.0
21.5/22.0	29.50	1.79	21.88	0.75	20	1.375	27.25	66.0
24	32.00	1.75	24.38	1.00	20	1.375	29.50	75.0
28	36.50	1.88	28.38	1.00	28	1.375	34.00	86.0
32 (800mm)	41.75	1.88	32.12	1.00	28	1.625	38.50	118.0
36	46.00	1.88	36.38	1.00	32	1.625	42.75	140.0
40(1000mm)	53.00	1.88	40.00	1.50	36	1.625	49.50	185.0
42	53.00	1.88	42.38	1.10	36	1.625	49.50	172.0
48(1200mm)	59.50	1.88	48.00	1.35	44	1.625	56.00	205.0

Convoluted back-up rings, 150 lb. conform to the vital dimensions of ANSI B16.5 such as outside diameter, bolt circle, bolt hole number & size.

The rings will mate with the following flanges:

- Forged steel flanges, Class 150, per ANSI B16.5
- Plate steel flanges, 150 lb. per AWWA C207
- Cast iron flanges, 125 lb. per ANSI 816.1

Ouctile Iron Material: ASTM 536-80, Grade range from 60/40/18 to 65/45/12

Finish: Zinc chromate primer



The term "convoluted" refers to the cross-sectional shape of the ring. The shape allows the usage of less material which affects its original cost as well as shipping & handling cost.

Earlier style back-up rings are available upon request.

### **Technical Considerations**

### Pressure Rating

All molded fittings and reducers, flange adapters, stub ends, branch saddles, branch saddle reducing tees, and transition fittings are fully pressure rated to match the pipe SDR pressure rating to which they are made. The shape of fabricated fittings are substantially different than the shape of straight pipe. As a result, stresses imposed on fabricated fittings are higher than those imposed on pipe. Therefore, it is recommended that the pressure rating of fabricated ells, wyes and tees be re-rated to approximately 75% of the pressure rating of the pipe used to fabricate the fitting. If the full pressure rating of the pipe is required, Phillips Driscopipe recommends using a heavier wall fitting (25%) where available. As an alternate measure, when properly designed concrete encasement or other external reinforcement is used on ells, wyes and tees, the pressure rating can be increased to the working pressure of the pipe from which it is fabricated. Specific recommendations for concrete encasement are shown in the Driscopipe Systems Installation brochure.

### Installation Precautions

Driscopipe fabricated tees, elbows and was are made by butt fusing or sidewall fusing together special cut segments of Driscopipe pipe to obtain the desired fitting. The configuration of these fittingss, and the fact that they are fabricated rather than molded, requires that certain precautions be taken when installing them into a piping system.

The installation procedures should provide the least possible amount of lifting and moving of the assembled pipe and fabricated fittings. If it becomes necessary to pull the assembly along side the ditch to properly position it, the fabricated fitting should never be used as the point of attachment for the pulling.

The fusion joining of a fabricated tee and wye into a system becomes complicated because of the third side. It is not too difficult to keep strain off the fitting when fusing pipe to the running side of the tee and lifting and lowering this much of the assembly into position in a ditch. It is when sufficient pipe is added to the third (branch) side to permit the laying of pipe in this direction, that the assembly becomes very difficult to handle. Final handling and positioning of these assemblies requires extra handling equipment and additional precautions to prevent damage to the fabricated fitting.

Recommended Alternate Method: The need for extra equipment and much of the possibility of damage can be eliminated by altering the method of installing the fabricated tee and wye to include the use of a flanged connection on the branch side. This will allow final positioning to take place before the branch side is connected. There will be some instances where it will prove very advantageous from an installation viewpoint to use flanged connections on two sides of a tee or wye and also one side of the elbow. This allows the pipe to be laid from either direction, pushed or pulled into tight locations, rolled into the ditch, and generally handled much easier and faster...before the final connection is made at the tee, wye, or elbow. From the standpoint of economy, speed and ease of installation, and eliminate the occurrence of excessive installation stresses of fabricated fittings, it is recommended that flanged connections always be used on the branch side of tees and wyes and on one end of elbows for larger diameter pipes.

• Driscopipe \* 1000/6400 Molded fittings are made from the same resin as the Driscopipe \* 1000 & 6400 series pipe.

Molded fittings do not form exact true angles. Due to stresses in the material during the molding and cooling cycles, and the post machining operations required on some of these fittings, angles can deviate approximately 2-3 degrees from true.

• Driscopipe Fabricated fittings are manufactured from Driscopipe 1000 & 6400 piping systems. Fabricated ells, wyes and tees are made by butt fusing together mitre cul segments of pipe to obtain the desired shape.

Fabricated elbows: Due to the nature of polyethylene and the mitered fusion process, the tolerance is generally plus or minus one degree per segment. The broad tolerance typically causes no installation problems due to the flexibility of polyethylene.

• Driscopipe special littings are custom designed for your specific application through your Phillips Driscopipe. Inc. representative.

IMPROVED PIPING



PRODUCTS, INC.

LEE SUPPLY CO., INC. P.O. BOX 35 305 FIRST & LINCOLN AVE. CHARLEROI, PA 15022



UNVOLUTED BACK-UP FLANGES

### **BACK-UP FLANGES**

### **DUCTILE IRON, 150 LB\$**

# BUPP-DI-150

MATERIAL: ASTM A536-84

#### 1.SCOPE

This pamphlet describes convoluted back-up flanges, 150 lb., in ductile iron ASTM A536, grade 65/45/42. These back-up flanges are used in conjuction with thermoplastic injection molded or fabricated stub ereds which are heat-fusion bonded via special heat-fusion machines to the pipe during shop or field laboration.

#### 2. DESCRIPTION

#### 2.1 Generic Description

Convoluted back-up flanges conform to the vital dimensions of ANSI B16.5 such as outside diameter, bolt circle, bolt hole number and size. However, a range of inside diameters (see Table 1) is offered to suit the preference of the user or installer relative to fusion-bead clearance or fit-up with pipe of metric or special dimensioning.

Flanges are being offered in various finishes to be specified by user.

Physical properties shall be as specified hereafter.

#### 2.2.1 Ductile Iron

- 1. Material: ASTM 536, Grade 65/45/12
- Finish: As-cast with flash removed from all edges and bolt holes to the specified dimensions.
- Marking: Manufacturer's Trademark, size, bolthole template, material and type of flange.

#### 2.1.2 Optional Finish

Convoluted back-up flanges are available in the following finishes:

- 1. Zinc chromate primer
- 2. Hot-dipped galavanized (ASTM 213)
- 3. Epoxy coated

#### 2.2. Purchase Order Description

Requisition should contain the following information:

- 1. Quantity
- 2. NPS size
- 3. Flange Order Number (See Table 1)
- 4. Finish
- 5. Unit cost





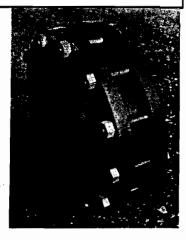
Top picture views the front side of IPP's 16" convoluted back-up flange. This side receives the bolt heads or hex nuts.

The bottom picture shows the reverse side of IPP's flange. A wide landing area contacts the rear shoulder of the plastic stub end or hub adapter in order to keep bearing stress values to a minimum. Notice the transition radius at the ring bore. It eliminates digging into the stub end radius and thus avoids generating unwanted stress raisers. This precaution cannot be achieved with flame cut bores of plate steel flanges which have sharp edges.



Flanges as reflected in Table 1 will mate with the following flanges:

- Forged steel flanges, Class 150, per ANSI B16.5.
- Plate steel flanges, 150 lb., per AWWA C207.
- 3. Cast iron flanges, 125 lb., per ANSI B16.1.



The right hand picture shows an assembled 14" joint. Not only is this joint better looking, but it is safer than thin plate steel rings.

Convoluted rings eliminate the need for bolt re-tightening due to their capability of storing elastic energy. This fact is especially desirable in systems running at elevated system temperature due to ambient or process conditions, since all thermoplastic piping materials possess high thermal expansion coefficients.



All flanges are identified as to manufacturer, type of material, size and rating.



### **Warranty:**

IPP guarantees each IPP Flange manufactured by it to be free from defects in material and workmanship under normal use and service within limitations recommended by it.

If any IPP Flange is believed to be defective, and if on examination IPP finds to its satisfaction that such flange is in fact defective, it will repair or replace such flange at its option without cost.

IPP shall not be liable for any consequential damages resulting from any defect



IPP's convoluted back-up flanges are stocked in various

## Table 1 BACK-UP FLANGES

		0	Q	w	Y/Y <sub>1</sub>	n	С	D	r		
Nominal											Non-Sho
Pipe	Flange	Outside	Minimum	Minimum	Length	Number	Minimum	Diameter	Inside	Approx.	Operati
Size	Order	Dia. of	Thickness	Dia. of	Through	of Bolt	Dia. of	of Bolt	Corner	Weight	Pressu
(Inch)	Number	Flange	of Flange	Bore	Hub	Holes	Bolt Holes	Circle	Radius	(Lbs)	(PSIG
			72.			All Tab					100
			· For size	s 1/2" thro	ugh 1-1/2"	use IPP St	andard Lap	Joint 💮			
	4. 146	1254		Flange	s designe	i to ANSI (E	316.5)				A Park F
2 <b>.</b>	BUPP 02'A	6.00	0.75	3.00	0.23	A	0.75	4.75	0.13	2.5	275
2'	BUPP 02'B	6.00	0.75	2.63	0.23	4	0.75	4.75	0.13	2.5	275
2•	BUPP 02"C	6.00	0.75	2.46	0.37	4	0.75	4.75	0.31	2.5	275
3"	BUPP 03"A	7.50	0.94	4.00	0.25	4	0.75	6.00	0.13	3.8	275
3' 1	BUPP 03'B	7.50	- 0.94	7.7	0.25		0.75	6.00	0.13	3.8	275
3	BUPP 03'C	7,50	0.94	3.60	0.50	4	0.75	6.00	₹¥0.38	3.8	275
and the	BUPP 03 D	7.50	0.94	559	0.50 0.25	4	0.75	6.00 7.50	0.38 0.13	3.8	275 275
4"	BUPP 04"B BUPP 04"C	9.00 9.00	0.94 0.94	4.60	0.50	8	0.75	7.50	0.44	5.3 5.3	275
4"	BUPP 04"D	9.00	0.94	4.50	0.50	8:	0.75	7.50	0.44	5.3	275
5"	BUPP 05*B	10.00	0.94	5.81	0.27	8	0.88	8.50	0.13	6.4	275
5"	BUPP 05°C	10.00	0.94	5.69	0.50	8	0.88	8.50	0.44	6.4	275
6'	BUPP 06'B	11.00	1.00	6.88.	0.28	8	88.0	9.50	0.13	7.3	275
6	BUPP 06'C	11.00	1.00	6.75	0.56	8	0.88	è⊭/9.50 ृ*.	0.50	7.3	275
6"	BUPP 06"D BUPP 08"B	11.00 13.50	1.12	8.88	0.56 0.30	8 8	0.88 0.88	9.50 🥜 11.75	0.50 · 0.13	7.3 11.1	275 275
8 <b>"</b> 8"	BUPP 08"C	13.50	1.12	8.75	0.56	8	0.88	11.75	0.50	11.1	275
8*	BUPP 08*D	13.50	1.12	8.66	0.56	8	0.88	11.75	0.50	11.1	275
10"	BUPP 10"A	16.00	1.19	10.31	0.60	12	1.00	14.25	0.30	18.0	275
10"	BUPP 10"B	16.00	1.19	11.00	0.60	12	1.00	14.25	0.38	16.8	275
10"	BUPP 10'C	16.00	1.19	10.92	0.60	12	1.00	14.25	0.50	16.8	275
12"	BUPP 12'B	19.00	1.25	13.13	0.34	12	1.00	- 17.00 ·-	0.31	22.6	<b>2</b> 75
12" 14"	BUPP 12°C BUPP 14°B	19.00 21.00	1.25 1,38	12.92 14.38	0.65 0.65	12 12	1.00 1.13	17.00 18.75	0.50 0.40	22.6 28.0	275 250
14"	BUPP 14"C	21.00	1.38	14.18	0.65	سنساڪ اڪينده 12	1.13	18.75	0.50	28.5	250 250
16"	BUPP 16 B	23.50	1.44	16.38	0.80	16	1.13	21.25	0.40	36.6	250
16"	BUPP 16"C	23.50	1.44	16.19	0.80	16	1.13	21.25	0.50	36.6	250
18"	BUPP 18"B	25.00	1.56	18.38	0.88	16	1.25	22.75	0.38	41.0	250
18*	BUPP 18'C	25.00	1.56	<b>#18.20</b>	0.88	.∓16	1.25	22.75	0.50	41.0	250
20"	BUPP 20'B	27.50	1.69	20.38	0.88	20	1.25	25.00	0.31	53.4	200
22"	BUPP 22"A BUPP 22"B	32.00 29.50	1.88 1.81	22.67 22,22	1.00 0.90	20 20	1.38 1.38	29.50 27.25	0.24 0.50	79.0 63.0	200 200
24"	BUPP 24"A	32.00	1.88	25.43	0.50	20	1.38	29.50	0.23	72.6	200
24"	BUPP 24"B	32.00	1.88	24.38	0.90	20	1.38	29.50	0.44	74.0	200
24"	BUPP 24°C	32.00	1.88	24.25	0.90	20	1.38	29.50	0.50	76.0	200
26"	BUPP 26"B	34.25	2.00	26.38	1.00	24	1.38	31.75	0.25	85.8	150
28*	BUPP 28 A	38.75	2.06	28.58	1.45	28	1.38	36.00	0.23	141.1	150
28"	BUPP 28"B	4.36.50	2.06	28.38	1.00	28	1.38	34.00	0.50	103.0	150
30"		38.75	2.06	32.32		28	1.38	36.00 36.00		91.5	
30 <b>"</b> 32"	BUPP 30"B BUPP 32"B	38.75 41.75	2.06 2.06	30.38 32.38	1.00 1.00	28 28	1.38 1.63	38.50	0.25 0.50	102.00 118.00	150 120
36"	BUPP 36"B	46.00	2.06	36.38	1.00	32	1.63	42.75	0.50	141.9	120
40"	BUPP 40"A	53.00	2.00	40.00	1.50	36	1.63	49.50	0.50	219.4	100
42°	BUPP 42"B	53.00	2.00	42.38	1.10	36	1.63	49.50	0.50	190.7	100
	BUPP 48°B	59.50	2.00	48.50	1.35	44	<b>33/1.63</b>	56.00			80
55"	BUPP 55'A	66.25	3.50	55.75	1.70		1.38	62.75		410.0	60
63*	BUPP 63"A	80.00	4.50	64.00	2.25	52	1.38	76.00	0.50	760.0	60

### **PRODUCT FINISHES:**

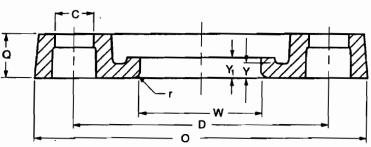
In Stock:
Red Oxide Primer
On Inquiry:
Hot-dipped Galvanized
Epoxy Coated and others

### PHYSICAL PROPERTIES

Tensile Strength Yield Strength Elongation in 2"

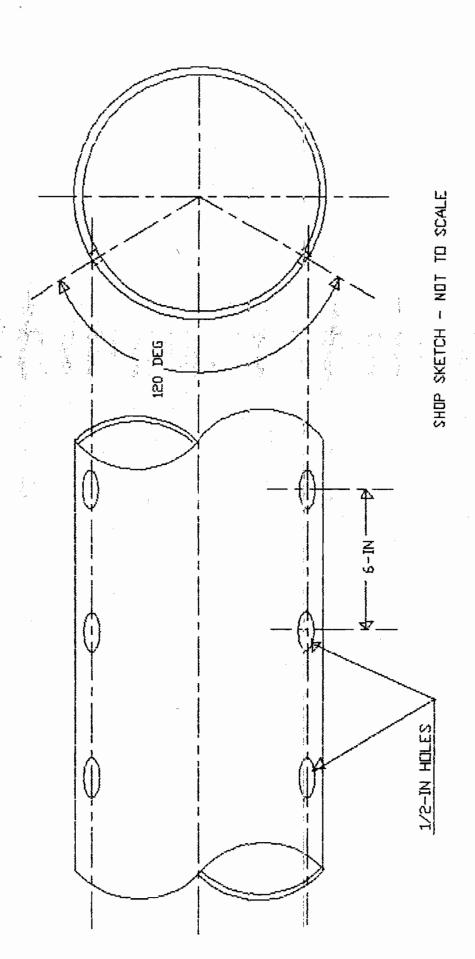
### **ASTM A536-84**

65,000 psi 45,000 psi 12%



BACK-UP FLANGE, DUCTILE IRON CONVOLUTED TYPE

3/93



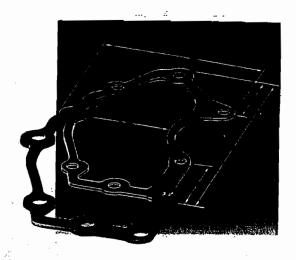
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# BILTRITE Neoprene Sheet

### Oil and Ozone Resistant Chloroprene Sheet – Black

## Styles 10 & 15 Smooth Finish — Style 12 Matte Finish

Chloroprene rubber is unique in its range of properties affecting oil, ozone, oxidation, and sunlight resistar ce. Performance in any given application is influenced by, among other things, the formulation and physical properties designed into the specific compound. Neoprene offerings, in our case our styles 10, 12, and 15, are distinguished by the ASTM specification, the effect of which is reflected in the physical properties.



### Style 10 - Commercial

A smooth finish commercial blended neoprene compound adaptable to extreme weather conditions since it resists rotting, checking and cracking due to ozone exposure. Has low temperature flexibility and is oil resistant. Designed to meet ASTM specifications for 1 BC Material.

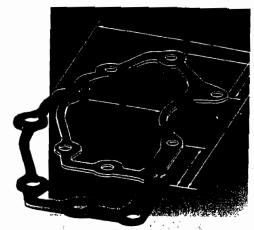
### **Physical Properties**

¥ .									
10	1/16 thru 1	36 & 48	40	800	350	-20°F to +170°F	1/8-2.5	Smooth	ASTM 0-2000 SAE J200, IBC 408 MIL R-3065, SC 408
10	1/16 thru 2	36 & 48	50	800	300	20°F to +170°F	1/8-2.6	Smooth	ASTM D-2000 SAE J200, IBC 508 MIL R-3065, SC 508
10	1/32 thru 2 1/16, 1/8, 1/4	36 & 48 <sup>-</sup> 72	60	900	300	−20°F to +170°F	1/8-2.7	Smooth	ASTM D-2000 SAE J200, IBC 609 MIL R-3065, SC 609
10	1/16 thru 2	36 & 48	70	1000	200	20°F to +170°F	1/8-2.7	Smooth	ASTM D-2000 SAE J200, IBC 710 MIL R-3065, SC 710
10	1/16 thru 2	36 & 48	80	1000	100	-20°F to +170°F	1/8-2.9	Smooth	ASTM D-2000 SAE J-200, IBC 810 MIL R-3065, SC 810

# BILTRITE Nepprene Sheet continued

### Style 12 - Matte Finish

A commercial blended neoprene sheet with a matte finish on one side. It is free of talc and release solutions which make it excellent for applications that involve the use of pressure sensitive adhes; ives.



**Physical Properties** 

								a fant	
12	1/16 thru 1/4	36	50	800	300	-20°F to +170°F	1/8-2.6	Smooth	ASTM D-2000 SAE J200, IBC 508 MIL R-3065, SC 508
12	1/16 thru 1/4	36, 72	;0	90;0	300	-20°F ta +170°F	1/8-2.7	Smooth	ASTM D-2000 SAE J200, IBC 609 MIL R-3065, SC 60
12	1/16 thru 1/4	36	;0	100,0	200	→20°F to +170°F	1/8-2.7	Smooth	ASTM D-2000 SAE J200, IBC 710 MIL R-3065, SC 710
12	1/16 thru 1/4	36	£0	100;3	100	-20°F to +170°F	1/8-2.9	Smooth	ASTM D-2000 SAE J200, IBC 810 MIL R-3065, SC 810

### Style 15 - 50% Base Polymen

(50% Base) is a premium grade product that has very good oil resistant characteristics. The 50% neoprene base polymer formula resists ozone and is highly recommended for hot and colo applications. See chart for specific physical properties.

**Physical Properties** 

						f. gradut			8-17-11-2
15	1/16 thru 1	36 & 48	50	1000	300	-40°F to +180°F	1/8-2.6	Smooth	ASTM D-2000 IBC 510 MIL R-3065, SC 510
15	1/16 thru 1	36 & 48	60	1000	300	40°F to +180°F	1/8-2.7	Smooth	ASTM D-2000 IBC 610 MIL R-3065, SC 610
15	1/16 thru 1	36 & 48	70	1000	200	-40°F to +180°F	1/8-2.7	Smooth	ASTM D-2000 18C 710 MIL R-3065, SC 710

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### Serrot International, Inc.

PROJECT NAME:	Mckena LF. PROJECT# 10057 CERT.# 4	
LOCATION:	MLBION N-y, OWNER:	
The undersigned, a representative of Serrot International, Inc., have viewed the subgrade surface described below and found it to be an acceptable surface upon which to install geomembrane.		
This certification is based solely on observations of the surface of the subgrade. No subterranean inspections or tests have been performed by Serrot International, Inc. and Serrot International, Inc. makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Serrot International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications nor does Serrot International, Inc. accept responsibility for protecting or maintaining the condition of the subgrade after this acceptance.		
Area Being Accepted (Describe Fully):		
60. Mil. LLDFE LINEY.		
SQUARE FOOTAGE: 46. 299		
SERROT INTERNATIONAL, INC. REPRESENTATIVE:		
	SIGNATURE: Rafael Herrera	
	PRINT NAME: RaFael Herrera	
	PRINTTITLE: SUBECVISA	
	DATE: 9-26-00 TIME: 6:00 PH	
OWNER'S REPRESENTATIVE:		
	SIGNATURE: Print W. Smith	
	PRINT NAME: BRIAN W. SMITH	
	PRINTTITLE: ENGLNEEPING VECH.	
	DATE: 9-26-00	
	•	

### Serrot International, Inc.

RPT. Pa. 8/8

PROJECT NAME: MCKenna IF. PROJECT # 10057 CERT. # 5
LOCATION: ALBION NIY. OWNER:
The undersigned, a representative of Serrot International, Inc., have viewed the subgrade surface described below and found it to be an acceptable surface upon which to Install geomembrane.
This certification is based solely on observations of the surface of the subgrade. No subterranean inspections or tests have been performed by Serrot International, Inc. and Serrot International, Inc. makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Serrot International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications nor does Serrot International, Inc. accept responsibility for protecting or maintaining the condition of the subgrade after this acceptance.
Area Being Accepted (Describe Fully):
60 Mil. LLDPE. LINCY
North West Corner
SQUARE FOOTAGE: 59,580 4
SERROT INTERNATIONAL, INC. REPRESENTATIVE:
SIGNATURE: RaFael Herrera
PRINT NAME: Rafael Herrera.
PRINT TITLE:
DATE: 11-2-00 TIME: 5:30
OWNER'S REPRESENTATIVE:
SIGNATURE: Print
PRINT NAME: BRIAN W. SMITH
PRINTTITLE: ENGINEERING TECH. (GEA)
DATE: 6-3-11-2-00

Pg- 7/7

ر :	PROJECT NAME:	MCKENN	a LF.	PROJECT#: _	10057	CERT.#	6
	LOCATION:	ALBION	· ·				
	subgrade s	rsigned, a repre	esentative of	Serrot Internation ound it to be an acc	nal, Inc., hav ceptable surfa	ve viewed ace upon wh	the nich
	subterrane Serrot Inte which may responsibil Serrot Inte	an inspections o mational, Inc. m exist below the ity for conformar	r tests have be takes no repressurface of the noce of the sub- cept responsi	ervations of the seen performed by sesentations or war subgrade. Serrot I ograde to this projecting	Serrot Interna ranties regare nternational, ect's specifica	itional, Inc. a ding condition Inc. accepts ations nor do	and ons no oes
	Area Being Ad	cepted (Descr	ibe Fully):				
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		SIGNATURE:		a Fael Hey	rerg		
		PRINT NAME:		Fael Her	rera.		
		PRINT TITLE:		Spervisor		- 11 A	**
		DATE:	H-3-0	<u>_</u>	TIME:	5:30 PH -	
	OWNER'S REI	PRESENTATIV			_		
	,	SIGNATURE:	Bras	W. Su	Th_		
				W. SMIT			A
		PRINT TITLE:	ENGINE	ERING TECH	6. (67A	)	
		DATE:	6-3-00	11-6-00			***************************************

PG. 10/10

Certificate of Acceptance of Subgrade Surface
PROJECT NAME: MCKENNA LF. PROJECT # 108.57 CERT. # 7
LOCATION: ACBION NY OWNER: Waste HGMT.
The undersigned, a representative of Serrot International, Inc., have viewed the subgrade surface described below and found it to be an acceptable surface upon which to install geomembrane.
This certification is based solely on observations of the surface of the subgrade. No subterranean inspections or tests have been performed by Serrot International, Inc. and Serrot International, Inc. makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Serrot International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications nor does Serrot International, Inc. accept responsibility for protecting or maintaining the condition of the subgrade after this acceptance.
Area Being Accepted (Describe Fully):
60 Mil LLDPE LINEY
North site
SQUARE FOOTAGE: 68,815
SERROT INTERNATIONAL, INC. REPRESENTATIVE:
SIGNATURE: BaFael Henrera
PRINT NAME: Ra Fael Herrera
PRINTTITLE: Superiatendent
DATE: 11-6-00 TIME: 6:00 PM
OWNER'S REPRESENTATIVE:
SIGNATURE: Brian W. Swith
PRINT NAME: BRIALD W. SMOVIA
PRINTTITLE: ENGINEERING TECH.
DATE: (1-15-00)

Pa. 9/9

PROJECT NAME:	McKenna LF.	_ PROJECT #:	10057	CERT.#	8
LOCATION:	ALBION M. y.	_ OWNER:	Was	Te Ma	MT.
subgrade s	rsigned, a representative of Surface described below and touecomembrane.	Serrot Internati nd it to be an a	ional, Inc., have acceptable surfa	e viewed the ce upon which	<b>∋</b> 7
subterrane Serrot Inte which may responsibil Serrot Inte of the subg	cation is based solely on obse an inspections or tests have been mational, Inc. makes no repres exist below the surface of the sity ity for conformance of the subg mational, Inc. accept responsibility grade after this acceptance.	en performed be entations or we ubgrade, Serro rade to this pr	y Serrot Internat varranties regard it International, Ir oject's specificat	ional, Inc. and ling conditions nc. accepts no tions nor does	d 5 0
	ccepted (Describe Fully):	·	,		
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North	site				<del></del>
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SQUARE FOOT	AGE: 49,5664				
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	SIGNATURE: RoFa	el Herr	ere		
	PRINT NAME: Ra	Facl He	rrerg		
	PRINT TITLE: SVO	eriNeNde	NT		
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OWNER'S REF	PRESENTATIVE:				
	SIGNATURE: Brian	W. Smt	4		
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Pg-7/7

	PROJECT NAME:				PROJECT#:	10057	_ CERT.#	_9
	LOCATION:	ALBION	N	· y	OWNER:	Waste	MGMT	7
	subgrade :	rsigned, a repri surface describer eomembrane.	esent d bel	tative of Sow and four	errot Internation and it to be an ac	nal, Inc., hav ceptable surfa	re viewed the ce upon which	ne ch
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	OWNER'S RE	PRESENTATIV						
		SIGNATURE:		-				
		PRINT NAME:	`F	BRIAN_	W. SMIT	ы	·	
		PRINT TITLE:	I	NEINE	ERING TE	CHI -		
•		DATE:		11-15-00	#			

 PROJECT NAME:	MEKEN	Na LF	_ PROJECT#:	10057	CERT.#	18
LOCATION:	ACBION	N.Y.	OWNER:	Waste	MGMT.	
subgrade s	signed, a repre urface described omembrane.	/ esentative of S d below and fou	Serrot Internation nd it to be an ac	inal, Inc., have cceptable surfac	viewed the e upon which	
subterrane: Serrot Inter which may responsibili Serrot Inter	cation is based an inspections or mational, Inc. mexist below the ty for conformar mational, Inc. acrade after this acrade	r tests have been akes no repressurface of the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the subgreet from the s	en performed by entations or wa ubgrade. Serrot rade to this proj	Serrot Internati tranties regardi International, In ject's specificati	onal, Inc. and ng conditions ic. accepts no ions nor does	
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	SIGNATURE:	Brian	W. Smit	1		
	PRINT NAME:	BRIAN	W. SMITT	н		
	PRINT TITLE:	ENGINE	FRING TECH	<u>( </u>		···
	DATE:	11-15-00				

Ps-7/7

#### Serrot International, Inc.

·,	PROJECT NAME:	HCKEN	SNa LF.	PROJECT#: _	10057	CERT.#	11
	LOCATION:	ACBION	Al-ya	OWNER:	Waste	MGMT.	
,	subgrade	ersigned, a repri surface described eomembrane.	esentative of S d below and four	errot Internation ad it to be an acc	ai, inc., hav aptable surfa	e viewed the ce upon which	
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	SERROT INTE	ERNATIONAL, I	NC. REPRESE	NTATIVE:			
		SIGNATURE:	RaF	act Her	rera		
		PRINT NAME:	RuF	ael Hen	ers		
		PRINT TITLE:		rintende			
		DATE:	11-18-0			00 PM	
	OWNER'S RE	PRESENTATIV	E:				
		SIGNATURE:	Burn	V. Smith	_		
		PRINT NAME:	BRIAN	W. SMIT	6		
		PRINT TITLE:	ENGINE	ERING TE	C+6.		
		DATE:	12-1-08	ס			

Pg 6/6

## Serrot International, Inc.

PROJECT NAME:	MCKENN	a LF.	PROJECT #: _	10057	CERT.# _ 1Z
LOCATION:	ACBION.	<i>U</i> ·y.	OWNER:	Waste	MGHT.
subgrade	rsigned, a repressurface described	esentative of S i below and foun	errot Internation nd it to be an acc	al, Inc., have eptable surfac	viewed the e upon which
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OWNER'S RE	PRESENTATIV	E:			
	SIGNATURE:	Burn	V. Suits		
			W. SMIT	24	
	PRINT TITLE:	ENGINE	ERING TI	ECH -	
	DATE:	12-1			

Certificate Of Assaptiones Of Subgrade Surface

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þ		McKend					
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	subterrans Serrot Inte which may responsibli Sarrot Inte	ication is based an inspections o mational, inc. m exist below the lity for conformal emational, inc. ac grade after this ac	r tests have bee takes no repras surface of the si nce of the subg scept responsibil	in performed b ectations or w ubgrade. Seco rade to this pr	y išerrot internat varanties regard it international, li ojaciis apecilicat	ional, Inc. an ing condition 1c. accepts n ions nor dee	d o
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DATE: 9-14-00 GEOMEMBRANE RECO

> WASTE MANAGENEN OF NEW YORK LLC MOTENNA LANDFILL REMEDIAL CLOSURE PROJECT ALBION, NEW YORK LY RECORD GEOMEMBA

							DEPLOYMENT RECORD					
	WEAT	WEATHER DATA										
							PANEL DIMENSIONS (FT)				PANEL D	PANEL DIMENSIONS (FT)
TIME	AIR TEMP	WIND SPEED (MPH)	TIME	PANEL NO.	ROLL NO.	MDTH	TENGTH	TIME	PANEL NO.	ROLL NO.	WIDTH	LENGTH
0089	65	∞	0815	7-0	15 P-1 5770 22.5	22.5	2/6	/#35	401	5807	22.5	6/
			08%	P.2	40 P.2 5770 22.5	22.5	96/	0441	BA		22.5 10	0/
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			1050	P-7	5773	22.5	225					
			1100	P. B	1100 P. A 5773 22.5	22.5	2/7					
			1130	9	5810	22.5	230					
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			1340	P. 12	O P.12 5811 22.5	22.5	208					
			1400	613	0 12 5807 22.5	22.5	240					
		1	1430	P. 12	0 P.124 5807 22.5	22.5	30					

							TRIAL SEAMING RECORD				
	;	WELD	WELDER I.D.		MACHINE SETTINGS	38			FIELD TEST RESULTS		
					FUSION SEAMER	SEAMER					-
SAMPLE NO.	TIME	OPERATOR I.D.	MACHINE 1,D.		TEMP. (*C) SPEED (FT./MIN.)	PRE-HEAT	_	PEEL (LBS)	SHEAR (LBS)	PASSIFAIL; REMARKS	
2.7	0835	1416	1206		0		135 /139 /	32/136 135/133	138 142, 133	PASS	
2-5	1308	1416	1206	750	0)		11/2/110 10	11/11/10 109/113 114/121 116,118, 120	16.118 120	PASS	
5.3	1430	/93	5 420	420	0/		122/118 119	111/4/11	122,126, 125	PASS	
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REMARKS: # SWIN = SEROT NEDLE WELDER KAPPROX, 1515 STOP OF PROYING GEO. MEM. & CONT. WIGEO TEXES ~ TO,000 13 & LOV. FOR DAY

GZA GEOENVIRONMENTAL OF NEW YORK

GEOMEMBRANE DAILY RECORD

DATE: 2-14-00

GEOMEMBRANE RECORD SHEET Z OF Z

WASTE MANAGENIENT OF NEW YORK, LLC MCKENNA LANDFILL REMEDIAL CLOSURE PROJECT

ALBION, NEW YORK
PRODUCTION SEAMING RECORD

DS-2 115 N. OF S. END S-3/4 5-5/6 5.78 SOUTH OF N. END S-1/2 75 NVE SIENS 5 12 19 60'5 OF NEWD S-10/1P W. END (COUNTER) DS-8 @ MID-SCAM DS-3 57'N, OF S. END 15'S. OF N. GUD 25.6 10º 5.0F 25-50 7 9.16.00 9-16 00 9-9-9 9-15.00 00 91.6 9-15.00 9-16.00 9-16.00 00.9/-6 9-16-00 0.91.6 9.19.00 9-15.00 9-16-00 0.1500 9.15.00 1-1600 9-15-00 ORIGINAL) NON-DESTRUCTIVE TESTING
| EXTRUSION | DATE VACUUM TEST PASS/FAIL PASS PASS PASS 1330 1335 1223 1542 145d 1514 1520 235 1240 1353 1358 1450 1532 1537 1300 (305 1454 1459 1233 1238 1345 1350 1425 1430 STOP 1315 1320 Z##1 Z##1 1410 1415 TEST TIMES 1449 1445 START FUSION Į 1 TEST PRESSURES (PSI) 30 STOP **1**9 (1) A1 (1) M 34 δ N 3 ار دم m m W W W SN W CO BOOM 30 32 33 DESTRUCTIVE SAMPLE 5-50 0**}-**₹4 DS-3 05-2 DS-1 DS-4 05-8 12-13 CUMUL. LENGTH SEAM LENGTH (FT.)
FUSION EXTRUSION
PREVIOUS PREVIOUS
CUMULATIVE: CUMULATIVE: ٥ # 7 CURRENT 2 t 2/5 1486 227 1713 220 1933 220 615 220 835 222 1051 2365 395 2603 2636 26.77 2705 SEAM LENGTH 200 200 252 224 2157 87 PREVIOUS CUMULATIVE: 1 00 00 561 208 22 9 22 EXTRUSION PRE-HEAT 240 240 99 00 9 9 **6**6 9 500 0 750 10 9 Q 750 750 750 420 TEMP. (°C) 250 250 420 250 420 750 420 250 1206 1206 1206 1206 1206 1206 1200 1206 210 210 OPERATOR MACHINE 1206 1416 4H0/ 1416 0/7/ 0820 1416 0930 1416 1416 0141 410 1416 74.61 1044 5-124/13 1600 59/10A 1615 1 5-104/11 1620 1650 0701 C.12/2 1520 5-12/12A 1450 1/20 0121 00// 5-11/12A 1540 1345 S-4/5 S-5/6 53/10 € 8/64 5-10/104 SEAM NO / PATCH NO. 6/8-5 5-10/11 2.06/2

GZA GEOENVIRONMENTAL OF NEW YORK

TEXTURED SEAM

FOR

= SEAROT WEDGE WEIGH

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REMARKS:

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ALBION, NEW YORK

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GEOMEMBRANE RECORD

2 of 2
REPORT PAGE

GEOMEMBR.

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WASTE MANAGEMEN, JF NEW YORK, LLC
MCKENNA LANDRILL REMEDYAL CLOSURE PROJECT
ALBION, NEW YORK

										PRODUCTION SEAMING RECORD	EAMING R	ECORD						
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GEOMEMBRANE DARY RECORD
WASTE MANAGEMENT OF NEW YORK, LLC
MAKENAL LANCH'LL REMEDAL CLOSURE PROJECT
ALBION, NEW YORK

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1300 23 5134 225 522	-			1150	22	5734	22.5	7.20						_
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	Н			13/0	24	7/15	22.5	220					_	_

OPERATOR						FIELD TEST RESULTS	
PERATOR			FUSION	BEAMER	<u></u>	_	
	MACHINETO	TEMP.	SPEED (FT MIN.)	PRE-HEAT	PEEL (185)	SHEAR (285)	PARAFALI
416		750	0		134/13,	139,137,148	a
. 66/	422F	420	4	4.0	124175 125/120 122/124	120 131 130	Q
1/20/1	200	255	Q		18/1021 011/11 01/18/1	28,124,122	Q
9	25.55	30	ń	- ·	IJ.	10,110	S.
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REMORE \* MACH # 1200 REPLYED 12/ MACHINE # 6055

ZA GEDENVIRONMENTAL OF NEW YORK

GEOMEMBRANE RECORDS....... 2 OF 2

WASTE MANAGEMÊN: OF NEW YORK, LLC MAKENNA LANDFILL REMEDIAL CLOSURE PROJECT ALBION, NEW YORK

LY RECORD

GEOMEMBR

2705 - Can 1206 288 - Sww 165

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DS 13 ~ 35 11,00 5. ENDS23/24 DS 14 ~ 10 11 or 5. EN, 524/25. (STANT OF NEW, MACHINE) SOFNIEUDS14/15 DS-15 ~62' N. OF 5. END 526/27 DS-11 ~90'S. OF N. END S. 19/20 1/21.2 JUST OF NEWD 5.17/1 ~90'N, OF S. END 521/22 X DS-16 ~80'S, or 11, Exp 53/29 251 6-50 20061-6 20061-6 20061-6 20061-6 9.19.00 9.19.00 9.19.00 (IF OTHER THAN ORIGINAL) NON-DESTRUCTIVE TESTING | DATE VACUUM TEST PASS/FAIL 1786 1785 1785 1716 1743 1748 1743 1748 1855 09855 1855 0985 1855 1000 000 0 000 0 00 PRODUCTION SEAMING RECO ~ ★ B S B H F 8 DESTRUCTIVE SAMPLE 9-59 01-59 21-55 55-14 5/-50 5-13 05-9 1-S CUMUL. LENGTH PREVIOUS CUMULATIVE: - 210-CURRENT 22 57 8 3705 205 3910 205 3910 205 4433 224 4583 224 4583 224 4583 218 436 216 654 218 688 22 110 35 2280 203 3183 25 328 30 3483 205 3453 30 3483 210 5245 SEAM LENGTH 77 PREVIOUS CUMULATIVE **8889里年8** | S-164/40225 | 14/6 | 1204 | 750 | 14 | S-11/74 | 0235 | 193 | 165 | 470 | 4 | S-16/74 | 0250 | 14/6 | 1206 | 750 | 14 | S-104/18 | 1020 | 14/16 | 1206 | 750 | 14 | S-104/18 | 1025 | 14/16 | 1206 | 750 | 14 | S-104/18 | 1025 | 14/6 | 1206 | 750 | 14 | S-104/18 | 1025 | 14/6 | 1206 | 750 | 14 5-13/4/0830 / 5-15/17/0845 5-14/15/0857 5-14/15/0857 SEAM NO/ PATCH NO.

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MACHINE

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MACHINE

						DEPLOYMENT RECORD					
WEATH	WEATHER DATA										
						PANEL DIMENSIONS (FT)				PANEL DIMENSIONS (FT)	XIMENBION: (FT)
AIR TEMP	WIND SPEED (MPH)	<b>BMIT</b>	PANEL NO.	ROLL NO.	WIOTH	LENGTH	TIME	PANEL NO.	ROLL NO.	MIDTH	LENGTH
80	27	0930	32	0930 32 5826 225	22.5	208					
		900/	33	1000 33 5026		206					
		0801	34	5824		204					
		11/5	35	1115 35 5824		204					
		9/1/	36	580		204					
		1350	7 1	135037 5801		(32)					
		1355	374	5822		70					
		1400 38	88	400 38 5822		202					
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			14	5732		961					
		2091	42	600 42 5712		194	,				
		1420	394	420 394 5824		30					
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		PASS/FAIL; REMARKS	P #55	P 455	P 455										,		
FIELD TEST RESULTS		SHEAR (LBB)	121 120 125	121.124.119	113,118,120						-						
RECORD		PEEL (LBS)	66 101 001	1/112 114/111 113/114	103/166 106/122 11/116											٥	
TRIAL SEAMING RECORD	EXTRUSION	PRE-HEAT	240 10	. 117	103	+		_							-		
MACHINE SETTINGS	FUSION	ΙZ		0/	0	-;- -											
		EMP.		054	256												
WELDER I.D.		MACHINE I.D.	210	6055 750	6059 750	† 											
WELD		OPERATOR 1.D.	₹6/	861	(93	1											
	_	TIME	0800	10 30	1305	1											
	_	SAMPLE NO.	/ح ح	2.5	5-3												

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WASTE MANGEMBI, OF NEW YORK, LLC

MAKENIA LANDRIL REMEDIAL, CLOSLIKE PROJECT

ALBION NEW YORK

	NON-DESTRUCTIVE TESTING	FUSION EXTRUSION DATE		RES (PS) TEST TIMES	VACUUM (IF OTHER TOP PASSFAIL ORIGINAL) REMANDES	122-12 (1x1) 5/3/	92200 8 (2x1) 5/4/15 S.E	3.50 0 (/X/) 5/4/15 15	P155 9-22-00 0 (2x1) SI4/15 220 N. 0F5. FUD	9.2200 E (2X1)	9.220 F(XI) 515/16	9.22.00 0(1X1) SIG/17.	9.2200 # (2x1) 517/18	9.200 (4x2) 05-9	1925 9.20 12x1) SI4/15/15A	9-2200 x (2x1) 515/16	9.22.00	9-22-0 " (2x1)517/18/	9.2200 " (4x2) DS-	0	. a.	٥	,ec	8		a	>		×	· .	Z	***	88	8	200	844	<b>!</b>	
		Ц				9.22-00 1 (1x1) 5/3,	19200 8 (2x1) 5/4/	17.15 (1X1) 0 202-6	9-22-00 (1x2) SIU/	9.2200 [ (2x1) SI4)	9.220 F(XI) 515	9-22-00 0(1X1) SIG/	9.22 00 H (2KI) 517/	9.22 (4x2) 05	9.20 2x1)	9-2200 K (2XI)	9.22-00 1 (2x1)	9-22-0 " (2x1)517/18,	9.2200 " (4x2) DS-			٥	.04	65		] o	>	w	×	·>	Z	*	88	00	oo .	Ш	lt.	
	ON-DESTRUCTIVE TEST	2		TEST TIMES	START																																	
		FUSIC		TEST PRESSURES (PSI)	STOP																																	
PRODUCTION SEAMING RECORD				۳	DESTRUCTIVE SAMPLE START	~	· · · · · ·	ဲ့ပ	٥	ш	<u>,</u>	ø	Ξ	î T		×	1	Ž 🗷	Z	0	۵	ď	æ	8		n	>	.*	×	λ.	2	.\$	88	8	8	H	E	. :
	יו	EXTRUSION	PREVIOUB		CURRENT CUMUL DES			,																														
	SEAM LENGTH (FT.)	_	PREVIOUS CUMULATIVE: C	_	CURRENT CUMUL CUR																																	
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				MACHINE BETTINGS	FUSION EX SPEED PR	1		2	2	2	101	7	2	0	2	0	2	0	7																			_
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REPORT PAGE

GEOMEMBRANE DAILY RECORD

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WASTE MANAGEMENT OF NEW YORK, LLC MCKENNA LANDFILL REMEDIAL CLOSURE PROJECT ALBION, NEW YORK -12:01Z

RODUCTION SEAMING RECORD

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USION [EXTRUSION | DATE 0942 0347 0952 0455 1035 1040 1000 1005 1340 1345 ٥ 0 0 000 0 TEST PRESSURES (PSI) **★ 8** 8 8 8 8 11 12 8 DESTRUCTIVE SAMPLE 05-19 DS-20 B-50 21-50 SEAM LENGTH ENGTH (FT.)
EXTRUSION
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GEOMEMBRANE DAILY RECORD

WASTE MANAGEMENT OF NEW YORK, LLC MOKENNA LANDFILL REMEDIAL CLOSURE PROJECT ALBION, NEW YORK

PRODUCTION SEAMING RECORD	AM LENGTH (FT.) NON-DESTRUCTIVE TESTING	EXTRUSION	CHAIN ATAY: CHAIL ATAY:	$\dashv$	CURRENT CUMUL CURRENT CUMUL DESTRUCTIVE START STOP DROP START STOP PASSFAIL ORGINAL) REMARKS	PA\$\$ 3.22.00 x D5-10	PA55   3.22.00   5.18/19/19A	O	PASS 3.22.00 0 DS-	1/455 3-220 E (15x2)~75/N.ö.	PA55	6 6 3-22-ca	1465 3-22-4 N. FUD S-23/24 (/X!)	1945 3-2200 1 100 5 17 1 100 5 1 1 10 5-23/6	3-22 00 1 (3x2) 65' N. 0F S.	×	PASS 3-2200 ((X1) S. END S21/22	S (1X1) 1 22.50 (1X1) S	3-12-00 N DS-15	0 BNSS 2-2200 0 (3×2) ~10 'N. 0FS. END 5.72/2	3.2200 ((XI) S. END 5.22/	Pass 22200 0 (6x2)	322.00 R (4x2) DS-14	8 PAN 32200 ((XI) S.EUD S. 24	1945 3-22-00 1 (XI) S. E.D.D. S. 22	1,444 3.2240 U(XX) S. EUD 5-25/26	V 485 3.7800 V 48.81	SO WOUNDER CONTRACTOR	Poss 32200 V/2XI) 45. 16.	723 3.22 1 7 1 1 1 1 2 2 2 8 1	M (204) 3.22m M (5x2) 50 N 0 ES, EM 5 - 20/2	88 BS S.22.00 BB DS = 16	PASS 3.22 vo ca(1x1)100 'S.	00 00 00 00 00 00 00 00 00 00 00 00 00	125 33200 11 (4/2) 20'5.ne N 600 5.27	PA45 3-22 ** F(XI) N. END 5.	1.200 ad (2x) N. FIND	FASS 3-22-00 (2x1) N. END S. 28/29
	AM LENGTH	H			CUMUL CURRENT	· ·	1		240 0	1			240		1		240	_	240	_	_				240 7	-	<u> </u>	Т	1		240	1	П		240 E		╗	otro.
				WELDER I.D. MACHINE SETTINGS	FUSION SPEED MACHINE TEMP. (*C.) (FT.JMIN)	2/0	2/0	2/0	2/0		210	210	2/0	210	210	210	2/0	201	2/0	210	20	0.0	2/0	210	20	210	200	2 0	000	5,0	210	210	2/0	2/0				2/0
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WASTE MANAGEMEN. JF. NEW YORK LLC
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ALBION, NEW YORK

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WASTE MANAGEMENT OF NEW YORK, LLC
MAKENNA LAWDFILL REMEDAL, CIGSURE PROJECT
ALBICH, NEW YORK

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WASTE MANAGEMENT OF NEW YORK, LLC
MAKENNA LANDFILL REMEDIAL CLOSURE PROJECT
ALBION, NEW YORK

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	NON-DESTRUCTIVE TESTING	NOSON	TEST TIMES	VACUUM (FOTHER TOTHER PELABRES	PASS 1/K1) 5.600	8(2×1) 10' N. OF	c(1x1) 5 END	0 (/x/) S. END 5.30	1/X1 > 6.649	((xi) 5 = 5.9 5.33/34	6 (4x2)	ii (2x1)	1 (/x/) S.	1 (5x2) 5 END 5-37/	9-25-00 x (/X1) 5. END S	166.5 4M3.5 (1X1)	•	9.25.00 N	9.25.00 0 DS - 18	9-25-00	9.2500 0 (1X1) N. END	PASS 9-2500 R (2XI) N GND 5-29/30	9.2500 8 (3x2) 100'5 OF N. 600 5-33	7-25-00 1 (JOXZ) 40'S OF N ENDS-35/	59.25.00 U (5x2/90 5.0F NEWO	2012 9 25 m (2 x 1) 100 N of 2 5 10 5 5 2 7 2 2	9.25.00 x (3x1) 50'N. OF SEND S 361	(XE)	9-25-00 2 (3x1) 70'S, OF NEW 536	9.2500 M (3x2) 20 S. OF N. FUD	9.25 m BB (10X2)	9-25 00 00 (5x2 ) 70'5, OF N.	9.2500 00 05-19	1845 125.0 E(3x2) 25'S OF N. EJD 5-38/39	9-25-0 H (KI) NEND 5-38/3	9-25-00 (4x2)2
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7/120

GZA GEOENVIRONMENTAL OF NEW YORK

REMARKS:

XEE 9.20-00 FOR 4V 1 4X

GEOWEMBRANE RECORD SHEET 3 of 3

REPORT PAGE \_\_\_\_ OF \_\_\_

GEOMEMBRANE DAILY RECORD

WASTE MANAGEMENT OF NEW YORK, LLC
MCKENNA LANDFILL REMEDIAL CLOSURE PROJECT
ALBION, NEW YORK

#210 - 43 -

VACUUM (IF OTHER TEST TRAN PASSFAIL ORIGINAL)
POSS 9-25-00 A PASS 9-25-00 B NON-DESTRUCTIVE TESTING

-USION | EXTRUSION | STOP START DROP TEST PRESSURES (PSI) STOP PRODUCTION SEAMING RECORD START ₹ # 유 명 표 표 CURRENT CUMUL DESTRUCTIVE SEAM LENGTH SAMPLE 22 65 22 67 SEAM LENGTH (FT.)
FUSION
FREVIOUS
PREVIOUS
CUMULATIVE:

CUMULATIVE:

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TOWN SEAM LENGTH × 4 8 8 8 H H 8 E TEMP. C.C.) (FT.AMR)

C.C.)

240

240 REMARKS: 

GZA GEOENVIRONMENTAL OF NEW YORK



WASTE MANAGE

EW YORK LLD

WEKENIA LANDSTIL RED. BLOOL GLOBERE PROJECT

ALBION, NEW YORK

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GZA GEOENVIRONMENTAL OF NEW YORK

VASTE MANAGEM
FOR YORK, LLC
NAK, LANDFILL REALENAL CLOSURE PROJECT
ALBION, NEW YORK

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GEOMEMBRANE RECORD SHEET 2 OF 3 გ | REPORT PAGE

GEOMEMBRANE DAILY RECORD

WASTE MANAGEMENT OF NEW YORK, LLC MCKENNA LANDFILL REMEDIAL CLOSURE PROJECT ALBION, NEW YORK

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PRODUCTION SEAMING RECORD

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GZA GEOENVIRONMENTAL OF NEW YORK

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GZA GEOENVIRONMENTAL OF NEW YORK

GEOMENBRANE DALLY RECORD
WASTE MANAGEMENT OF NEW YORK, LLC
MAKENIK, LANDRIL BENEDAL, CIOSUNE PROJECT
ALBION, NEW YORK

GEOMEMBRANE RECORD SHEET 2 of 2.

GEOMEMBR TY RECORD
WASTE MANAGEMENT OF NEW YORK, LLC
MAKENNA LANDRILL REMEDAL CLOBURE PROJECT
ALBION, NEW YORK

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GZA GEOENVIRONMENTAL OF NEW YORK

DATE 9-28-000 GEONE BROOKE RECORD BREET \_\_\_ or \_\_\_ REPORT PO\_\_\_\_ or \_\_\_

GEOMEMBRANE DAILY RECORD
WASTE MANGEMENT OF NEW YORK LLC
MACENIA LANGELE SHOULE CLOSURE PROJECT
ALKON, NEW YORK

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	FIELD TEST RESULTS		PEEL (185) PASS/FAIL; REMARKS	139,138,137 685										
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WASTE MANAGEBER. J. NEW YORK LIC
MACENAL LANGILL REMEDIAL CICIOSINE PROJECT
ABION, NEW YORK

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16055; 1015 (1907) GEOMENBAR LY RECORD WASTE MANAGEM NEW YORK LLC 1652; 1060 / 1402 MAGNINI LANGILL REACON CLOQUIRE PROJECT ALBON, NEW YORK

E. FLO P. 58 (MID) 20' N. OF S. END 05-33 w 40-7-11 | 1-4-00 | 1-4-00 | 1-4-00 | 1-4-00 11-400 00-7-11 11-4-00 11-4.00 11-4.00 11-40 11-4.00 (IF OTHER THAN ORIGINAL) 004-1 11-4.00 NON-DESTRUCTIVE TESTING FUSION DATE VACUUM TEST PASS/FAIL 0847 0851 0847 0852 0841 0852 0844 0853 0905 0910 0916 0921 0927 0940 2807 0807 2855 3313 2866 0811 2807 1812 2808 0813 1650 1655 TEST TIMES 0 0 Ð ٥ 0 d RODUCTION SEAMING RECORD 2002232 202223 202223 CUMUL EXTRUSION PREVIOUS CUMULATIVE 120 1520 1 SEAM LEY FUSION PREYYOUS CUMULATIVE: 95 1400 8 8 8 8 × 20 # E WELDER LD हुं हुं (6) (794 B40 3/73 1600 BEAM NO.

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> WASTE MANAGEMENT OF NEW YORK, LLC MACENNA LANDFILL REMEDIAL CLOSURE PROJECT ALBION, NEW YORK GEOMEMBRANE DAILY RECORD

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GEOMEMBRANE RECORD BHEET 2 OF 2

GEOMEMBRANE DAILY RECORD
WASTE LAWAGEMENT OF NEW YORK LLC
MACENIA LAWOFIL REJEDIAL CLOSURE PROJECT
ALBION, NEW YORK

									4	PRODUCTION SEAMING RECORD	EAMIN	3 RECORD						
	-						Į٤١	A LENGTH (FT.)					¥	N-DESTR	NON-DESTRUCTIVE TESTING	DNI	П	
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		WELDER LD.	¥	MACHINE SETTINGS	TINGS							TEST PRESSURES (PSI)	RES (PSI)	Ĕ	TEST TIMES			
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DEPLOTMENT RECORD	•	PANEL MO.															COCCURATION CONTRACTOR	MING RECORD	PESS A MAY	8 135/138	441/621 681/141 641/	132 195/131 133/144	27 129/139 129/142	125' 142	136/129 126/132 133/130											
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								SEAMI	LENGTH (FT.)					Ŕ	NON-DESTRUCTIVE TESTING	/E TESTING			
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		WELDER I.D.	2 E	₹	MACHINE SELLINGS			ŀ					TEST PRESSURES (PSI)	(PSI)	TEST TIMES	£			
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ATCH NO.	TIME	OPERATOR	MACHINE	OPERATOR MACHINE TEMP. ("C) (FT.MIN)	(FT MIN)	<del>ပ</del>		_	SEAM		SAMPLE	_	STOP	DROP	START	STOP P/	-	7	REMARKS
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WASTE MANAGENENT OF NEW YORK, LLC MAKENAN LANDFIL REMEDIAL CLOSURE PROJECT ALBION, NEW YORK

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GEOMEM ILY RECORD
WASTE MANAGEMENT OF NEW YORK LLC
BENK LAWFELL REMEDIAL CLOSURE PROJECT
ALBION, NEW YORK

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WELTERLID. WICHER SETTINGS TRAIN RELAINING RECORD  WELTERLID. WICHER SETTINGS TRAIN RELAINING RECORD  TELD TEST RESULTS  TO CO. 122/121, 122/113, 125/120 149, 147, 151   Particular Settings											_				
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WASTE MANAGEMENT OF NEW YORK, LLC MAKENIA LANDRILL REMEDIAL, CLOSUIRE PROJECT ALBION, NEW YORK

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BEÁM NO. PATCH NO.

GEOMEMBRANE DAILY RECORD

GEOMELIBRANE RECORD BHEET 2 OF 2

1", 34"Z. O & O & O & A . F . D > 3 . X > N (FOTHER THAN ORIGINAL) NON-DESTRUCTIVE TESTING FUSION ESTRUCION DATE VACUUM TEST PASS/FAIL 1353 1358 1355 1400 1410 1415 TEST TIMES 37 C 2 TEST PRESSURES (PSI) **★ 28 - 8 - 28 - 18 + 18** 3 Z O L CURRENT CUMUL CURRENT CUMAL SEAM LENGTH SEAM LENGTH (FT.)
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10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (22.4) 576.5   10 (\$ (						294										
10 (5 (22.6) 77.65   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85   10.2.5 77.85						001	5819									
10 (8 (224.57)2-5   10 (8 (224.57)2-5   10 (8 (224.57)2-5   10 (8 (224.57)2-5   10 (8 (224.57)2-5   10 (8 (224.57)2-5   10 (8 (224.57)2-5   10 (8 (224.57)2-5   10 (8 (224.57)2-5   10 (8 (224.57)2-5   10 (8 (224.57)2-5   10 (8 (224.57)2-5   10 (8 (224.57)2-5   10 (8 (224.57)2-5   10 (8 (224.57)2-5   10 (8 (224.57)2-5   10 (8 (224.57)2-5   10 (8 (224.57)2-5   10 (8 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5   10 (224.57)2-5						1	5765									
10 (8 (22.0) 576.5   10 (8 (22.0) 571.2   10 (8 (22.0) 571.2   10 (8 (22.0) 571.2   10 (8 (22.0) 571.2   10 (8 (22.0) 571.2   10 (8 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.0) 571.2   10 (22.							5739									
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GEOMENBRANE DALY RECORD
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ONTE. 11-14-00 GEONEMBRANE RECORD BHEST 2 OF 2 REPORT PAGE 5 OF 7

GEOMEMBRANE DAILY RECORD

WASTE MANAGENENT OF NEW YORK, LLG MCGNNA LANDFILL REMEDJAL CLOSURE PROJECT ALBION, NEW YORK

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REMARKS;

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WASTE LANAGEMENT OF NEW YORK, LLC MACENIA LANDFIL REMEDIAL CLOSURE PROJECT ALBION, NEW YORK

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REMARKS:

GEOMEMBRANE DAILY RECORD

WASTE WANAGEMENT OF NEW YORK LLC MAKENNA LANDFIL REMEDIAL CLOBURE PROJECT ALBION, NEW YORK

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GEOMEMBRANE DALY RECORD

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REMARKS

GEOMEMBRANE DAILY RECORD
WASTE MANAGEMENT OF NEW YORK, ILC

WASTE MANAGEMENT OF NEW YORK LLC MAKENNA LANDFUL REMEDAL CLOSURE PROJECT ALBJON, NEW YORK

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GZA GEOENVIRONMENTAL OF NEW YORK

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GEOMEMBRANE DAL Y RECORD
WASTE MANAGEMENT OF NEW YORK, LLC

GEOMENBRANE RECORD SHEET 3 OF 3

REPORT PAGE OF

WASTE MANAGEMENT OF NEW YORK, LLC MCKENAN, LANDFILL REMEINAL CLOSURE PROJECT ALBION, NEW YORK

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OEDMEMANNE RECORD SHEET 2 OF 2.

WASTE MANGEMENT OF NEW YORK, LLD.
MARCHAN, LANDRILL REMEDAL, CLOBURE PROJECT
ALEKON, NEW YORK

ALY RECORD

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GZA GEOENVIRONMENTAL OF NEW YORK

GEOMEKBRANE DALLY RECORD WASTE MANABURITOF MEW YORK, LLD MAKDAN, LAWOFIL REMODIL, CLOSUME PROJECT ALBION, NEW YORK

### PER 13/17/16   19/1/17/16   170,169)

22A OKOPIWECHNINTAL OF MPS YORK

WIE 11-18:00 GECINEMERANTE RECOPO SHEET 2 OF 2.

GEOMEMBRANE DAILY RECORD

1653: 240 16655; 100' 165: 1218'

240

WASTE MANAGENERT OF NEW YORK LLO MAGENIA LANDFIL REMEDIAL CLOBURE PROJECT ALBIDIL, NEW YORK

25.5% 30 N.OF SEUR DS-571 GO' 5.0F N.CWD 55' 2. OF M.END 15-59 60' 5 OF N. G.D 05-60 Ļ 11.20-11.20ms 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-20 to 11-11.230 (F OTHER THAN OPIGINAL) 11-22-00 NON-DESTRUCTIVE TESTING
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GZA GEDENVIRONMENTAL OF NEW YORK

RESET CUMUL. LENSTY TO 0' (0 DS-52 (TOTAL: 6135') FOR MACK: 16055? (NOT TO OPD GHUL. VALUE) KENT COMUL. LENSTY TO O' (0 DS-55) (TOTAL: CASS') FOR MACK: 1653

GEOMEMBRANE DALLY RECORD
WASTE MANAGEMENT OF NEW YORK, LLD
MACENAL LANDELL EAMENT CITOSURE PROJECT
ALBON, NEW YORK

		_					DEPLOYMENT RECORD	9			
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	0260	0660		121	5731		126A	5742			
-	-	-		72/	5737	1650	127A	5742			
				123	5806						
1150	1150	1150		401	5816						***
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REPORT PAGE OF

GEOMEMBRANE DAILY RECORD

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WASTE MANAGEMBYT OF NEW YORK, LLC MAGENAA LANDFILL REMEDIAL CLOSURE PROJECT ALBOR, NEW YORK

PRODUCTION SEAMING RECORD

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GEOMEMBRANE RECORD SHEET 2 OF 4

WASTE MANAGEMENT OF NEW YORK, LLC MAKENNA LANDFILL REMEDIAL CLOSURE PROJECT ALBION, NEW YORK

CTION SEAMING RECORD

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GEOMEMBRANE DAILY RECORD

WASTE MANAGEMENT OF NEW YORK, LLC MAGENAN LANDFILL REMEDIAL CLOSURE PROJECT ALBION, NEW YORK

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REMARKS:

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WASTE MANAGEMENT OF MEN YORK, ILC MAKENIA LANDFIL REMEDIAL CLOSURE PROJECT ALBOR, NEW YORK RECORD GEOMEMBRAN

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WASTE ANAVOBENT OF NEW YORK, LLD
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ALSION, NEW YORK

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GEOMENBRANE RECORD SHEET X OF 2

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WASTE MANAGEMENT OF NEW YORK, LLC MAYENNA LANDRIL REMENAL CLOSURE PROJECT ALBION, NEW YORK

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WASTE MANDBURTOR NEW YORK, LLC
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ALBICH, NEW YORK

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REPORT PAGE OF

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WASTE MANAGEMENT OF NEW YORK LLC MAYENNA LANDFIL REMEDAL CLOSURE PROJECT ALBION, NEW YORK

PRODUCTION SEAMING RECORD

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GEOMEMBRANE DAILY RECORD
WASTE MANAGEMENT OF NEW YORK LLC

WASTE MANAGEMENT OF NEW YORK, LLC MACENNA LANDFIL, REMEDIAL CLOSURE PROJECT ALBION, NEW YORK

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REPORT PAGE OF

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GEOMEMBRANE DAILY RECORD

238:314

WASTE MANAGEMENT OF NEW YORK, LLC MACENIA: LANDFILL REMEDIAL, CLOSURE PROJECT ALBION, NEW YORK

											101 GV4																										
				RELANGES		(2×1) S131/125	2//33	0 (Ste) DS-69	-54 (2x5)	1 (5x2) DS-71	(235)	1 (5x/5) WW #2			*			<b>**</b>	.0	<b>1</b>	ō			3 =-	Ţ			×	, ·	Z		98	.8	DO	. SE		ġċ
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GZA GEOENVIRONMENTAL OF NEW YORK



DATE REC'D: 19-Sept-00 **CONTACT: JOHN DANZER OR BART KLETTKE** PROJECT: McKENNA LANDFILL - ALBION, NY CLIENT: GZA GEOENVIRONMENTAL (NY)

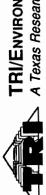
DATE TESTED: 19-Sept-00 SEAM TYPE: HEAT FUSION WELD MATERIAL: LLDPE TRI LOG #: E2144-80-01

**ASTM D 4437/413/3083 NSF Modified** ANALYST: AR
REVIEW: JAN
REPORT DATE: 19-Sept-00

	_					DS-02												DS-01						NUMBER	SAMPLE		
MEAN	58	4B	3B	28	1B	MEAN:	5A	4A	3A	2A	1A	MEAN	58	4B	38	2B	1B	MEAN:	5A	4A	3A	2A	1A	NUMBER	SPECIMEN		
137	137	137	136	135	140	130	127	128	126	128	141	125	122	127	126	125	124	125	124	126	125	125	125	(lb/in)	TENSION	MAXIMUM	
	<b>~10</b>	<u></u>	· <10	<b>^10</b>	<10		<10	<b>^10</b>	<b>^10</b>	<b>^10</b>	<b>~10</b>		<10	<10	<10	<10	<10		<10	<b>~10</b>	<10	<10	<10	(%)	INCURSION	PEEL	
	SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	SE	SE	FAILURE	유	Locus	PEEL EVALUATIO
	FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	BIA	MODE	FAILURE		
MEAN:			_								AN	MEAN:								_			NA	(lb/in)	SPEC.	PROJECT	
124			123		125		123		125		123	125			125		125		124		126		126	(lb/in)	TENSION	MAXIMUM	
			> 50		> 50		> 50		> 50		> 50				> 50		> 50		> 50		> 50		> 50	(%)	@ BREAK	ELONGATION	SHEAR EVALUATION
			FTB		FTB		FTB		FTB		FTB				FTB		FTB		FTB		FTB	•	FTB	MODE	FAILURE	NSF 54	LUATION
											NA					_							NA	(lb/in)	SPEC.	PROJECT	

#### NA: Not Available

to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI. The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply



A Texas Research International Company

# **GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS** QUALITY ASSURANCE TESTING

PROJECT: MCKENNA LANDFILL - ALBION, NY CLIENT: GZA GEOENVIRONMENTAL (NY)

CONTACT: JOHN DANZER OR BART KLETTKE

DATE REC'D: 19-Sept-00

**SEAM TYPE: HEAT FUSION WELD** TRI LOG #: E2144-80-01 MATERIAL: LLDPE

DATE TESTED: 19-Sept-00

**ASTM D 4437/413/3083 NSF Modified** 

REVIEW: グイン REPORT DATE: 19-Sept-00 ANALYST: AR

				PEEL EVALUATION	7			SHEAR EVALUATION	UATION	
			PEEL	SNOOT		PROJECT	MAXIMUM	ELONGATION	NSF 54	PROJECT
SAMPLE	SPECIMEN	TENSION	S	P	FAILURE	SPEC.	TENSION	@ BREAK	FAILURE	SPEC.
NUMBER	NUMBER		(%)	FAILURE	MODE	(lb/in)	(lb/in)	(%)	MODE	(lb/in)
	14	135	<10	SE	FTB	ΝΑ	122	> 50	FTB	ΑN
	<b>4</b> 2	137	<10 510	ᄖ	FŦB					,
	3A	133	×10	SE	FTB		124	> 20	FTB	
	4	130	410	SE	FTB					
	5A	130	×10	SE	FTB		123	> 20	FTB	<del></del> .
DS-03	MEAN.	123				r.—	.—			
	18	132	×10	SE	FTB		123	> 20	FTB	
	2B	135	×10	SE	FTB					_
	38	133	×10	SE	FTB		123	^ 20	FTB	
	48	135	410	SE	FTB					
	28	133	~10 ~10	SE	FTB					
	MEAN	134				MEAN:	123			
	1A	136	<10	SE	FTB	Ą	127	> 50	FTB	Ϋ́Α
	2 <b>A</b>	139	40	SE	FTB					
	34	135	<b>~10</b>	SE	FTB		127	> 20	FTB	
	4	138	40	SE	FTB					
	2A	137	<10	SE	FTB		125	> 20	FTB	
DS-04	MEAN:	137								
	18	138	<10	SE	FTB		127	^ 20	FTB	
	2B	140	×10	SE	FTB					
	38	129	410	SE	FTB		127	> 20	FTB	
	48	139	×10	SE	FTB					
	2B	136	×10	SE	FTB					
	MEAN	136				MEAN:	127			

#### NA: Not Available

to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI. The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply

9063 Bee Caves Road • Austin, Texas 7873 3 .03° 4 (512)263-2101 • FAX (512)263-2558



DATE REC'D: 19-Sept-00 CONTACT: JOHN DANZER OR BART KLETTKE PROJECT: McKENNA LANDFILL - ALBION, NY CLIENT: GZA GEOENVIRONMENTAL (NY)

> SEAM TYPE: HEAT FUSION WELD MATERIAL: LLDPE

DATE TESTED: 19-Sept-00 TRI LOG #: E2144-80-01

ASTM D 4437/413/3083 NSF Modified ANALYST: AR
REVIEW: JAN
REPORT DATE: 19-Sept-00

							DS-06												DS-05						NUMBER	SAMPLE		
MEAN		ה ס	4B	3B	2B	1B	MEAN:	5A	4A	3A	2A	1A	MEAN	5B	4B	3B	2B	â	MEAN:	5A	4A	3A	2A	1A	NUMBER	SPECIMEN		
126	120	1 2 2 8	131	124	126	119	125	123	127	123	125	125	141	143	143	139	142	140	144	146	147	143	142	142		TENSION		
	2	1	- 10	<del>1</del> 0	<b>^10</b>	<10		<10	<b>^10</b>	<b>^10</b>	<b>^10</b>	<10		<10	<b>^10</b>	<b>1</b> 0	<u>-10</u>	<b>^10</b>							(%)	ᅙ	PEEL	
	S.	Ç T	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	æ	SE	SE	FAILURE	유	Locus	PEEL EVALUATIO
	7 0	n D	FTB	FTB	FTB	FTB		F <b>T</b> B	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB		ı					MODE			
MEAN:										•		NA	MEAN:					_	<u> </u>		_			ŇA	(lb/in)	SPEC.	PROJECT	
118				120		120		118		118		117	126			121		124		129		125		129	(lb/in)	TENSION	MOMIXAM	
				> 50		> 50		> 50		> 50		> 50				> 50		> 50		> 50	_	> 50		> 50	(%)	@ BREAK	ELONGATION	SHEAR EVALUATION
				FΤB		FTB		FTB		FTB		FTB				FTB		FTB		FTB		FTB		FTB	MODE	FAILURE	NSF 54	UATION
												NA A												NA	(lb/in)	SPEC.	PROJECT	

#### NA: Not Available

to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

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# **GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS** QUALITY ASSURANCE TESTING

CLIENT: GZA GEOENVIRONMENTAL (NY)

DATE REC'D: 19-Sept-00

CONTACT: JOHN DANZER OR BART KLETTKE PROJECT: McKENNA LANDFILL - ALBION, NY

**SEAM TYPE: HEAT FUSION WELD** MATERIAL: LLDPE

TRI LOG #: E2144-80-01 DATE TESTED: 19-Sept-00

**ASTM D 4437/413/3083 NSF Modified** ANALYST: AR

REVIEW: ジャン REPORT DATE: 19-Sept-00

				PEEL EVALUATION	7			SHEAR EVALUATION	UATION	-
		MAXIMUM	PEEL	FOCUS	NSF 54	PROJECT	MAXIMUM	ELONGATION	NSF 54	PROJECT
SAMPLE	SPECIMEN	TENSION	INCURSION	P	FAILURE	SPEC.	TENSION	@ BREAK	FAILURE	SPEC.
NUMBER	NUMBER	(lb/in)	(%)	FAILURE	MODE	(lb/in)	(lb/in)	(%)	MODE	(lb/in)
	1A	139	×10	SE	FTB	Ϋ́	128	> 50	FTB	ΑN
	2 <u>A</u>	141	£10	C(s)	£78			•		
	3A	141	×10	SE	FTB		127	^ 20	FTB	
	4 4	140	×10	SE	FTB					
	2A	137	×10	SE	FTB		124	> 20	FTB	
DS 0.7	MEAN	33.				· 			-	-,
	18	143	<10	SE	FTB		127	> 20	FT8	
	2B	140	×10	SE	FTB					
	38	141	×10	SE	FTB		123	> 20	FTB	
	4B	143	×10	SE	FTB					
	2B	140	×10	SE	FTB					
	MEAN	141				MEAN:	126			

#### NA: Not Available



PROJECT: McKENNA LANDFILL - ALBION, NY CLIENT: GZA GEOENVIRONMENTAL (NY)

DATE REC'D: 20-Sept-00 CONTACT: JOHN DANZER OR BART KLETTKE DATE TESTED: 20-Sept-00

**SEAM TYPE: SINGLE EXTRUSION WELD** MATERIAL: LLDPE TRI LOG #: E2144-81-04

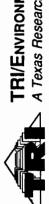
ANALYST: MDG
REVIEW: AN
REPORT DATE: 20-Sept-00

ASTM D 4437/413/3083 NSF Modified

_												
			DS-08						NUMBER	SAMPLE		
			MEAN:	5	4	ω	2	`	NUMBER	SPECIMEN		
	-		116	.108	114	107	119	132	(lb/in)	TENSION	MAXIMUM	
				40	<10	40	<b>~10</b>	<b>~10</b>	(%)	INCURSION	PEEL	
				SE	SE	SE	SE	SE	FAILURE	유	Locus	PEEL EVALUATION
				FTB	FTB	FTB	FTB	FTB	MODE	FAILURE	NSF 54	Ž
MEAN:				<u> </u>				N N	(lb/in)	SPEC.	PROJECT	
145	145	146		144		146		145	(lb/in)	TENSION	MAXIMUM	
	> 50	> 50		> 50		> 50		> 50	(%)	@ BREAK	ELONGATION	SHEAR EVALUATION
	FTB	FTB		FTB		FTB		FTB	MODE	FAILURE	NSF 54	.UATION
								NA	(lb/in)	SPEC.	PROJECT	

#### NA: Not Available

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## **GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS** QUALITY ASSURANCE TESTING

CONTACT: JOHN DANZER OR BART KLETTKE PROJECT: McKENNA LANDFILL - ALBION, NY CLIENT: GZA GEOENVIRONMENTAL (NY)

DATE REC'D: 20-Sept-00

**SEAM TYPE: HEAT FUSION WELD** TRI LOG #: E2144-81-04 MATERIAL: LLDPE

DATE TESTED: 20-Sept-00

**ASTM D 4437/413/3083 NSF Modified** REPORT DATE: 20-Sept-00 REVIEW: JAN ANALYST: MDG

																					_						
	PROJECT	SPEC.	(lp/in)	¥												Ą											
UATION	NSF 54	FAILURE	MODE	FTB		FTB		FTB		FTB		FTB				FTB		FTB		FTB		FTB		FTB			
SHEAR EVALUATION	ELONGATION	@ BREAK	(%)	> 50	·	> 50		> 50		> 20		> 20				> 50		> 20		> 50		> 20		> 20			
	MAXIMUM	TENSION	(lb/in)	135		130		128	<b>-</b> ,	115		122			126	144		139		147		136		140			141
	PROJECT	SPEC.	(lb/in)	¥											MEAN:	¥				_							MEAN:
2	NSF 54	FAILURE	MODE	FTB	FTB	FTB	FTB	FTB	:	FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB	
PEEL EVALUATION	SOOOT	Ŗ	FAILURE	SE	T,	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	S	SE	SE	SE	
	PEEL	INCURSION	(%)	<10	\$10	۲10	410	<10		<10	د10 د	×10	<10	۲۰ د		<10	<10	×10	<b>د10</b>	<10		<10	×10	× 10	×10	<10	
	MAXIMUM	TENSION	(lþ/in)	128	128	126	124	127	127	128	125	129	128	132	128	137	136	135	140	138	137	139	140	138	142	140	140
	,	SPECIMEN	NUMBER	14	7. 7.	æ	4 <b>4</b>	5A	MEANI	18	28	38	48	28	MEAN	1A	8	3A	<b>4</b>	2A	MEAN:	18	2B	38	4B	5B	MEAN
		SAMPLE	NUMBER						90-SO												DS-10						

#### NA: Not Available



DATE REC'D: 20-Sept-00 CONTACT: JOHN DANZER OR BART KLETTKE CLIENT: GZA GEOENVIRONMENTAL (NY)
PROJECT: McKENNA LANDFILL - ALBION, NY

DATE TESTED: 20-Sept-00 MATERIAL: LLDPE SEAM TYPE: HEAT FUSION WELD TRI LOG #: E2144-81-04

> ASTM D 4437/413/3083 NSF Modified ANALYST: MDG

REPORT DATE: 20-Sept-00 REVIEW: AND

						DS-12												DS-11						NUMBER	SAMPLE		
MEAN	5B	4B	3B	28	B	MEAN:	5A	4A	3A	2A	1A	MEAN	5B	4B	3B	28	īB	MEAN:	5A	4A	3A	2A	1A	NUMBER	SPECIMEN		
129	127	128	127	134	129	138	129	141	139	140	140	135	133	134	135	136	136	135	134	135	134	137	134	i .			
	<10	<b>^10</b>	<b>1</b> 0	<b>^10</b>	<10		<10	<b>^10</b>	<b>~10</b>	<b>^10</b>	<b>~10</b>		<b>~10</b>	<10	<10	40	<10		<del>1</del> 0	<b>1</b> 0	<b>^10</b>	<b>^10</b>	<10	(%)	INCURSION	PEEL	
	SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	SE	SE	FAILURE	유	Locus	PEEL EVALUATION
	FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB	MODE		NSF 54	2
MEAN:						<b>L</b>					N A	MEAN:											Š	(lb/in)	SPEC.	PROJECT	
136		_	134		131		138		138		139	136			134		131		138		138		139	(lb/in)	TENSION	MAXIMUM	
			> 50		> 50		> 50		> 50		> 50				> 50		> 50		> 50		> 50		> 50	(%)	@ BREAK	ELONGATION NSF	SHEAR EVAL
			FTB		ET8		FTB		FTB		FTB				FTB		FTB		FTB		FTB		FTB	MODE	FAILURE	NSF 54	UATION
											NA			-				_					N A	(lb/in)	SPEC.	PROJECT	

#### NA: Not Available



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## **GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS** QUALITY ASSURANCE TESTING

CLIENT: GZA GEOENVIRONMENTAL (NY) PROJECT: MCKENNA LANDFILL - AL CONTACT: JOHN DANZER OR BART

DATE REC'D: 20-Sept-00

MATERIAL: LLDPE

**ASTM D 4437/413/3083 NSF Modified** REVIEW: AND REPORT DATE: 20-Sept-00 ANALYST: MDG

SEAM TYPE: HEAT FUSION WELD	TRI LOG #: E2144-81-04	DATE TESTED: 20-Sept-00
LBION, NY	T KLETTKE	

_			_			_	_	_					_		_	_											
	PROJECT	SPEC.	(lb/in)	ΑN												¥											
UATION	NSF 54	FAILURE	MODE	FTB		FTB		FTB		FTB		FTB				FTB		FTB		FTB		FTB		FTB			
SHEAR EVALUATION	ELONGATION	@ BREAK	(%)	> 20		> 50		> 50		> 50		> 50				> 50		> 50		> 50		> 50		> 50			
	MAXIMUM	TENSION	(lp/in)	135		124		136	·.—	128		130			131	142		139		133		140		137			138
	PROJECT	SPEC.	(lb/in)	NA											MEAN:	Ą											MEAN:
	NSF 54	FAILURE	MODE	FTB	F15	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB		FTB	FT8	FT8	FT8	FTB	
PEEL EVALUATION	rocus	R	FAILURE	SE	3E	S	S	SE		SE	SE	S	SE	SE		SE	SE	S	SE	SE		SE	SE	SE	SE	SE	
	PEEL	INCURSION	(%)	<10	<16	×10	×10	<10		<10	<10	۲10 د10	×10	c10		<10	×10	×10	×10	<10		<10	×10	<10	×10	<10	
	MAXIMUM	TENSION	(lb/in)	120	137	125	134	132	130	137	136	133	135	133	135	127	127	121	127	121	125	141	142	138	140	139	140
		SPECIMEN	NUMBER	1A	2k	3A	4 <b>A</b>	5A	WEAN.	18	28	38	4B	5B	MEAN	14	\$	ЗĄ	4	5A	MEAN:	18	28	38	4B	5B	MEAN
		SAMPLE	NUMBER						13-15												DS-14						

#### NA: Not Available



# QUALITY ASSURANCE TESTING GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GZA GEOENVIRONMENTAL (NY)
PROJECT: McKENNA LANDFILL - ALBION, NY
CONTACT: JOHN DANZER OR BART KLETTKE
DATE REC'D: 20-Sept-00

MATERIAL: LLDPE SEAM TYPE: HEAT FUSION WELD TRI LOG #: E2144-81-04

DATE TESTED: 20-Sept-00

ASTM D 4437/413/3083 NSF Modified ANALYST: MDG/

REVIEW: AAJ
REPORT DATE: 20-Sept-00

						DS-15						NUMBER	SAMPLE		
MEAN	5B	4B	3B	2B	1B	MEAN:	5A	44	3A	2A	1>	NUMBER	SPECIMEN		
136	136	140	133	134	137	138	136	134	141	138	141	(lb/in)	TENSION	MAXIMUM	
	<10	<b>~10</b>	<b>10</b>	<10	<10		<b>10</b>	<b>^10</b>	<b>^10</b>	<b>10</b>	<b>10</b>	(%)	INCURSION	PEEL	
	SE	SE	SE	SE	SE		SE	SE	SE	SE	SE	FAILURE	유	Locus	PEEL EVALUATION
	FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB	MODE	FAILURE	NSF 54	
MEAN:											Š	(lb/in)	SPEC.	PROJECT	
147			146		149		147		146		145	(lb/in)	TENSION	MAXIMUM	
			> 50		> 50		> 50		> 50		> 50	(%)	@ BREAK	ELONGATION	SHEAR EVALUATION
			FTB		FTB		FTB		FTB		FTB	MODE	FAILURE	NSF 54	LUATION
											AN	(lb/in)	SPEC.	PROJECT	

#### NA: Not Available

to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI. The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply



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## **GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS** QUALITY ASSURANCE TESTING

CLIENT: GZA GEOENVIRONMENTAL (NY) PROJECT: MCKENNA LANDFILI - AI RIOM MY

MATERIAL: LLDPE

**ASTM D 4437/413/3083 NSF Modified** 

TE REC'D	DATE REC'D: 22-Sept-00									
				PEEL EVALUATION	2			SHEAR EVALUATION	LUATION	
		MAXIMUM	PEEL	SUCOL	NSF 54	PROJECT	MAXIMUM	ELONGATION	NSF 54	PROJECT
SAMPLE	SPECIMEN	TENSION	INCURSION	PO	FAILURE	SPEC.	TENSION	@ BREAK	FAILURE	SPEC.
NUMBER	NUMBER	(Ib/in)	(%)	FAILURE	MODE	(lb/in)	(lp/in)	(%)	MODE	(Ib/in)
	14	139	<10	SE	FTB	ΑN	153	> 50	FTB	Ϋ́
	24	137	×10	ПŞ	FTB					
	34	133	<10	SE	FTB		152	> 20	FTB	
	4 4	135	<10	SE	FTB					
	2A	134	<10	SE	FTB		150	> 20	FTB	
DE 18	MEANI	136								
	9	137	<10	SE	FTB		150	> 20	FTB	
	2B	138	<10	SE	FTB					
	38	136	<10	SE	FTB		150	> 20	FTB	
	48	134	<b>~10</b>	SE	FTB					
	2B	135	<10	SE	FTB					
	MEAN	136				MEAN:	151			
	1A	132	<10	SE	FTB	Ą	144	> 50	FTB	Ą Z
	2A	128	<10	SE	FTB					
	3A	134	<b>~10</b>	SE	FTB		140	> 20	FTB	
	<b>4</b> A	126	<10	SE	FTB					
	5A	129	<10	SE	FTB		140	> 20	FTB	
DS-17	MEAN:	130								
	18	133	<10	SE	FTB		137	> 20	FTB	
	2B	132	<10	SE	FTB					
	38	133	<10	SE	FTB		137	> 20	FTB	
	48	130	<b>~10</b>	SE	FTB					
	5B	133	<10	SE	FTB					
	MEAN	132				MEAN:	140			

#### NA: Not Available

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9063 Bee Caves Road · Austin, Texas 78733



DATE REC'D: 22-Sept-00 CONTACT: JOHN DANZER OR BART KLETTKE PROJECT: McKENNA LANDFILL - ALBION, NY CLIENT: GZA GEOENVIRONMENTAL (NY)

> **SEAM TYPE: HEAT FUSION WELD** MATERIAL: LLDPE TRI LOG #: E2144-83-02

DATE TESTED: 22-Sept-00

ASTM D 4437/413/3083 NSF Modified ANALYST: EMB

REVIEW: S&A

						DS-18						NUMBER	SAMPLE		
MEAN	5B	4B	3B	2B	1B	MEAN:	5A	4A	3A	2A	12	NUMBER	SPECIMEN		
133	135	135	134	130	131	135	136	133	134	134	136	(lb/in)	TENSION	MAXIMUM	
	<10 ·	<b>^10</b>	<10	<10	<10		<b>~10</b>	<10	<10	<10	<10	(%)	INCURSION	PEEL	
	SE	SE	SE	SE	SE		æ	æ	SE	SE	æ	FAILURE	유	Locus	PEEL EVALUATION
	FTB	BT3	FTB	ETB	FTB		FTB	FTB	FTB	FTB	FTB	MODE	FAILURE	NSF 54	2
MEAN:						<b>I</b>	<b>!</b>				Š	(lb/in)	SPEC.	PROJECT	
140			140		139		138		143		142	(lb/in)	TENSION	MAXIMUM	
			> 50		> 50		> 50		> 50		> 50	(%)	@ BREAK	ELONGATION	SHEAR EVALUATION
			FTB		FTB		FTB		FTB		FTB	MODE	FAILURE	NSF 54	UATION
											NA A	(lb/in)	SPEC.	PROJECT	

#### NA: Not Available

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## **GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS QUALITY ASSURANCE TESTING**

PROJECT: MCKENNA LANDFILL - ALBION, NY CONTACT: JOHN DANZER OR BART KLETTKE CLIENT: GZA GEOENVIRONMENTAL (NY) DATE REC'D: 25-Sept-00

MATERIAL: LLDPE

**SEAM TYPE: HEAT FUSION WELD** TRI LOG #: E2144-85-02 DATE TESTED: 25-Sept-00

**ASTM D 4437/413/3083 NSF Modified** REPORT DATE: 25-Sept-00 REVIEW: 5/24 ANALYST: EMB

_													_			_		_			_						
	PROJECT	SPEC.	(lb/in)	Ą					,-							ĄZ											
UATION	NSF 54	FAILURE	MODE	FTB		FTB		FTB		FTB		FTB				FTB		FTB		FTB		FTB		FTB			
SHEAR EVALUATION	ELONGATION	@ BREAK	(%)	> 20		> 20		> 50	—, <del>-</del>	> 50		> 50				> 50		> 50		> 50		> 50		> 50			
	MAXIMUM	TENSION	(lþ/in)	150		144		146	<del>-</del>	147		146			147	139		136		135		134		137			136
	PROJECT	SPEC.	(lb/in)	¥											MEAN:	Ą											MEAN:
2	NSF 54	FAILURE	MODE	FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB	
PEEL EVALUATION	FOCUS	R	FAILURE	SE	S T	SS	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	SE	SE	
	PEEL	INCURSION	(%)	<10		410	<10	<10		<10	<10	<10	<10	<10		<10	×10	۲0	۲0	<10		د10 د	<10	۲10 د10	۲0	<10	
	MAXIMUM	TENSION	(lb/in)	132	136	137	132	141	136	132	131	132	130	137	132	132	129	130	132	129	130	132	126	130	125	128	128
		SPECIMEN	NUMBER	1 <b>A</b>		3A	44 4	2A	MEAN:	18	28	38	4B	5B	MEAN	14	2 <b>A</b>	3A	44 4	5A	MEAN:	18	2B	38	48	5B	MEAN
		SAMPLE	NUMBER		~				DS-19								•				DS-20					•	

#### NA: Not Available

to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

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DATE REC'D: 28-Sept-00 CONTACT: JOHN DANZER OR BART KLETTKE PROJECT: MCKENNA LANDFILL - ALBION, NY CLIENT: GZA GEOENVIRONMENTAL (NY)

> SEAM TYPE: HEAT FUSION WELD MATERIAL: LLDPE TRI LOG #: E2144-88-09

DATE TESTED: 28-Sept-00

ASTM D 4437/413/3083 NSF Modified ANALYST: AR
REVIEW: 5,24

REPORT DATE: 28-Sept-00

- 1			143	MEAN:				132	MEAN	
					F1B	SE	<10	133	5B	
					FΤB	SE	10	135	4B	
~	FTB	> 50	141		FTB	SE	<b>1</b> 0	128	38	
					FTB	SH	10	129	2B	
	<b>B</b> 14	> 50	143		E.L.B	SE	<b>&lt;</b> 10	134	B	
								135	MEAN:	DS-22
	ET8	<b>&gt;</b> 50	144		FTB	SE	<b>^10</b>	132	\$	
					FTB	æ	10	138	À	
	FTB	> 50	142		FTB	£	3	132	3 A	
					FTB	SE.	<b>^10</b>	136	24	
	FTB	<b>&gt;</b> 50	147	Š	FTB	SE	10	136	\$	
1			153	MEAN:				136	MEAN	
					FTB	SE	40	136	58	
					FTB	SE.	<b>^</b> 10	137	<b>6</b>	
	F <b>78</b>	> 50	153		FTB	SE	<b>^10</b>	136	#	
			* I sur Ash		FTB	æ	<b>^10</b>	136	28	
	FT8	> 50	155		B13	æ	<b>^10</b>	137	æ	
				<b>I</b>				136	MEAN:	DS-21
	FTB	> 50	150		FTB	SE	<10	138	5A	
					FT8	æ	10	133	Ā	
	FTB	> 50	155		FT8	æ	<b>^10</b>	138	3A	
					FT8	SE	<b>^1</b> 0	135	24	
	FT8	> 50	153	Š	FTB	SE	<b>^1</b> 0	137	1A	
	MODE	(%)	(lb/in)	(lb/in)	MODE	FAILURE	(%)	(lb/in)	NUMBER	NUMBER
	FAILURE	@ BREAK	TENSION	SPEC.		웃		TENSION	SPECIMEN	SAMPLE
	NSF 54	ELONGATION	MAXIMUM	PROJECT	NSF 54	Locus	PEEL	MAXIMUM		
1	UATION	SHEAR EVALUATION			ı	EEL EVALUATION				
1										

#### NA: Not Available

to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply TRI observes and maintains cient confidentialty. TRI limits reproduction of this report, except in full, without prior approval of TRI.

9063 Bee Caves Road • Austin, Texas 7873: \$201 • (512)263-2101 • FAX (512)263-2558

### QUALITY ASSURANCE TESTING GEONEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GZA GEOENVIRONMENTAL (NY)
PROJECT: MCKENNA LANDFILL - ALBION, NY
CONTACT: JOHN DANZER OR BART KLETTKE

DATE REC'D: 28-Sept-00

MATERIAL: LLDPE SEAM TYPE: HEAT FUSION WELD TRI LOG #: E2144-88-09 DATE TESTED: 28-Sept-00

ASTM D 4437/413/3083 NSF Modified ANALYST: AR REVIEW: STEA REPORT DATE: 28-Sept-00

MAXIMUM PEEL LOCUS NSF 54 PROJECT N TENSION INCURSION OF FAILURE SPEC.   141    410    410    85				•	PEEL EVALUATION	2			SHEAR EVALUATION	LUATION	
NUMBER   TENSION INCURSION OF FAILURE SPEC.   NUMBER   (Ib/in)   (%)   FAILURE   MODE   (Ib/in)   (%)   FAILURE   MODE   (Ib/in)   (%)   FAILURE   MODE   (Ib/in)   (%)   FAILURE   MODE   (Ib/in)   (%)   FAILURE   MODE   (Ib/in)   (%)   FAILURE   MODE   (Ib/in)   (%)   FAILURE   MODE   (Ib/in)   (%)   FAILURE   MODE   (Ib/in)   (%)   FAILURE   (Ib/in)   (AILURE   AILURE   AILURE   (AILURE   AILURE   AILURE   (AILURE   AILURE   AILURE   (AILURE   AILURE   AILURE   (AILURE   AILURE   AILURE   (AILURE   AILURE   AILURE   (AILURE   AILURE   AILURE   (AILURE   AILURE   AILURE   (AILURE   AILURE   AILURE   (AILURE   AILURE   AILURE   (AILURE   AILURE   AILURE   (AILURE   AILURE   AILURE   (AILURE   AILURE   AILURE   AILURE   (AILURE   AILURE   AILURE   AILURE   (AILURE   AILURE   AILURE   AILURE   (AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE   AILURE			MAXIMUM	PEEL	SOCOT	NSF 54	PROJECT	MAXIMUM	ELONGATION	NSF 54	PROJECT
NUMBER   (Ib/in)   (%)   FAILURE   MODE   (Ib/in)     14	SAMPLE	SPECIMEN	TENSION	INCURSION	٥ م	FAILURE	SPEC.	TENSION	@ BREAK	FAILURE	SPEC.
14	NUMBER	NUMBER	(lb/jn)	( <b>%</b> )	FAILURE	MODE	(lb/jin)	(lbfin)	(%)	MODE	(lb/in)
2A 143 <10 SE FTB  4A 140 <10 SE FTB  4A 144 <10 SE FTB  4A 144 <10 SE FTB  B 140 <10 SE FTB  B 140 <10 SE FTB  5B 146 <10 SE FTB  5B 146 <10 SE FTB  MEAN:  1A 138 <10 SE FTB  MEAN:  4A 141 <10 SE FTB  AA 145 <10 SE FTB  AB 135 <10 SE FTB  AB 131 <10 SE FTB  AB 132 <10 SE FTB  TB 131 <10 SE FTB  TB 131 <10 SE FTB  TB 131 <10 SE FTB  TB 131 <10 SE FTB  TB 132 <10 SE FTB  TB 133 <10 SE FTB  TB 134 <10 SE FTB  TB 135 <10 SE FTB  TB 136 <10 SE FTB  TB 137 <10 SE FTB  TB 138 <10 SE FTB  TB 138 <10 SE FTB  TB 138 <10 SE FTB  TB 138 <10 SE FTB  TB 138 <10 SE FTB  TB 138 <10 SE FTB  TB 138 <10 SE FTB		14	141	£10	SE	813	4VA	153	} ଫુ\$≮	在近	4/4
3A         140         <10         SE         FTB           4A         144         <10		\$	143	<b>~10</b>	SE	FTB					
4A         144         <10         SE         FTB           MEAN:         140         <10         SE         FTB           1B         140         <10		34	140	410	S	FTB		152	<b>2</b> 00 <b>^</b>	FTB	
SA         140         <10         SE         FTB           1B         140         <10		44	144	×10	S	FTB					
MEAN:         142         C10         SE         FTB           2B         145         <10		5A	140	<b>c10</b>	T.	FTR		151	\$ 5	arr.	<u> </u>
1B     140     <10     SE     FTB       2B     145     <10	DS-23	MEAN:	142								
2B 145 <10 SE FTB  4B 146 <10 SE FTB  4B 146 <10 SE FTB  6B 140 <10 SE FTB  7A 141 <10 SE FTB  7A 141 <10 SE FTB  7A 141 <10 SE FTB  7A 141 <10 SE FTB  7A 141 <10 SE FTB  7A 141 <10 SE FTB  7A 141 <10 SE FTB  7A 135 <10 SE FTB  7A 136 <10 SE FTB  7A 136 <10 SE FTB  7A 136 <10 SE FTB  7A 137 <10 SE FTB  7A 138 <10 SE FTB  7A 138 <10 SE FTB  7A 138 <10 SE FTB  7A 138 <10 SE FTB  7A 138 <10 SE FTB  7A 138 <10 SE FTB  7A 138 <10 SE FTB  7A 138 <10 SE FTB  7A 138 <10 SE FTB  7A 138 <10 SE FTB  7A 138 <10 SE FTB		<b>8</b>	140	<10	SS	FTB		151	<b>20</b>	FTB	
3B         145         <10         SE         FTB           4B         146         <10         SE         FTB           5B         140         <10         SE         FTB           1A         138         <10         SE         FTB           2A         141         <10         SE         FTB           3A         135         <10         SE         FTB           6A         136         <10         SE         FTB           AA         131         <10         SE         FTB           BAN         132         <10         SE         FTB           BB         131         <10         SE         FTB           4B         132         <10         SE         FTB           6B         132         <10         SE         FTB           6B         132         <10         SE         FTB           6B         132         <10         SE         FTB           FTB         FTB         FTB		28	145	40	SE	FTB					
4B         146         <10         SE         FTB           5B         140         <10         SE         FTB           MEAN         143         <10         SE         FTB         NA           2A         141         <10		38	145	۲۰ د	SE	F78		152	> 20	FTB	
5B         140         <10         SE         FTB         MEAN:           1A         138         <10		48	146	v 10	SE	FTB		all or by	-		
MEAN         143         C10         SE         FTB         NA           2A         141         <10		28	140	410	SE	FTB		****			
1A     138     <10		MEAN	143				MEAN:	152			
2A 141 <10 SE FTB 3A 135 <10 SE FTB 4A 141 <10 SE FTB 5A 136 <10 SE FTB 5A 136 <10 SE FTB 18 131 <10 SE FTB 3B 131 <10 SE FTB 4B 132 <10 SE FTB 5B 132 <10 SE FTB 5B 132 <10 SE FTB 5B 132 <10 SE FTB 5B 132 <10 SE FTB		14	138	<10	SE	FTB	AZ Z	142	09 <	FTB	¥
3A 135 <10 SE FTB 4A 141 <10 SE FTB 5A 136 <10 SE FTB  MEAN: 138 <10 SE FTB  18 131 <10 SE FTB  2B 132 <10 SE FTB  4B 132 <10 SE FTB  5B 131 <10 SE FTB  5B 132 <10 SE FTB  5B 132 <10 SE FTB  5B 132 <10 SE FTB		82	141	×10	S	FTB					
4A         141         <10         SE         FTB           5A         136         <10         SE         FTB           MEAN:         138         <10         SE         FTB           2B         132         <10         SE         FTB           3B         131         <10         SE         FTB           4B         132         <10         SE         FTB           5B         129         <10         SE         FTB		34	135	د10	SE	FTB		141	> 50	FT8	
5A         136         <10         SE         FTB           MEAN:         138         <10         SE         FTB           2B         132         <10         SE         FTB           3B         131         <10         SE         FTB           4B         132         <10         SE         FTB           5B         129         <10         SE         FTB		₹	141	د10	SE	ET B					
MEAN:         138         <10         SE         FTB           18         132         <10		5A	135	٠ <u>٠</u>	SE	FTB		143	<b>&gt;</b> 50	FTB	
131 <10 SE FTB 132 <10 SE FTB 131 <10 SE FTB 132 <10 SE FTB 129 <10 SE FTB	DS-24	MEAN:	138			,					_
132 <10 SE FTB 131 <10 SE FTB 132 <10 SE FTB 129 <10 SE FTB		<b>æ</b>	131	<10	SE	FT 8		141	^ 20	FTB	
131 <10 SE FTB 132 <10 SE FTB 129 <10 SE FTB		29	132	c10	SE	<u>E</u>		· ·			
132 <10 SE 129 <10 SE		æ	131	<b>c</b> 10	SE	ET8		141	<b>^</b> 50	FTB	
129 <10 SE		48	132	<del>دا</del> 0	SE	<b>6</b>					
		58	129	<10	SE	FT9					
MEAN 131 MEAN: 14		MEAN	131				MEAN	142			

#### NA: Not Available

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# QUALITY ASSURANCE TESTING GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GZA GEOENVIRONMENTAL (NY)
PROJECT: McKENNA LANDFILL - ALBION, NY
CONTACT: JOHN DANZER OR BART KLETTKE
DATE REC'D: 28-Sept-00

MATERIAL: LLDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2144-88-09
DATE TESTED: 28-Sept-00

ASTM D 4437/413/3083 NSF Modified
ANALYST: AR

REPORT DATE: 28-Sept-00

MEAN	58	48	38	28	18	DS-25 MEAN		4	34	24	- \$	NUMBER NUMBER	(n		
130				128			125	126	125	126	131	-	_	MAXIMUM	
	<b>~</b>	46	<b>^10</b>	<b>^10</b>	<b>^10</b>		<b>^10</b>	10	<b>^10</b>	<b>^10</b>	<u>^</u>	(%)	INCURSION	PEEL	
	æ	SE	SE	SE	SE		SE	SE	æ	SE	SE	FAILURE	읶	Locus	
	FIB	<b>B</b>	FTB	E B	FTB		F18	F]B	FTB	F78	FT8	MODE	FAILURE	NSF 54	
MEAN:				_							×	(lb/in)	SPEC.	PROJECT	
138			139		137		138		135		143	(In/Id)	TENSION	MAXINUM	
			<b>&gt;</b> 50		<b>&gt;</b> 50		> 50		> 50		> 50	(%)	@ BREAK	ELONGATION	
			FTB		FTB		FTB		FT8		₽T8	MODE	FAILURE	NSF 54	
								_			×	(lb/in)	SPEC.	PROJECT	

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# GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS **QUALITY ASSURANCE TESTING**

PROJECT: MCKENNA LANDFILL - ALBION, NY CONTACT: JOHN DANZER OR BART KLETTKE CLIENT: GZA GEOENVIRONMENTAL (NY)

DATE REC'D: 07-Nov-00

**SEAM TYPE: HEAT FUSION WELD** TRI LOG #: E2148-29-03 MATERIAL: LLDPE

DATE TESTED: 07-Nov-00

**ASTM D 4437/413/3083 NSF Modified** ANALYST: EMB/MDG REPORT DATE: 07-Nov-00 REVIEW: 5424

			$  \  $	PEEL EVALUATION	Н	1 1		SHEAR EVALUATION	JATION	1000
_	MAXIM	S	PEEL	rocns	NSF 54	PROJECT	MAXIMUM	ELONGATION	NSF 54	PROJECT
SPECIMEN   TENSION	TENSIO	z	INCURSION	ᆼ	FAILURE	SPEC.	TENSION	@ BREAK	FAILURE	SPEC.
	(lb/in)		(%)	FAILURE	MODE	(lb/in)	(lb/in)	(%)	MODE	(lb/in)
1A 122	122	l	<10	SE	FTB	ΑΝ	122	> 20	FTB	¥
	123		<10	SE	FTB					
	125		×10	SE	FTB		124	> 20	FTB	
	125		<10	SE	FTB					
5A 126	126		~10 ~10	SE	FTB		122	> 50	FTB	
-	424	Ι.				·				
	126		<10	SE	FTB		120	> 20	FTB	
	127		<10	SE	FTB					
3B 124	124		<10	SE	FTB		124	> 20	FTB	
	122		<u>~10</u>	SE	FTB	_				
	124		<10	SE	FTB					
	125					MEAN:	122			
	115		<10	SE	FTB	¥	118	> 50	FTB	Š
2A 117	117		۲ <u>۰</u>	SE	FTB					
	116		<10	SE	FTB		118	> 20	FTB	
	129		410	SE	FTB					
	118		<10	SE	FTB		118	> 20	E B	
MEAN: 119	119									
	137		<10	SE	FTB		117	. > 50	FTB	
2B 139	139		<10	SE	FTB					
	138		410	SE	FTB		119	> 20	FTB	
	135		<b>~10</b>	SE	FTB					
5B 135	135		<10	SE	FTB	,				
MEAN 137	137					MEAN:	118			
		ı								

#### NA: Not Available

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# QUALITY ASSURANCE TESTING GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GZA GEOENVIRONMENTAL (NY)
PROJECT: McKENNA LANDFILL - ALBION, NY
CONTACT: JOHN DANZER OR BART KLETTKE
DATE REC'D: 07-Nov-00

MATERIAL: LLDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2148-29-03

DATE TESTED: 07-Nov-00

ASTM D 4437/413/3083 NSF Modified ANALYST: EMB/MDG REVIEW: 〜ドス

REPORT DATE: 07-Nov-00

						DS-29												DS-28						NUMBER	SAMPLE		
MEAN	5B	4B	3B	2B	1B	MEAN:	5A	4A	3A	2A	1A	MEAN	5B	4B	3B	2B	1B	MEAN:	5A	4A	3A	2A	1A	NUMBER	SPECIMEN		
127	125	122	130	129	129	127	127	134	122	127	124	133	124	132	154	131	125	137	132	131	162	127	133			MAXIMUM	
	<10	<b>^10</b>	<b>~10</b>	<10	<10	,	<10	<b>^10</b>	<b>~10</b>	<b>^10</b>	<10		<10	<b>^10</b>	<b>^10</b>	<b>^10</b>	<10		<10	<b>^10</b>	<b>~10</b>	<10	<10	(%)	INCURSION	PEEL .	
	SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	SE	SE	FAILURE	유	Locus	PEEL EVALUATION
	FTB	FΤB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB		FTΒ	FTB	FTB	FTB	FTB		FTB	FTB	FΤΒ	FTB	FTB	MODE	FAILURE	NSF 54	-
MEAN:											NA	MEAN:											A	(lb/in)	SPEC.	PROJECT	
114			113		116		113		115		112	119			120		122		117		117		121	(lb/in)	TENSION	MAXIMUM	
			> 50		> 50		> 50		> 50		> 50				> 50		> 50		> 50		> 50		> 50	(%)	@ BREAK	ELONGATION	SHEAR EVALUATION
			FΤB		FΤB		FTB		FΤB		FTB				FTB		FTΒ		FTB		FTB		FΤB	MODE	FAILURE	NSF 54	UATION
						_					NA												×	(lb/in)	SPEC.	PROJECT	

NA: Not Available

to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



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## GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS **QUALITY ASSURANCE TESTING**

**CONTACT: JOHN DANZER OR BART KLETTKE** PROJECT: MCKENNA LANDFILL - ALBION, NY CLIENT: GZA GEOENVIRONMENTAL (NY) DATE REC'D: 07-Nov-00

MATERIAL: LLDPE SEAM TYPE: HEAT FUSION WELD

TRI LOG #: E2148-29-03

DATE TESTED: 07-Nov-00

**ASTM D 4437/413/3083 NSF Modified** ANALYST: EMB/MDG REPORT DATE: 07-Nov-00 REVIEW: SR24

TENSION INCURSION (136 < 10   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136   136		יייייייייייייייייייייייייייייייייייייי	T.		TI OLIO TEON	JATION	1
(%) C	Locus	NSF 54 FAILIRE	PROJECT	MAXIMUM	ELONGATION © RRFAK	NSF 54	PROJECT
	FAILURE	MODE	(lb/in)	(lb/in)	;; (%) (%)	MODE	(lb/in)
_	SE	FTB	Ϋ́	125	> 20	FTB	¥
	SE	FTB	_	_	_		_
	SE	FTB		125	> 20	FTB	
	SE	FTB					
	SE	FTB		125	> 20	FTB	
	SE	FTB		126	> 20	FTB	
	SE	FTB					
	SE	FTB		125	> 50	FTB	
	SE	FTB					
3 <10	SE	FTB					
			MEAN:	125			
	SE	FTB	¥	122	> 50	FTB	Ą
<10	SE	FTB					
	SE	FTB		123	> 50	FTB	
	SE	FTB					
	SE	FTB		123	> 50	FTB	
	SE	FTB		123	> 50	FTB	
	SE	FTB					
<10	SE	FTB		123	> 50	FTB	
	SE	FTB					
	SE	FTB					
133			MEAN:	123			

#### NA: Not Available

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DATE REC'D: 07-Nov-00 **CONTACT: JOHN DANZER OR BART KLETTKE** CLIENT: GZA GEOENVIRONMENTAL (NY)
PROJECT: McKENNA LANDFILL - ALBION, NY

> MATERIAL: LLDPE SEAM TYPE: HEAT FUSION WELD TRI LOG #: E2148-29-03

DATE TESTED: 07-Nov-00

**ASTM D 4437/413/3083 NSF Modified** ANALYST: EMB/MDG
REVIEW: 5024

**REPORT DATE: 07-Nov-00** 

						DS-33												DS-32						NUMBER	SAMPLE		
MEAN	5B	4B	3B	2B	1B	MEAN:	5A	4A	3A	2A	1A	MEAN	5B	4B	3B	2B	1B	MEAN:	5A	4A	3A	2A	1A	NUMBER	SPECIMEN		
120	119	121	124	113	124	123	122	126	123	125	117	129	131	129	128	129	129	131	128	132	133	132	128	(lb/in)	TENSION	MAXIMUM	
	<10	<10	<10	<10	<10		<10	<b>^10</b>	<10	<10	<10		<10	<b>~10</b>	<b>~10</b>	40	<10		<10	<10	<b>~10</b>	<10	<10	(%)	INCURSION	PEEL	
	SE	SE	SE	SE	ЭS		SE	SE	SE	SE	SE		SE	SE	SE	SE	3S		SE	SE	SE	SE	SE	FAILURE	유	Locus	PEEL EVALUATION
	FTB	FΤB	FTB	FTB	BTF		FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	BTF		FTB	FTB	FTB	FTB	ETB	MODE	FAILURE	NSF 54	
MEAN:											NA A	MEAN:											NA A	(lb/in)	SPEC.	PROJECT	
114			112		114		118		113		115	117			117		116		116		118		118	(lb/in)	TENSION	MAXIMUM	
			> 50		> 50		> 50		> 50		> 50				> 50		> 50		> 50		> 50		> 50	(%)	@ BREAK	ELONGATION	SHEAR EVALUATION
			FTB		BI3		FTB		FTB		FTB				FTB		FTB		FTB		FTB		ВТЭ	MODE	FAILURE	NSF 54	UATION
											NA												NA	(lb/in)	SPEC.	PROJECT	

#### NA: Not Available

to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI. The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply



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# QUALITY ASSURANCE TESTING GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

PROJECT: MCKENNA CONTACT: JOHN DAN DATE REC'D: 09-Nov-00	CLIENT: GZA GEDENVIKONMENTAL (NT) PROJECT: McKENNA LANDFILL - ALBION, NY CONTACT: JOHN DANZER OR BART KLETTKE ATE REC'D: 09-Nov-00	CLIENT: GZA GEOENVIRONMENTAL (NY) ROJECT: MCKENNA LANDFILL - ALBION, N NTACT: JOHN DANZER OR BART KLETT E REC'D: 09-Nov-00		MATERIAL: LLDPE SEAM TYPE: HEAT FUS TRI LOG #: E2148-314 DATE TESTED: 09-Nov-00	MATERIAL: LLDPE SEAM TYPE: HEAT FUSION WELD TRI LOG #: E2148-31-03 \TE TESTED: 09-Nov-00	WELD		ASTM D 4437/413/3083 NSF Modified ANALYST: MDG REVIEW: 〜スマ4 REPORT DATE: 09-Nov-00	%3083 NSF Mo MDG ► KZ4 09-Nov-00	diffed
				BEEL EVALUATION	2			NOLEVII IEVAI IEVAI	NO FY	
		MAXIMUM	PEEL	LOCUS	NSF 54	PROJECT	MAXIMUM	ELONGATION	NSF 54	PROJECT
SAMPLE	SPECIMEN	TENSION	INCURSION	P	FAILURE	SPEC.	TENSION	@ BREAK	FAILURE	SPEC.
NUMBER	NUMBER	(lb/in)	(%)	FAILURE	MODE	(Ib/in)	(lb/in)	(%)	MODE	(Ib/in)
	14	129	<10	SE	FTB	Ϋ́	138	> 50	FTB	ΑN
	2A.	135	×10	SE	FTB					
		135		S	FTB	<b>.</b>		> 20	FTB	
	4 4	135	<b>~10</b>	SE	FTB					
	2A	132	<10	SE	FTB		138	> 20	FTB	
DS-34	MEAN:	133						•		
	18	128	×10	SE	FTB		134	> 20	EE.	
	28	129	<10	S	FTB					
	3B	132	<10	SE	FTB		136	> 20	FTB	
	4B	126	<10	SE	FTB					
	5B	125	<10	SE	FTB					
	MEAN	128				MEAN:	138			
	1A	126	<10	SE	FTB	Ϋ́	129	> 50	FTB	¥
	₹	130	×10	SE	FTB					
	3 <b>X</b>	126	<10	SE	FTB		122	> 50	FTB	
	4 4	124	×10	S	FTB					
	2 <b>A</b>	128	c10	S	FTB		125	> 50	FTB	
DS-35	MEAN:	127								
	18	122	c10	SE	FTB		125	> 50	FTB	
	2B	127	<10	SE	FTB					
	38	122	<10	SE	FTB		125	> 20	ETB	
	4B	125	<10	SE	FTB					
	5B	125	<10	SE	FTB					
	MEAN	124	-			MEAN:	125			

#### NA: Not Available



DATE REC'D: 09-Nov-00 CONTACT: JOHN DANZER OR BART KLETTKE CLIENT: GZA GEOENVIRONMENTAL (NY)
PROJECT: McKENNA LANDFILL - ALBION, NY

DATE TESTED: 09-Nov-00 SEAM TYPE: HEAT FUSION WELD TRI LOG #: E2148-31-03 MATERIAL: LLDPE

> **ASTM D 4437/413/3083 NSF Modified** ANALYST: MDG REVIEW: SKA

**REPORT DATE: 09-Nov-00** 

						DS-37												DS-36						NUMBER	SAMPLE		
MEAN	5B	4B	3B	2B	1B	MEAN:	5A	4A	3A	2A	1A	MEAN	5B	4B	3B	28	1B	MEAN:	5A	4A	3A	2A	1A	NUMBER	SPECIMEN		
130	129	128	128	132	131	133	132	134	129	134	134	123	123	124	119	117	133	126	121	130	126	129	125		TENSION		
	<10	<10	<10	<b>~10</b>	<10		<10	· <10	<10	<10	<10		<10	<10	<b>^10</b>	40	<10		<10	<10	<b>~10</b>	<b>~10</b>	<10	(%)	INCURSION	PEEL	
	SE	SE	SE	SE	ЭS		SE	SE	SE	SE	BS		SE	SE	SE	SE	ЭS		SE	SE	SE	SE	SE	FAILURE	유	LOCUS	PEEL EVALUATION
	FTB	FΙΒ	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	BTA		FTB	FTB	FIB	FIB.	BTA	MODE	FAILURE		
MEAN:											AN	MEAN:					•						NA A	(lb/in)	SPEC.	PROJECT	
142			142		142		141		141		145	138			143		135		138		135		138	(lb/in)	TENSION	MAXIMUM	
			> 50		> 50		> 50		> 50		> 50				> 50		> 50		> 50		> 50		> 50	(%)	@ BREAK	ELONGATION	SHEAR EVALUATION
			FTB		FTB		FTB		FTB		FTB				FTB		FTB		FTB		FTB		FTB	MODE	FAILURE	NSF 54	JATION
											NA												NA	(lb/in)	SPEC.	PROJECT	

#### NA: Not Available



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# **GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS QUALITY ASSURANCE TESTING**

CLIENT: GZA GEOENVIRONMENTAL (NY)

MATERIAL . LI DPF

ASTM D 4437/413/3083 NSF Modified

		PROJECT	SPEC.	(lb/in)	¥			_		 						
33083 NSF Mo MDG X-R24 09-Nov-00	JATION	NSF 54	FAILURE	MODE	FTB		E B E		FTB		E		FTB			
ASIM D 443//413/3083 NSF Modified ANALYST: MDG REVIEW: S-R24 REPORT DATE: 09-Nov-00	SHEAR EVALUATION	ELONGATION	@ BREAK	(%)	> 20		> 20		> 20		> 20		> 20			
		MAXIMUM	TENSION	(lb/in)	131	_	135		132	 _; 	140		144			136
VELD		PROJECT	SPEC.	(IIp/in)	Ϋ́											MEAN:
MAIERIAL: LLDPE SEAM TYPE: HEAT FUSION WELD TRI LOG #: E2148-31-03 (TE TESTED: 09-Nov-00	Z	NSF 54	FAILURE	MODE	FTB	FTB	FTB	FTB	FTB	     	FTB	FTB	FTB	FTB	FTB	
MAIEKIAL: LLUPE SEAM TYPE: HEAT FUS TRI LOG #: E2148-31-4 DATE TESTED: 09-Nov-00	PEEL EVALUATION	SNOOT	R	FAILURE	SE	S	SE	SE	SE		SE	SE	SE	SE	SE	
		PEEL	INCURSION	(%)	<10	×10	<10	<10	<10	'	<10	<10	<10	<10	<10	
CONMENIAL DFILL - ALBI OR BART KI		MUMIXAM	TENSION	(lþ/in)	124	124	120	125	118	122	120	121	130	130	116	123
CLIEN I: GZA GEDENVIKUNMEN I AL (NT) PROJECT: MCKENNA LANDFILL - ALBION, NY CONTACT: JOHN DANZER OR BART KLETTKE ATE REC'D: 09-Nov-00		-	SPECIMEN	NUMBER	1A	5A	3A	44	5A	MEAN.	18	2B	38	4B	58	MEAN
PROJECT: MCKENNA CONTACT: JOHN DAN DATE REC'D: 09-Nov-00			SAMPLE	NUMBER						NS.38						

#### NA: Not Available



DATE REC'D: 14-Nov-00 CONTACT: JOHN DANZER OR BART KLETTKE CLIENT: GZA GEOENVIRONMENTAL (NY)
PROJECT: McKENNA LANDFILL - ALBION, NY

DATE TESTED: 14-Nov-00

SEAM TYPE: HEAT FUSION WELD TRI LOG #: E2148-34-09

MATERIAL: LLDPE

**ASTM D 4437/413/3083 NSF Modified** ANALYST: EMB/MB

**REPORT DATE: 14-Nov-00** REVIEW: 5/24

						DS-40												DS-39						NUMBER	SAMPLE		
MEAN	5B	4B	3B	2B	1B	MEAN:	5A	. 4A	3A	2A	1A	MEAN	5B	4B	3B	2B	1B	MEAN:	5A	4A	3A	2A	1A	NUMBER	SPECIMEN		
142	143	142	140	143	142	138	138	136	139	141	138	137	138	135	137	137	137	139	139	138	141	140	139	(lb/in)	TENSION	MAXIMUM	
	<10	<10	<10	<10	<10		<10	<10	<10	<b>&lt;10</b>	. <10		<10	<del>1</del> 0	<10	<10	<10		<10	<b>~10</b>	40	<b>~10</b>	<10	(%)	<b>INCURSION</b>	PEEL	
	SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	SE	SE	FAILURE	유	Locus	PEEL EVALUATION
	FTB	FTB	FTB	FTB	BIA		FTB	FTΒ	FTB	FTB	81.4		FTB	FTB	FTB	FTB	BTA		FTB	FTB	FΤB	FTB	BTF	MODE	FAILURE	NSF 54	Ш
MEAN:											NA A	MEAN:											AN	(lb/in)	SPEC.	PROJECT	
152			151		153		152		150		153	150			147		150		150		148		153	(lb/in)	TENSION	MAXIMUM	
			> 50		> 50		> 50		> 50		> 50				> 50		> 50		> 50		> 50		> 50	(%)	@ BREAK	ELONGATION	SHEAR EVALUATION
			FTB		FTB		FTB		FTB		BTA				FTB		FTB		FTB		FTB		FTB	MODE	FAILURE	NSF 54	UATION
											N A												NA	(lb/in)	SPEC.	PROJECT	

NA: Not Available

to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI. The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply



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## QUALITY ASSURANCE TESTING GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GZA GEOENVIRONMENTAL (NY)
PROJECT: McKENNA LANDFILL - ALBION, NY
CONTACT: JOHN DANZER OR BART KLETTKE

DATE REC'D: 14-Nov-00

MATERIAL: LLDPE SEAM TYPE: HEAT FUSION WELD TRI LOG #: E2148-34-09 DATE TESTED: 14-Nov-00

ASTM D 4437/413/3083 NSF Modified ANALYST: EMB/MB REVIEW: 5/2/4 REPORT DATE: 14-Nov-00

I WELD ANALYST
REVIEW
REPORT DATE

			<b>a</b>	PEEL EVALUATION				SHEAR EVALUATION	UATION	
		MAXIMUM	PEEL	FOCUS	NSF 54	PROJECT	MAXIMUM	ELONGATION	NSF 54	PROJECT
SAMPLE	SPECIMEN	TENSION	INCURSION	R	FAILURE	SPEC.	TENSION	@ BREAK	FAILURE	SPEC.
NUMBER	NUMBER	(lb/in)	(%)	FAILURE	MODE	(lb/in)	(lb/in)	(%)	MODE	(lþ/jn)
	1A	128	<10	SE	FTB	ΑN	133	> 50	FTB	₹
	2A	134	<10	SE	FTB					
	3A	131		SE	FTB		131	> 20	FTB	
	44	130	<10	SE	FTB					
	5A	130	<10	SE	FTB		129	> 50	FTB	
DS-41	MEAN:	131					<del></del> ,			
	9	127	- 10 -	SE	FTB		130	> 20	E B	
	2B	130	<10	SE	FTB					
	38	129	×10	SE	FTB		132	> 50	FTB	
	48	127	<10	SE	FTB					±°.
	5B	127	<10	SE	FTB					
	MEAN	128				MEAN:	131			
	1A	134	<10	SE	FTB	ΑN	138	> 50	FTB	ΑN
	<b>2</b> A	130	°10	SE	FTB					
	3A	128	70	SE	FTB		134	> 20	FTB	
	44 4	132	×10	SE	FTB					
	5A	132	<10	SE	FTB		139	> 20	FTB	
DS-42	MEAN:	131								
	18	137	<10	SE	FTB		134	> 20	FTB	
	28	137	×10	SE	FTB					
	38	137	×10	SE	FTB		138	> 20	FTB	
	48	135	×10	SE	FTB					
	5B	134	<10	SE	FTB					
	MEAN	136				MEAN:	137			

### NA: Not Available

to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



## GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS QUALITY ASSURANCE TESTING

DATE REC'D: 17-Nov-00 **CONTACT: JOHN DANZER OR BART KLETTKE** PROJECT: McKENNA LANDFILL - ALBION, NY **CLIENT: GZA GEOENVIRONMENTAL (NY)** 

> **SEAM TYPE: HEAT FUSION WELD** MATERIAL: LLDPE

DATE TESTED: 17-Nov-00 TRI LOG #: E2148-37-07

> ASTM D 4437/413/3083 NSF Modified ANALYST: EMB

**REPORT DATE: 17-Nov-00** REVIEW: JAN

_	_					_					_	_				_						_		$\overline{}$			
						DS-44							*					DS-43						NUMBER	SAMPLE		
MEAN	5B	4B	3B	28	1B	MEAN:	5A	4 A	3A	2A	14	MEAN	58	4B	3B	28	1B	MEAN:	5A	48	3A	2A	1A	NUMBER	SPECIMEN		
134	131	134	133	135	137	137	134	139	138	137	138	133	132	133	134	132	136	129	130	134	126	128	126			MAXIMUM	
	<10	<b>^10</b>	<b>^10</b>	<b>10</b>	<10		<10	<b>~10</b>	<b>^10</b>	<b>~10</b>	<10		<10	40	10	10	<10		<10	<b>~10</b>	<10	<b>~10</b>	<10	(%)	INCURSION	PEEL	
	SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	æ	SE		SE	SE	SE	SE	SE	FAILURE	유	Locus	PEEL EVALUATION
	FTB	FTB	FTB	FTB	BTF		FTB	BT4	F <b>T</b> B	FTB	FTB		FTB	FTB	FTB	FTB	BT4		FTB	FTB	FTB	ETB	FTB	MODE	FAILURE	NSF 54	ΙI
MEAN:			-								AN	MEAN:											AN	(lb/in)	SPEC.	PROJECT	
149			147		149		148		149		150	144			143		146		143		144		145	(lb/in)	TENSION	MAXIMUM	
			> 50		> 50		> 50		> 50		> 50				> 50		> 50		> 50		> 50		> 50	(%)	@ BREAK	ELONGATION	SHEAR EVALUATION
			F <b>T</b> B		FTB		FTB		FTB		B13				FTB		FTB		FTB		FTB		FTB	MODE	FAILURE	NSF 54	UATION
		_									NA												AN	(lb/in)	SPEC.	PROJECT	

### NA: Not Available

to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



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## **GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS QUALITY ASSURANCE TESTING**

CLIENT: GZA GEOENVIRONMENTAL (NY)

CONTACT: JOHN DANZER OR BART KLETTKE PROJECT: McKENNA LANDFILL - ALBION, NY

DATE REC'D: 17-Nov-00

MATERIAL: LLDPE

**SEAM TYPE: HEAT FUSION WELD** TRI LOG #: E2148-37-07

DATE TESTED: 17-Nov-00

**ASTM D 4437/413/3083 NSF Modified** REVIEW: ノタン REPORT DATE: 17-Nov-00 ANALYST: EMB

MAXIMUM PEEL LOCUS NSF 54 PROJECT MA TENSION INCURSION OF FAILURE SPEC. TE (b/in) (%) FAILURE MODE (lb/in) (%) SE FTB NA 131 <10 SE FTB FTB SEC. 123 <10 SE FTB FTB SEC. 129 <10 SE FTB FTB FTB SEC. 129 <10 SE FTB FTB SEC. 129 <10 SE FTB FTB SEC. 129 <10 SE FTB FTB SEC. 129 <10 SE FTB FTB SEC. 129 <10 SE FTB SEC. 129 <10 SE FTB SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 129 SEC. 1				•	PEEL EVALUATION	z			SHEAR EVALUATION	UATION	
SPECIMEN         TENSION INCURSION OF TAILURE         FAILURE MODE (Ib/in)         TENSION INCURSION OF TAILURE MODE (Ib/in)         TENSION (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)         (Ib/in)				PEEL	LOCUS	NSF 54	PROJECT	MAXIMUM	ELONGATION	NSF 54	PROJECT
NUMBER         (Ib/In)         (%)         FAILURE         MODE         (Ib/In)         (Ib/In)           1A         131         <10	SAMPLE	SPECIMEN		INCURSION	P.	FAILURE	SPEC	TENSION	@ BREAK	FAILURE	SPEC.
1A   131   <10   SE   FTB   NA   143	NUMBER	NUMBER	(lb/in)	(%)	FAILURE	MODE	(lb/in)	(Ib/in)	(%)	MODE	(lb/in)
2A     133     -10     SE     FTB     135       3A     138     <10		14	131	<10	SE	FTB	ΑN	143	> 50	FTB	¥
3A         138         <10         SE         FTB         135           4A         132         <10		\$	133	2,10	SE SE	FTB					
4A         132         <10         SE         FTB         138           MEAN.         6-55         <10         SE         FTB         138           1B         130         <10		34	138	×10	SE	FTB		135	> 50	FTB	
5A         131         <10         SE         FTB         138           1B         130         <10		4	132	410	SE	FTB					
MEAN.         498         410         SE         FTB         138           2B         135         <10		5A	131	<10	SE	FTB		138	> 20	FTB	
1B         130         <10         SE         FTB         138           2B         135         <10	U3-45	MEAN	198								
2B         135         <10         SE         FTB         138           4B         133         <10		18	130	<10	SE	FTB		138	> 50	FTB	
3B         129         <10         SE         FTB         138           4B         133         <10         SE         FTB         MEAN:         138           5B         135         <10		28	135	×10	SE	FTB					
4B         133         <10         SE         FTB           5B         135         <10         SE         FTB         NA         138           1A         133         <10		38	129	۲10	SE	FTB		138	> 50	FTB	
5B         135         <10         SE         FTB         MEAN:         138           1A         133         <10		48	133	۲۰	SE	FTB					
MEAN         132         ACTO         SE         FTB         NA         155           2A         134         <10		5B	135	۲10	SE	FTB					
1A       133       <10       SE       FTB       NA       155         2A       134       <10		MEAN	132				MEAN:	138			
2A       134       <10       SE       FTB       146         3A       133       <10		1A	133	<10	SE	FTB	ΑN	155	> 50	FTB	Ϋ́
3A         133         <10         SE         FTB         146           4A         138         <10		ZA	134	×10	SE	FTB					
4A         138         <10         SE         FTB         143           5A         134         <10         SE         FTB         143           MEAN:         134         <10         SE         FTB         144           2B         135         <10         SE         FTB         154           4B         137         <10         SE         FTB         154           5B         138         <10         SE         FTB         MEAN:         148		3A	133	×10	S	FTB		146	> 20	FTB	
5A         134         <10         SE         FTB         143           MEAN:         134         <10         SE         FTB         144           2B         138         <10         SE         FTB         154           3B         135         <10         SE         FTB         154           4B         137         <10         SE         FTB         154           5B         138         <10         SE         FTB         MEAN:         148		4 <b>A</b>	138	<10	SE	FTB					
MEAN:         134         <10         SE         FTB         144           2B         138         <10		5A	134	<10	SE	FTB		143	> 20	FTB	
134     <10	DS-46	MEAN:	134								
138     <10		18	134	<10	SE	FTB		144	> 20	FTB	
135     <10		2B	138	×10	SE	FTB					_
137 <10 SE FTB 138 <10 SE FTB MEAN:		38	135	×10	SE	FTB		154	> 20	FTB	
138 <10 SE FTB MEAN:		48	137	×10	SE	FTB					
136 MEAN:		5B	138	<10	SE	FTB					
		MEAN	136				MEAN:	148			

### NA: Not Available

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9063 Bee Caves Road • Austin, Texas 7873 \_\_01 • (512)263-2101 • FAX (512)263-2558



## GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS QUALITY ASSURANCE TESTING

DATE REC'D: 17-Nov-00 CONTACT: JOHN DANZER OR BART KLETTKE PROJECT: McKENNA LANDFILL - ALBION, NY CLIENT: GZA GEOENVIRONMENTAL (NY)

> MATERIAL: LLDPE SEAM TYPE: HEAT FUSION WELD TRI LOG #: E2148-37-07

DATE TESTED: 17-Nov-00

**ASTM D 4437/413/3083 NSF Modified** ANALYST: EMB

**REPORT DATE: 17-Nov-00** REVIEW: VAN

						DS-48												DS-47						NUMBER	SAMP		
						8												17						R	Ę		
MEAN	5B	4B	3B	2B	18	MEAN:	5A	4A	3A	2A	1A	MEAN	5B	4B	3B	2B	1B	MEAN:	5A	4A	3A	2A	1A	NUMBER	SPECIMEN		
140	138	141	140	140	140	136	133	137	135	135	139	136	135	137	136	139	135	141	138	141	139	144	141		TENSION		
	<10	40	<b>10</b>	40	<10		<b>10</b>	<b>^10</b>	<b>^10</b>	<b>1</b> 0	<10		<10	<10	<b>1</b> 0	<b>~10</b>	40		<10	<b>1</b> 0	10	40	<10	(%)	INCURSION	PEEL	
	SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	æ	æ	æ	SE		SE	SE	SE	SE	SE	FAILURE	읶	Locus	PEEL EVALUATIO
	FΤB	FTB	FTB	ETB	FTB		FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FΤB		FTB	FTB	FTB	FTB	FTB	MODE			ıı
MEAN:							l				NA	MEAN:				_							NA	(lb/in)	SPEC.	PROJECT	
144			144		143	_	143		143		146	143			142		143		142		141		149	(lb/in)	TENSION	MAXIMUM	
			> 50		> 50		> 50		> 50		> 50				> 50		> 50		> 50		> 50		> 50	(%)	@ BREAK	ELONGATION	SHEAR EVALUATION
			FTB		FTB		FTB		FTB	-	FTB				FTB		FΤΒ		FTB		FΤB		FTB	MODE	FAILURE	NSF 54	-UATION
			_				_				NA A												×	(lb/in)	SPEC.	PROJECT	

### NA: Not Available

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## **GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS** QUALITY ASSURANCE TESTING

PROJECT: McKENNA LANDFILL - ALBION, NY CLIENT: GZA GEOENVIRONMENTAL (NY)

CONTACT: JOHN DANZER OR BART KLETTKE

DATE REC'D: 17-Nov-00

SEAM TYPE: HEAT FUSION WELD MATERIAL: LLDPE

DATE TESTED: 17-Nov-00

TRI LOG #: E2148-37-07

ASTM D 4437/413/3083 NSF Modified ANALYST: EMB

REVIEW: JAJ REPORT DATE: 17-Nov-00

SAMPLE SPE NUMBER NU				PEEL EVALUATION				SHEAR EVALUATION	UATION	
		MAXIMUM	PEEL	rocus	NSF 54	PROJECT	MAXIMUM	ELONGATION	NSF 54	PROJECT
1	SPECIMEN	TENSION	INCURSION	R	FAILURE	SPEC.	TENSION	@ BREAK	FAILURE	SPEC.
	JMBER	(lþ/in)	(%)	FAILURE	MODE	(lb/in)	(lþ/in)	(%)	MODE	(lb/in)
	1A	132	<10	SE	FTB	NA	139	> 50	FTB	A V
	24	125	£10	Ω,	FTB			_		
	3A	124	×10	SE	FTB		138	> 50	FTB	
	44	130	×10	SE	FTB					
	5A	128	۲10 دا0	SE	FTB		139	> 50	FTB	
\$ SS-50	WEAN.	} 3₹,				—,-	_,-			
	18	131	<10	SE	FTB		135	> 50	FTB	
	2B	139	۲9 د	SE	FTB					_
_	38	137	~10 ~10	SE	FTB		137	> 50	FTB	
	48	134	410	SE	FTB					
	5B	136	×10	SE	FTB					
	MEAN	135				MEAN:	138			
	1A	137	<10	SE	FTB	ΑN	142	> 50	FTB	¥
	2A	140	410	SE	FTB					
	3A	138	۲10 د10	SE	FTB		139	> 50	FTB	
	44	137	×10	SE	FTB				_	
	5A	139	۲0 د10	SE	FTB		138	> 50	FTB	
DS-50	MEAN:	138								
	18	131	×10	SE	FTB		138	> 50	FTB	_
	2B	133	40	SE	FTB					
	38	131	×10	SE	FTB		141	> 50	FTB	
	48	131	۲ <u>۰</u>	SE	FTB					
	5B	132	×10	SE	FTB					
	MEAN	132				MEAN:	140			

### NA: Not Available

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## **GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS** QUALITY ASSURANCE TESTING

DATE REC'D: 17-Nov-00 **CONTACT: JOHN DANZER OR BART KLETTKE** CLIENT: GZA GEOENVIRONMENTAL (NY)
PROJECT: McKENNA LANDFILL - ALBION, NY

> SEAM TYPE: HEAT FUSION WELD TRI LOG #: E2148-37-07 MATERIAL: LLDPE

DATE TESTED: 17-Nov-00

**ASTM D 4437/413/3083 NSF Modified** ANALYST: EMB
REVIEW: JAN

**REPORT DATE: 17-Nov-00** 

						DS-52												DS-51						NUMBER	SAMPLE		
MEAN	5B	4B	3B	28	1B	MEAN:	5A	4A	3A	2A	1A	MEAN	5B	4B	3B	2B	1B	MEAN:	5A	4A	3A	2A	1A	NUMBER	SPECIMEN		
143	142	143	139	144	146	135	134	136	131	137	136	139	138	138	141	142	138	138	137	137	138	139	138	(lb/in)		MAXIMUM	
	<10	40	<10	40	<10		<10	<b>~1</b> 0	<b>1</b> 0	<b>1</b> 0	<10		<10	10	<b>1</b> 0	<b>^10</b>	<10		<10	<b>10</b>	<b>^10</b>	<b>~10</b>	<10	(%)	INCURSION	PEEL	
	SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	SE	SE	FAILURE	유	Locus	PEEL EVALUATIO
	FTB	FTB	FTB	FTB	BTF		FTB	FТВ	FTB	F <b>T</b> B	FTB		FTB	FΤB	FΤB	FTB	FTB		FTB	FTB	FTB	FTB	FTB	MODE			
MEAN:											AN	MEAN:											NA A	(lb/in)	SPEC.	PROJECT	
146			147		142		145		144		150	139			137		141		138		137		143	(lb/in)	TENSION	MAXIMUM	
			> 50		> 50		> 50		> 50		> 50				> 50		> 50		> 50		> 50		> 50	(%)	@ BREAK	ELONGATION	SHEAR EVALUATION
			FTB		FTB		FTB		FTB		FTB				БТВ		БТВ		FTB		FTB		FTB	MODE	FAILURE	NSF 54	UATION
		_									N N												NA	(lb/in)	SPEC.	PROJECT	

NA: Not Available

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## QUALITY ASSURANCE TESTING GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GZA GEOENVIRONMENTAL (NY)

PROJECT: McKENNA LANDFILL - ALBION, NY CONTACT: JOHN DANZER OR BART KLETTKE

DATE REC'D: 17-Nov-00

MATERIAL: LLDPE

SEAM TYPE: HEAT FUSION WELD TRI LOG #: E2148-37-07 DATE TESTED: 17-Nov-00

ASTM D 4437/413/3083 NSF Modified ANALYST: EMB REVIEW: 人存入 REPORT DATE: 17-Nov-00

			۵.	PEEL EVALUATION	~			SHEAR EVALUATION	-UATION	
		MAXIMUM	PEEL	SNOOT	NSF 54	PROJECT	MAXIMUM	ELONGATION	NSF 54	PROJECT
SAMPLE	SPECIMEN	TENSION	INCURSION	P	FAILURE	SPEC.	TENSION	@ BREAK	FAILURE	SPEC.
MBER	NUMBER	(lb/in)	(%)	FAILURE	MODE	(lb/in)	(lb/in)	(%)	MODE	(lb/in)
	1A	128	<10	SE	FTB	AN	132	> 20	FTB	AN
	2A	134	<10 <10	Ϋ́	FTB					- -
	3A	126	<10	SE	FTB		132	> 50	FTB	
	4 4	133	×10	SE	FTB					
	2A	135	<b>~10</b>	SE	FTB		135	> 50	FTB	
DS 53	MEAN	134				· 				
	18	130	<10	SE	FTB		131	> 20	FTB	
	2B	134	<10	SE	FTB					
	38	136	<b>~10</b>	SE	FTB		133	> 20	FTB	
	48	135	<10	SE	FTB					
	28	132	°10	SE	FTB					
	MEAN	133				MEAN:	133			
	1A	132	<10	SE	FTB	Ą	143	> 50	FTB	Ą
	2A	127	<b>~10</b>	S	FTB					
	3A	131	<10	SE	FTB		139	> 20	FTB	
	44	131	×10	SE	FTB					
	5A	128	<10	SE	FTB		140	> 20	FTB	
DS-54	MEAN:	130								
	18	135	<10	SE	FTB		142	> 20	FTB	
	2B	130	<10	SE	FTB					
	38	128	<10	SE	FTB		141	> 20	FTB	
	48	130	<10	S	FTB					
	2B	123	<10	SE	FTB		-			
	MEAN	120				MEAN	171			

### NA: Not Available

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## GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS QUALITY ASSURANCE TESTING

DATE REC'D: 17-Nov-00 **CONTACT: JOHN DANZER OR BART KLETTKE** PROJECT: McKENNA LANDFILL - ALBION, NY CLIENT: GZA GEOENVIRONMENTAL (NY)

DATE TESTED: 17-Nov-00 **SEAM TYPE: HEAT FUSION WELD** TRI LOG #: E2148-37-07 MATERIAL: LLDPE

**ASTM D 4437/413/3083 NSF Modified** REVIEW: AND REPORT DATE: 17-Nov-00 ANALYST: EMB

		_	_								_	_				_	_										
						DS-56												DS-55						NUMBER	SAMPLE		
MEAN	5B	4B	3B	2B	18	MEAN:	5A	4A	3A	2A	1A	MEAN	5B	4B	3В	2B	18	MEAN:	5A	4A	3A	2A	1A	NUMBER	SPECIMEN		
129	127	127	134	128	128	121	122	120	122	120	119	140	137	139	141	140	141	134	130	136	134	136	134			MAXIMUM	
	<10	<b>^10</b>	<b>^10</b>	<b>~10</b>	<10		<10	40	<b>^1</b> 0	<b>1</b> 0	<10		<b>~10</b>	<b>^1</b> 0	<del>1</del> 0	<b>^10</b>	<b>~1</b> 0					<b>^1</b> 0		(%)	INCURSION	PEEL	
	SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	SE	SE	FAILURE	유	Locus	PEEL EVALUATIO
	FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB					FTB					
MEAN:											NA	MEAN:											NA	(lb/in)	SPEC.	PROJECT	
135			136		131		138		136		135	146			148		145		145		142		150	(lb/in)	TENSION	MAXIMUM	
			> 50		> 50		> 50		> 50		> 50				> 50		> 50		> 50		> 50		> 50	(%)	@ BREAK	ELONGATION	SHEAR EVALUATION
			FTB		FTB		FTB		FTB		FTB				FTB		FTB		FTB		FTB		FTB	MODE	FAILURE	NSF 54	LUATION
					_						NA A	J											N	(lb/in)	SPEC.	PROJECT	

### NA: Not Available

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### **GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS** QUALITY ASSURANCE TESTING

PROJECT: MCKENNA LANDFILL - ALBION, NY CLIENT: GZA GEOENVIRONMENTAL (NY)

DATE REC'D: 01-Dec-00

**SEAM TYPE: HEAT FUSION WELD** TRI LOG #: E2148-45-06 MATERIAL: LLDPE CONTACT: JOHN DANZER OR BART KLETTKE

DATE TESTED: 01-Dec-00

**ASTM D 4437/413/3083 NSF Modified** ANALYST: EMB REVIEW: //E/

REPORT DATE: 01-Dec-00

SAMPLE   MAXIMUM   PEEL   LOCUS   NSF 64   PROJECT   MAXIMUM   RAXIMUM   PATIONS   NSF 64   PROJECT   MAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUME   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   RAXIMUM   R				<b>a.</b>	PEEL EVALUATION				SHEAR EVALUATION	UATION	
SPECIMEN         TENSION         INCURSION         OF         FAILURE         SPEC.         TENSION         @ BREAK           NUMBER         (bin)         (%)         FAILURE         MODE         (bin)         (%)           1A         127         <10         SE         FTB         NA         140         > 50           2A         127         <10         SE         FTB         NA         140         > 50           5A         128         <10         SE         FTB         137         > 50           1B         130         <10         SE         FTB         137         > 50           1B         130         <10         SE         FTB         137         > 50           1B         130         <10         SE         FTB         137         > 50           1B         130         <10         SE         FTB         138         > 50           1ABAN:         130         <10         SE         FTB         NA         144         > 50           1ABAN:         131         <10         SE         FTB         139         > 50           1B         132         <10         SE			MAXIMUM	PEEL	rocns	NSF 54	PROJECT	MAXIMUM	ELONGATION	NSF 54	PROJECT
NUMBER         (bhrn)         (%)         FAILURE         MODE         (lbfin)         (%)           1A         129         <10         SE         FTB         NA         140         >50           3A         126         <10         SE         FTB         NA         140         >50           5A         128         <10         SE         FTB         139         >50           2B         128         <10         SE         FTB         130         >50           2B         126         <10         SE         FTB         140         >50           2B         125         <10         SE         FTB         140         >50           4B         124         <10         SE         FTB         >50           4B         124         <10         SE         FTB         >50           AA         131         <10         SE         FTB         >50           AA         131         <10         SE         FTB         >50           AA         131         <10         SE         FTB         >50           AA         132         <10         SE         FTB	SAMPLE	SPECIMEN	TENSION	INCURSION	Ą	FAILURE	SPEC.	TENSION	@ BREAK	FAILURE	SPEC.
1 A   129   <10   SE   FTB   NA   140   > 50     3 A   128   <10   SE   FTB	NUMBER	NUMBER	(lp/in)	(%)	FAILURE	MODE	(lb/in)	(lþ/in)	(%)	MODE	(lb/in)
2.A.         127         \$10         \$1         \$1         \$1         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2         \$2 <th< th=""><th></th><th>1A</th><th>129</th><th>×10</th><th>SE</th><th>FTB</th><th>Α̈́</th><th>140</th><th>&gt; 20</th><th>FTB</th><th>¥</th></th<>		1A	129	×10	SE	FTB	Α̈́	140	> 20	FTB	¥
3A         126         <10		24	127	£10	SE.	奇之章			•		
4A         128         <10		34	126	٠ <del>٢</del>	SE	FTB		139	> 20	FTB	
5A         128         <10		4 4	128	۲۰ د۱۵	SE	FTB					
MEAN:         426         C40         SE         FTB         140         > 50           1B         130         <10         SE         FTB         138         > 50           2B         125         <10         SE         FTB         138         > 50           5B         124         <10         SE         FTB         NA         144         > 50           6B         129         <10         SE         FTB         NA         144         > 50           1A         133         <10         SE         FTB         NA         144         > 50           2A         130         <10         SE         FTB         NA         144         > 50           3A         137         <10         SE         FTB         NA         141         > 50           4A         131         <10         SE         FTB         139         > 50           5A         131         <10         SE         FTB         139         > 50           1B         132         <10         SE         FTB         138         > 50           4B         133         <10         SE         FTB         FT		5A	128	<10	SE	FTB		137	> 50	FTB	
1B         130         <10	£6 £7	WEAN:	( <del>38</del> )				· 		•		
2B         125         <10		18	130	<10	SE	FTB		140	> 20	FTB	
3B         130         <10		2B	125	×10	SE	FTB					
4B         124         <10		38	130	×10	꼾	FTB		138	> 50	FTB	
5B         129         <10		4B	124	×10	꼸	FTB					
MEAN         128         MEAN:         139         > 50           1A         133         <10         SE         FTB         NA         144         > 50           2A         130         <10         SE         FTB         NA         144         > 50           3A         127         <10         SE         FTB         139         > 50           4A         131         <10         SE         FTB         141         > 50           MEAN:         139         <10         SE         FTB         139         > 50           139         <10         SE         FTB         139         > 50           4B         132         <10         SE         FTB         > 50           4B         133         <10         SE         FTB         > 50           5B         128         <10         SE         FTB         > 50           MEAN         133         <10         SE         FTB         > 50		5B	129	<10	SE	FTB					
1A       133       <10		MEAN	128				MEAN:	139			
2A       130       <10		14 4	133	×10	SE	FTB	AN	144	> 50	FTB	ΝΑ
3A         127         <10		8	130	۲۰ د ۲۰	SE	FTB					
4A         131         <10		3A	127	×10	SE	FTB		139	> 50	FTB	
5A         131         <10		4 <b>A</b>	131	۲۰ 0	띯	FTB					
MEAN:         130         <10		5A	131	<10	SE	FTB		141	> 50	FTB	
139       <10       SE       FTB       139       > 50         132       <10       SE       FTB       138       > 50         133       <10       SE       FTB       > 50         128       <10       SE       FTB       > 50         133       <10       SE       FTB       > 60	DS-58	MEAN:	130								
132         <10         SE         FTB         138         > 50           132         <10         SE         FTB         > 50           133         <10         SE         FTB         > 50           128         <10         SE         FTB           40           133         <10         SE         FTB           40		18	139	<10	SE	FTB		139	> 50	FTB	
132         <10         SE         FTB         138         > 50           133         <10         SE         FTB         SE         FTB           128         <10         SE         FTB         MEAN:         140		2B	132	× 10	SE	FTB		•			
133 <10 SE FTB		38	132	۲ <u>۰</u>	S	FTB		138	> 50	FTB	
128 <10 SE FTB MEAN:		48	133	× 10	SE	FTB					
133 MEAN:		5B	128	<10	SE	FTB					
		MEAN	133				MEAN:	140			

### NA: Not Available

to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI. The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply



# QUALITY ASSURANCE TESTING GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GZA GEOENVIRONMENTAL (NY)
PROJECT: McKENNA LANDFILL - ALBION, NY
CONTACT: JOHN DANZER OR BART KLETTKE
DATE REC'D: 01-Dec-00

MATERIAL: LLDPE SEAM TYPE: HEAT FUSION WELD TRI LOG #: E2148-45-06

DATE TESTED: 01-Dec-00

ASTM D 4437/413/3083 NSF Modified ANALYST: EMB REVIEW: //t/

REPORT DATE: 01-Dec-00

_												_															
						DS-60						٠						DS-59						NUMBER	SAMPLE		
MEAN	5B	4B	38	28	1B	MEAN:	5A	4A	3A	2A	1A	MEAN	5B	4B	3B	2B	íB	MEAN:	5A	4A	3A	2A	1A	NUMBER	SPECIMEN		
130	127	132	130	128	132	137	137	134	138	137	138	126	127	124	127	126	128	136	132	134	137	138	138	(lb/in)	TENSION	MAXIMUM	
	40	<b>~10</b>	40	<b>~10</b>	40		<10	40	<b>10</b>	<10	<10		<10	<10	<10	<b>^10</b>	<10		<10	<10	<b>~10</b>	<10	<10	(%)	INCURSION	PEEL	
	SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	SE	SE	FAILURE	유	Locus	PEEL EVALUATION
	FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB	MODE	FAILURE		
MEAN:	ı										NA	MEAN:											N	(lb/in)	SPEC.	PROJECT	
141			138		139		143		140		146	146			148		140		156		139		146	(lb/in)	TENSION	MAXIMUM	
			> 50		> 50		> 50		> 50		> 50				> 50		> 50		> 50		> 50		> 50	(%)	@ BREAK	ELONGATION	SHEAR EVALUATION
			FTB		FTB		FTB		FΤΒ		FTB				FTB		FTB		FTB		FTB		FTB	MODE	FAILURE	NSF 54	.UATION
											Š										_		×	(lb/in)	SPEC.	PROJECT	

NA: Not Available

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

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### **GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS** QUALITY ASSURANCE TESTING

CONTACT: JOHN DANZER OR BART KLETTKE PROJECT: MCKENNA LANDFILL - ALBION, NY CLIENT: GZA GEOENVIRONMENTAL (NY)

DATE REC'D: 01-Dec-00

MATERIAL: LLDPE

**SEAM TYPE: HEAT FUSION WELD** TRI LOG #: E2148-45-06 DATE TESTED: 01-Dec-00

**ASTM D 4437/413/3083 NSF Modified** ANALYST: EMB

REPORT DATE: 01-Dec-00 REVIEW: //rx

MAXIMUM PEEL LOCUS NSF 54 PROJECT   MAXIMUM PEEL   LOCUS NSF 54 PROJECT   MAXIMUM PEEL   LOCUS NSF 54 PROJECT   TENSION   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (15/11)   (1					PEEL EVALUATION				SHEAR EVALUATION	UATION	
SPECIMEN         TENSION         INCURSION         OF         FAILURE         SPEC.         TENSION           NUMBER         (Ib/In)         (%)         FAILURE         MODE         (Ib/In)         (Ib/In)           2A         130         <10         SE         FTB         144           3A         130         <10         SE         FTB         139           4A         130         <10         SE         FTB         141           B         130         <10         SE         FTB         141           B         120         <10         SE         FTB         140           B         126         <10         SE         FTB         140           B         128         <10         SE         FTB         139           B         128         <10         SE         FTB         141           B         128         <10         SE         FTB         133           B         128         <10         SE         FTB         135           B         131         <10         SE         FTB         130           B         131         <10         SE         F			MAXIMUM		SNOOT	NSF 54	PROJECT	MAXIMUM	ELONGATION	NSF 54	PROJECT
NUMBER   (Ib/in)   (%) FAILURE   MODE   (Ib/in)   (Ib/in)     1	SAMPLE	SPECIMEN	TENSION		P	FAILURE	SPEC.	TENSION	@ BREAK	FAILURE	SPEC.
1A         130         <10	NUMBER	NUMBER	(lp/in)		FAILURE	MODE	(lb/in)	(lb/in)	(%)	MODE	(lb/in)
2A         127         \$10         \$E         FTB         139           4A         130         <10         \$E         FTB         141           5A         130         <10         \$E         FTB         141           5A         130         <10         \$E         FTB         141           2B         126         <10         \$E         FTB         140           3B         127         <10         \$E         FTB         139           4B         128         <10         \$E         FTB         139           AA         128         <10         \$E         FTB         137           AA         126         <10         \$E         FTB         137           AA         129         <10         \$E         FTB         135           AA         128         <10         \$E         FTB         130           AA         118         <10         \$E         FTB         130           BB         116         <10         \$E         FTB         130           BB         116         <10         \$E         FTB         130           BB         1		14	130	<10	SE	FTB	Ϋ́	144	> 20	FTB	Ą
3A         130         <10		ZA	127	<10	SE	FTB					
4A         130         <10		34	130	٠ <del>١</del>	SE	FTB		139	> 20	FTB	
5A         130         <10		4 <b>A</b>	130	۲۰	З,	FTB					
MIEAN:         120         <10		5A	130	<10	SE	FTB		141	> 20	FTB	
1B         130         <10	DS.61	MEAN	120								
2B         126         <10		<b>.</b>	130	د10 د10	SE	FTB		140	> 50	FTB	
3B         127         <10		28	126	۲۰	SE	FTB					
4B         128         <10		38	127	۲۰۰	SE	FTB		139	> 20	FTB	
5B         128         <10		48	128	۲۰	SE	FTB					
MEAN         128         MEAN:         141           1A         126         <10         SE         FTB         NA         137           2A         129         <10         SE         FTB         133           3A         126         <10         SE         FTB         133           4A         131         <10         SE         FTB         135           MEAN:         123         <10         SE         FTB         130           2B         118         <10         SE         FTB         130           3B         116         <10         SE         FTB         132           4B         116         <10         SE         FTB         132           5B         114         <10         SE         FTB         MEAN:         133		5B	128	×10	SE	FTB					
1A         126         <10		MEAN	128				MEAN:	141			
2A     129     <10		<b>1</b>	126	×10	SE	FTB	Ϋ́	137	> 50	FTB	A V
3A         126         <10		8	129	<b>~10</b>	SE	FT8	•				
4A         131         <10		34	126	×10	SE	FT8		133	> 50	FTB	
5A         123         <10		<b>4</b>	131	۷۲٥	SE	FTB		`			
MEAN:         127         130           1B         118         <10         SE         FTB         130           2B         118         <10         SE         FTB         132           3B         116         <10         SE         FTB         132           4B         116         <10         SE         FTB           5B         114         <10         SE         FTB           MEAN         116         <10         MEAN:         133		5A	123	<10	SE	FTB		135	> 50	FTB	
118     <10     SE     FTB     130       118     <10     SE     FTB     132       116     <10     SE     FTB     132       114     <10     SE     FTB       116     <10     SE     FTB       116     <10     SE     FTB	DS-62	MEAN:	127								
118     <10     SE     FTB     132       116     <10     SE     FTB     132       116     <10     SE     FTB       114     <10     SE     FTB       116     <10     SE     FTB		18	118	<10	SE	FTB		130	> 50	FTB	
116     <10     SE     FTB     132       116     <10     SE     FTB       114     <10     SE     FTB       116     <10     SE     FTB		28	118	×10	SE	FTB					
116 <10 SE FTB		38	116	۷۲	SE	FTB		132	> 20	FTB	
114 <10 SE FTB MEAN:		48	116	40	띯	FTB					
116 MEAN:		58	114	<10	SE	FTB					
		MEAN	116				MEAN:	133			

### NA: Not Available

to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



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# QUALITY ASSURANCE TESTING GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GZA GEOENVIRONMENTAL (NY)
PROJECT: McKENNA LANDFILL - ALBION, NY
CONTACT: JOHN DANZER OR BART KLETTKE
DATE REC'D: 01-Dec-00

MATERIAL: LLDPE SEAM TYPE: HEAT FUSION WELD TRI LOG #: E2148-45-06

DATE TESTED: 01-Dec-00

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ASTM D 4437/413/3083 NSF Modified ANALYST: EMB
REVIEW: ////
REPORT DATE: 01-Dec-00

						_						_		_	_						_						
						DS-64												DS-63						NUMBER	SAMPLE		
MEAN	5B	4B	3B	28	1B	MEAN:	5A	4A	3A	2A	1A	MEAN	<del>SB</del>	4B	38	28	18	MEAN:	5A	4A	3A	2A	1A	NUMBER	SPECIMEN		
125	124	124	128	125	123	126	121	126	128	130	125	123	122	123	123	120	127	128	128	126	130	126	130	(lb/in)	TENSION	MAXIMUM	
	<10	<10	<10	<b>^10</b>	<10		<10	<b>^10</b>	<10	<10	<10		<10	<10	<b>1</b> 0	<b>^10</b>	<10		<10	<b>^10</b>	<b>10</b>	<10	<b>^1</b> 0	(%)	INCURSION	PEEL	
	SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	SE	SE	FAILURE	유	Locus	PEEL EVALUATION
	FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB	-	FTB	FTB	FTB	FTB	FTB	MODE	FAILURE	NSF 54	П
MEAN:										<u> </u>	NA	MEAN:											¥	(lb/in)	SPEC.	PROJECT	
131			132		129		133		129		132	133			138		130		132		128		137	(lb/in)	TENSION	MAXIMUM	
			> 50		> 50		> 50		> 50		> 50				> 50		> 50		> 50		> 50		> 50	(%)	@ BREAK	ELONGATION NSF	SHEAR EVAL
			FTB		FTB		FTB		FTB		FTB				FTB		FTB		FTB		FTB		FTB	MODE	FAILURE	NSF 54	UATION
			_		_						NA												¥	(lb/in)	SPEC.	PROJECT	

### NA: Not Available

to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI. The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply



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### **GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS QUALITY ASSURANCE TESTING**

PROJECT: MCKENNA LANDFILL - ALBION, NY CLIENT: GZA GEOENVIRONMENTAL (NY)

DATE REC'D: 01-Dec-00

TRI LOG #: E2148-45-06 **CONTACT: JOHN DANZER OR BART KLETTKE** 

MATERIAL: LLDPE SEAM TYPE: HEAT FUSION WELD

DATE TESTED: 01-Dec-00

ASTM D 4437/413/3083 NSF Modified ANALYST: EMB

REPORT DATE: 01-Dec-00 REVIEW:

MAXIMUM   PEEL   LOCUS   NSF 54   PROJECT   MAXIMUM   PEEL   LOCUS   NSF 54					PEEL EVALUATION				SHEAR EVALUATION	.UATION	
SPECIMEN         TENSION INCURSION OF INCURSION OF FAILURE NODE (Ib/In)         FAILURE (Ib/In)         FAILURE (Ib/In)         FAILURE (Ib/In)         FAILURE (Ib/In)         FAILURE (Ib/In)         FAILURE (Ib/In)         FAILURE (Ib/In)         FAILURE (Ib/In)         FAILURE (Ib/In)         FAILURE (Ib/In)         MODE (Ib/In)         FAILURE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MODE (Ib/In)         MO			MAXIMUM	PEEL	SNOOT	NSF 54	PROJECT	MAXIMUM	ELONGATION	NSF 54	PROJECT
NUMBER         (Ib/In)         (%)         FAILURE         MODE         (Ib/In)         (%)         MODE           1A         132         <10	SAMPLE	SPECIMEN	TENSION	INCURSION	P	FAILURE	SPEC.	TENSION	@ BREAK	FAILURE	SPEC.
1	NUMBER	NUMBER	(lb/in)	(%)	FAILURE	MODE	(llþ/in)	(lþ/in)	(%)	MODE	(lb/in)
2A         127         <10         SE         FTB         143         > 50         FTB           4A         126         <10         SE         FTB         144         > 50         FTB           5A         127         <10         SE         FTB         144         > 50         FTB           6A         127         <10         SE         FTB         144         > 50         FTB           1B         134         <10         SE         FTB         143         > 50         FTB           1B         134         <10         SE         FTB         143         > 50         FTB           ABAN         134         <10         SE         FTB         MEAN:         144         > 50         FTB           AA         126         <10         SE         FTB         MEAN:         144         > 50         FTB           AA         126         <10         SE         FTB         MEAN:         144         > 50         FTB           AA         126         <10         SE         FTB         NA         144         > 50         FTB           AA         126         <10         SE		14	132	۲۰ د ۲۰	S	FTB	Ϋ́	145	> 20	FTB	¥
3A         130         <10         SE         FTB         143         >50         FTB           6AA         126         <10		ZA	127	- 10 - 10	IJ,	FTB					
4A         126         <10         SE         FTB         144         >50         FTB           MEAN:         127         <10         SE         FTB         143         >50         FTB           1B         134         <10         SE         FTB         143         >50         FTB           1B         134         <10         SE         FTB         143         >50         FTB           1A         135         <10         SE         FTB         MEAN:         144         >50         FTB           1A         134         <10         SE         FTB         NA         140         >50         FTB           AA         126         <10         SE         FTB         NA         140         >50         FTB           AA         126         <10         SE         FTB         NA         140         >50         FTB           AA         126         <10         SE         FTB         NA         140         >50         FTB           AA         132         <10         SE         FTB         TB         137         >50         FTB           BB         130         <10 <td></td> <td>3A</td> <td>130</td> <td>× 10</td> <td>S</td> <td>FTB</td> <td></td> <td>143</td> <td>&gt; 20</td> <td>FTB</td> <td></td>		3A	130	× 10	S	FTB		143	> 20	FTB	
5A         127         <10         SE         FTB         144         > 50         FTB           1B         134         <10         SE         FTB         143         > 50         FTB           1B         134         <10         SE         FTB         143         > 50         FTB           3B         135         <10         SE         FTB         143         > 50         FTB           AB         134         <10         SE         FTB         MEAN:         144         > 50         FTB           AB         135         <10         SE         FTB         NA         140         > 50         FTB           AA         126         <10         SE         FTB         NA         140         > 50         FTB           AA         126         <10         SE         FTB         NA         140         > 50         FTB           AA         132         <10         SE         FTB         137         > 50         FTB           BAA         130         <10         SE         FTB         137         > 50         FTB           BB         130         <10         SE         <		4 <b>A</b>	126	×10	SE	FTB					
MEAN:         128         FTB         143         >50         FTB           1B         134         <10		5A	127	<10	SE	FTB	·	144	> 50	FTB	
18	DS-65	MEAN:	128					<del>-</del>	_,-		
2B         136         <10         SE         FTB         143         >50         FTB           4B         134         <10         SE         FTB         MEAN:         144         >50         FTB           ABAN         125         <10         SE         FTB         NA         140         >50         FTB           AA         126         <10         SE         FTB         NA         137         >50         FTB           5A         132         <10         SE         FTB         NA         137         >50         FTB           MEAN:         127         <13         >50         FTB         FTB         FTB           5A         132         <10         SE         FTB         137         >50         FTB           MEAN:         127         <10         SE         FTB         137         >50         FTB           5A         130         <10         SE         FTB         137         >50         FTB           18         130         <10         SE         FTB         137         >50         FTB           4B         128         <10         SE         FTB <th< td=""><td></td><td>18</td><td>134</td><td>×10</td><td>SE</td><td>FTB</td><td></td><td>143</td><td>&gt; 20</td><td>FTB</td><td></td></th<>		18	134	×10	SE	FTB		143	> 20	FTB	
3B         135         <10         SE         FTB         143         > 50         FTB           4B         134         <10         SE         FTB         MEAN:         144         > 50         FTB           ABAN         125         <10         SE         FTB         NA         140         > 50         FTB           AA         126         <10         SE         FTB         NA         140         > 50         FTB           AA         126         <10         SE         FTB         NA         137         > 50         FTB           ABAN:         132         <10         SE         FTB         137         > 50         FTB           BB         131         <10         SE         FTB         137         > 50         FTB           BB         130         <10         SE         FTB         137         > 50         FTB           ABAN:         128         <10         SE         FTB         137         > 50         FTB           ABAN:         129         <10         SE         FTB         ABAN:         137         > 50         FTB		28	136	×10	SE	FTB					
4B         134         <10         SE         FTB           MEAN         134         <10         SE         FTB         MEAN:         144         >50         FTB           1A         125         <10		38	135	×10	SE	FTB		143	> 50	FTB	
5B         133         <10         SE         FTB         MEAN:         144         NA         144         NA         144         NA         144         NA         144         NA         FTB         FTB         FTB         NA         140         > 50         FTB         FTB         FTB         NA         140         > 50         FTB         FTB         FTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB         PTB		48	134	×10	SE	FTB					
MEAN         134         MEAN:         144         NA         144         SE         FTB         NA         144         SE         FTB         FTB         NA         140         SO         FTB           2A         127         <10		5B	133	<10	SE	FTB					
1A         125         <10		MEAN	134				MEAN:	144			
2A     127     <10     SE     FTB     137     > 50       4A     126     <10		14	125	<10	SE	FTB	A A	140	> 50	FTB	Ą
3A         126         <10         SE         FTB         137         > 50           4A         126         <10         SE         FTB         137         > 50           5A         132         <10         SE         FTB         137         > 50           MEAN:         127         <10         SE         FTB         139         > 50           AB         128         <10         SE         FTB         137         > 50           MEAN:         128         <10         SE         FTB         MFAN:         138		8	127	×10	SE	FTB					
4A         126         <10         SE         FTB         137         > 50           MEAN:         127		3A	126	×10	SE	FTB		137	> 50	FTB	
5A         132         <10         SE         FTB         137         > 50           MEAN:         127         <139         > 50           18         131         <10         SE         FTB         139         > 50           2B         130         <10         SE         FTB         137         > 50           4B         128         <10         SE         FTB         HFAN         HFAN         HFAN		44	126	×10	SE	FTB					
MEAN:         127         139         > 50           1B         131         <10		5A	132	×10	SE	FTB		137	> 50	FTB	
131         <10	DS-66	MEAN:	127								
130 <10 SE FTB 137 > 50 128 <10 SE FTB 137 > 50 128 <10 SE FTB 128 <10 SE FTB 129   FTB 137   138   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429   1429		18	131	<10	SE	FTB	_	139	> 50	FTB	
130 <10 SE FTB 137 > 50 128 <10 SE FTB 137 > 50 128 <10 SE FTB MFAN: 138		28	130	410	SE	FTB					
128 <10 SE FTB 128 <10 SE FTB MFAN: 138		38	130	410	SE	FTB	_	137	> 50	FTB	
128 <10 SE FTB MFAN:		48	128	۲10	SE	FTB					
129 MEAN:		<b>2B</b>	128	۲۰	SE	FTB					
		MEAN	129				MEAN:	138			

### NA: Not Available

to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



# TRI/ENVIRONMENTAL, INC. A Texas Research International Company

# QUALITY ASSURANCE TESTING GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GZA GEOENVIRONMENTAL (NY)
PROJECT: McKENNA LANDFILL - ALBION, NY
CONTACT: JOHN DANZER OR BART KLETTKE
DATE REC'D: 01-Dec-00

MATERIAL: LLDPE
SEAM TYPE: HEAT FUSION WELD
TRI LOG #: E2148-45-06

TRI LOG #: E2148-45-06
DATE TESTED: 01-Dec-00

ASTM D 4437/413/3083 NSF Modified ANALYST: EMB REVIEW: 72-5

REPORT DATE: 01-Dec-00

				_			_		_	_		_		_	
						DS-67						NUMBER	SAMPLE		
MEAN	5B	4B	3B	28	18	MEAN:	5A	4A	3A	2A	12	NUMBER	SPECIMEN		
126	121	126	123	128	131	127	128	127	125	128	128	(lb/in)	TENSION	MAXIMUM	
	40	<del>1</del> 0	<b>~10</b>	^10	<10		<del>10</del>	<del>10</del>	<b>~10</b>	<b>10</b>	<b>^10</b>	(%)	INCURSION	PEEL	
	SE	SE	SE	SE	SE		SE	SE	SE	SE	SE	FAILURE	유	Locus	PEEL EVALUATIO
	FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB	MODE	FAILURE	NSF 54	2
MEAN:						L					Š	(lb/in)	SPEC.	PROJECT	
143			141		140		147		135		151	(lb/in)	TENSION	MAXIMUM	
			> 50		> 50		> 50		> 50		> 50	(%)	@ BREAK	ELONGATION	SHEAR EVALUATION
			FTB		FTB		FTB .		FTB		FTB	MODE	FAILURE	NSF 54	UATION
			_	_	•		_			_	N N	(lb/in)	SPEC.	PROJECT	

NA: Not Available

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### **GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS QUALITY ASSURANCE TESTING**

**CONTACT: JOHN DANZER OR BART KLETTKE** PROJECT: McKENNA LANDFILL - ALBION, NY CLIENT: GZA GEOENVIRONMENTAL (NY)

DATE REC'D: 05-Dec-00

**SEAM TYPE: SINGLE EXTRUSION WELD SEAM** TRI LOG #: E2148-47-07 MATERIAL: LLDPE

DATE TESTED: 05-Dec-00

**ASTM D 4437/413/3083 NSF Modified** ANALYST: EMB

REVIEW: 15 CA

T MAXIMUM TENSION (Ib/in) 139 139 140 140				4.	PEEL EVALUATION	>			SHEAR EVALUATION	UATION	
SPECIMEN         TENSION INCURSION         OF FAILURE         FAILURE MODE (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)         TENSION (Ib/in)				PEEL	SNOOT	NSF 54	PROJECT	_	ELONGATION	NSF 54	PROJECT
NUMBER (Ib/in) (%) FAILURE MODE (Ib/in) (Ib/in)  1 117 <10 SE FTB NA 139  2 115 <10 SE FTB  4 118 <10 SE FTB  5 125 <10 SE FTB  140  MEAN: 119	SAMPLE	SPECIMEN		INCURSION	R	FAILURE	SPEC.	TENSION	@ BREAK	FAILURE	SPEC.
1 117 <10 SE FTB NA 139 2 115 <10 SE FTB 3 118 <10 SE FTB 4 118 <10 SE FTB 5 125 <10 SE FTB 139 139 MEAN: 119 137	NUMBER	NUMBER		(%)	FAILURE	MODE	(lp/in)	(lþ/in)	(%)	MODE	(lp/lu)
2 115 <10 SE FTB 3 118 <10 SE FTB 4 118 <10 SE FTB 5 125 <10 SE FTB 140 MEAN: 119 137		-		<10		FTB	Ą	139	> 20	FTB	¥
3 118 <10 SE FTB 139 4 118 <10 SE FTB 140 5 125 <10 SE FTB 140 MEAN: 119 137 143 143 143 144 145 146 146 147 148 148 149 149 140 140 140 140 141 142 143 140 140 140 140 140 140 140 140		7		×10		FTB					
4     118     <10     SE     FTB     140       5     125     <10     SE     FTB     140       MEAN:     119     137		n			SE	FTB		139	> 50	FTB	
5         125         <10		4	118	×10	S	FTB					
MEAN: 119 137 143		5	125	×10	SE	FTB		140	> 50	FTB	
143	DS-68	MEAN:	119					—,- —-			<del>-</del> ,-
143								137	> 50	FTB	
143											
_				_				143	> 50	FTB	
-											
							MEAN:	140			

### NA: Not Available

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## GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS QUALITY ASSURANCE TESTING

DATE REC'D: 05-Dec-00 CONTACT: JOHN DANZER OR BART KLETTKE CLIENT: GZA GEOENVIRONMENTAL (NY)
PROJECT: McKENNA LANDFILL - ALBION, NY

DATE TESTED: 05-Dec-00 SEAM TYPE: HEAT FUSION WELD TRI LOG #: E2148-47-07 MATERIAL: LLDPE

ASTM D 4437/413/3083 NSF Modified REPORT DATE: 05-Dec-00 ANALYST: EMB
REVIEW: 524

						DS-70												DS-69	_			-		NUMBER	SAMPLE		
MEAN	5B	4B	38	2B	īB	MEAN:	5A	4A	3A	2A	1A	MEAN	58	4B	3B	28	18	MEAN:	5A	4A	3A	2A	1A	NUMBER	SPECIMEN		
136	135	136	138	135	135	130	133	131	129	130	127	123	121	122	123	125	124	138	138	138	136	139	138			MAXIMUM	
	<10	<10	<b>~10</b>	<b>10</b>	40		<10	<10	<b>~10</b>	10	<10		<b>~10</b>	<b>^10</b>	3	40	<10		<10	40	<b>1</b> 0	<10	<10	(%)	INCURSION	PEEL	
	SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	SE	SE	FAILURE	유	Locus	PEEL EVALUATION
	FTB	FTB	FTB	FTB	FTB		FTB	FTB	FΤB	FTB	FTB		FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB	MODE	FAILURE	NSF 54	
MEAN:			_				I				Š	MEAN:											N N	(lb/in)	SPEC.	PROJECT	
151			150		152		150		151		152	142			139		145		137		147		141	(lb/in)	TENSION	MAXIMUM	
			> 50		> 50		> 50		> 50		> 50				> 50		> 50		> 50		> 50		> 50	(%)	@ BREAK	ELONGATION	SHEAR EVALUATION
		•	FTB		FTB		FTB		FTB		FTB				FTB		FTB		FTB		FTB		FTB	MODE	FAILURE	NSF 54	.UATION
				_			_				NA												N N	(lb/in)	SPEC.	PROJECT	

NA: Not Available

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### **GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS** QUALITY ASSURANCE TESTING

PROJECT: McKENNA LANDFILL - ALBION, NY CLIENT: GZA GEOENVIRONMENTAL (NY)

DATE REC'D: 05-Dec-00

**SEAM TYPE: HEAT FUSION WELD** TRI LOG #: E2148-47-07 DATE TESTED: 05-Dec-00 MATERIAL: LLDPE **CONTACT: JOHN DANZER OR BART KLETTKE** 

ASTM D 4437/413/3083 NSF Modified

ANALYST: EMB REVIEW: SR名 REPORT DATE: 05-Dec-00

				PEEL EVALUATION				SHEAR EVALUATION	UATION	
		MAXIMUM	PEEL	SNOOT	NSF 54	PROJECT	MAXIMUM	ELONGATION	NSF 54	PROJECT
SAMPLE	SPECIMEN	TENSION	INCURSION	P	FAILURE	SPEC.	TENSION	@ BREAK	FAILURE	SPEC.
NUMBER	NUMBER	(lb/in)	(%)	FAILURE	MODE	(lp/in)	(lb/in)	(%)	MODE	(lþ/in)
	4	131	<10	SE	FTB	AN	142	> 50	FTB	¥
	5A	132	× 10	SE	FTB					
	3.	137		SE	FTB		144	> 50	FTB	
	4 <b>A</b>	136	×10	SE	FTB					
	5A	136	<10	SE	FTB		151	> 50	FTB	
DS-71	MEAN:	134								<del>-</del>
	T.	124	<10	S	FTB		145	> 50	FTB	
	2B	127	×10	SE	FTB					
	38	127	×10	SE	FTB		138	> 50	FTB	
	48	128	×10	SE	FTB					
	5B	129	<10	SE	FTB					
	MEAN	127				MEAN:	144			
	14	125	<10	SE	FTB	ΑΝ	149	> 50	FTB	Ϋ́
	2A	136	×10	SE	FTB					
	34	136	×10	SE	FTB		142	> 50	FTB	
	4 <b>A</b>	129	×10	SE	FTB					
	5A	136	<10	SE	FTB		141	> 20	FTB	
DS-72	MEAN:	132								
	18	135	<10	SE	FTB		144	> 50	FTB	
	<b>78</b>	140	×10	SE	FTB					
	38	137	×10	SE	FTB		141	> 50	FTB	
	48	141	×10	SE	FTB			_		
	5B	138	<10	SE	FTB					
	MEAN	138				MEAN:	143			
					The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon					

### NA: Not Available

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# QUALITY ASSURANCE TESTING GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GZA GEOENVIRONMENTAL (NY)
PROJECT: McKENNA LANDFILL - ALBION, NY
CONTACT: JOHN DANZER OR BART KLETTKE
DATE REC'D: 05-Dec-00

MATERIAL: LLDPE
SEAM TYPE: HEAT FUSION WELD
TBILOG #: 52448 47 67

SEAM TYPE: HEAT FUSION W TRI LOG #: E2148-47-07 DATE TESTED: 05-Dec-00

						DS-74												DS-73						NUMBER	SAMPLE		
MEAN	5B	4B	3B	2B	1B	MEAN:	5A	4A	3A	2A	1A	MEAN	5B	4B	3B	2B	1B	MEAN:	5A	4A	3A	2A	1A	NUMBER	SPECIMEN		
123	119	127	128	117	123	124	130	127	123	122	117	131	136	131	127	128	131	137	138	139	138	137	134	(lb/in)			ΙI
	<10	<10	<b>^10</b>	<b>^10</b>	<10		<10	<b>^10</b>	<10	<b>^10</b>	<10		<10	<10	<10	<10	<10		<10	<b>^10</b>	<b>~10</b>	<10	<b>~10</b>	(%)	INCURSION	PEEL	
	SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	SE	SE		SE	SE	SE	SE	SE	FAILURE	유	Locus	PEEL EVALUATION
	FTB	FTB	FΤB	FTB	BTF		FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FΤB	FTB		FTB	FTB	FTB	FTB	FTB	MODE			1 1
MEAN:											NA	MEAN:											N N	(lb/in)	SPEC.	PROJECT	
140			135	_	136		142		149		139	145		-	150		137		145		147		145	(lb/in)	TENSION	MAXIMUM	
			> 50		> 50		> 50		> 50		> 50				> 50		> 50		> 50		> 50		> 50	(%)	@ BREAK	ELONGATION	SHEAR EVALUATION
			FTB		FTB		FTB		BT <sub>3</sub>		ВТЭ				FTB		FTB		FTB		FTB		BTA	MODE	FAILURE	NSF 54	UATION
											N A												NA A	(lb/in)	SPEC.	PROJECT	

### NA: Not Available

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### **GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS** QUALITY ASSURANCE TESTING

CLIENT: GZA GEOENVIRONMENTAL (NY)

MATERIAL: LLDPE

**ASTM D 4437/413/3083 NSF Modified** 

PROJECT: MCKENNA CONTACT: JOHN DAI DATE REC'D: 05-Dec-00	PROJECT: McKENNA LANDFILL - ALBION, NY CONTACT: JOHN DANZER OR BART KLETTKE \TE REC'D: 05-Dec-00	DFILL - ALBIC OR BART KL		SEAM TYPE: HEAT FUS TRI LOG #: E2148-47-1 DATE TESTED: 05-Dec-00	SEAM TYPE: HEAT FUSION WELD TRI LOG #: E2148-47-07 .TE TESTED: 05-Dec-00	WELD		ANALYST: EMB REVIEW: 5-8-4 REPORT DATE: 05-Dec-00	EMB S-RZ4 05-Dec-00	
				PEEL EVALUATION	2		L	SHEAR EVALUATION	UATION	
		MAXIMUM	PEEL	SOCOS	NSF 54	PROJECT	MAXIMUM	ELONGATION	NSF 54	PROJECT
SAMPLE	SPECIMEN	TENSION	INCURSION	Ŗ	FAILURE	SPEC.	TENSION	@ BREAK	FAILURE	SPEC.
NUMBER	NUMBER	(lp/in)	(%)	FAILURE	MODE	(lb/in)	(lb/in)	(%) )	MODE	(lb/in)
	14	133	<10	SE	FTB	¥	151	> 50	FTB	ΑN
	Α	140	× 10	IJ,	FŢB		_			
	3A	137	×10	SS	FTB		147	> 50	FTB	
	44	135	<10	SS	FTB					
	5A	136	<10	SE	FTB		146	> 20	FTB	
DS-75	MEAN:	136				<u> </u>			-	_,
	<b>6</b>	132	×10	SE	FTB		148	> 50	FTB	
	2B	130	×10	SE	FTB					
	38	135	<10	S	FTB		146	> 50	FTB	
	48	135	×10	SE	FTB					
	5B	126	<10	SE	FTB					
	MEAN	132				MEAN:	148			
	14	125	<10	SE	FTB	¥	158	> 50	FTB	Ϋ́
	<b>2</b> A	128	<10	띯	FTB					
	3A	126	<10	S	FTB		140	> 20	FTB	
	4 <b>A</b>	128	<10	SS	FTB					
	5A	131	<10	SE	FTB		139	> 20	FTB	
DS-76	MEAN:	128				1				
	18	129	<10	ЗS	FTB	Τ	139	> 20	FTB	
	28	129	×10	S	FTB					
	38	125	<10	SE	FTB		154	> 20	FTB	
	48	126	<10	S	FTB					
	5B	127	<10	SE	FTB					
	MEAN	127				MEAN:	146			

### NA: Not Available

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# QUALITY ASSURANCE TESTING GEOMEMBRANE SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: GZA GEOENVIRONMENTAL (NY)
PROJECT: McKENNA LANDFILL - ALBION, NY
CONTACT: JOHN DANZER OR BART KLETTKE
DATE REC'D: 05-Dec-00

MATERIAL: LLDPE SEAM TYPE: HEAT FUSION WELD

TRI LOG #: E2148-47-07 DATE TESTED: 05-Dec-00

ASTM D 4437/413/3083 NSF Modified ANALYST: EMB

ANALYST: EMB
REVIEW: 524
REPORT DATE: 05-Dec-00

		_				_		_				_	_		
						DS-77						NUMBER	SAMPLE		
MEAN	5B	4B	3B	2B	1B	MEAN:	5A	4A	3A	2A	1A	NUMBER	SPECIMEN		
132	129	134	131	132	134	132	130	133	132	133	133	(lb/in)	TENSION	MAXIMUM	
	<10	<b>^10</b>	<10	<10	<b>^10</b>		<10	<b>10</b>	<b>~10</b>	<b>~10</b>	<b>~10</b>	(%)	INCURSION	PEEL	
	SE	SE	SE	SE	SE	-	SE	SE	SE	SE	SE	FAILURE	유	Locus	PEEL EVALUATION
	FTB	FTB	FTB	FTB	FTB		FTB	FTB	FTB	FTB	FTB	MODE	FAILURE	NSF 54	Z
MEAN:				_		l					NA	(lb/in)	SPEC.	PROJECT	
141		_	142		142		142		141		139	(lb/in)	TENSION	MAXIMUM	
			> 50		> 50		> 50		> 50		> 50	(%)	@ BREAK	ELONGATION	SHEAR EVALUATION
			FTB		FTB		FTB		FTB		FTB	MODE	FAILURE	NSF 54	UATION
			_				_				N A	(lb/in)	SPEC.	PROJEC.	

### NA: Not Available

to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply

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STRIPPING OF TOPSOIL FOR EXISTING SOIL RECOVERY



REMOVAL OF COVERSOIL FOR EXISTING SOIL RECOVERY



SLURRY MIXING PONDS FOR SOIL-BENTONITE BARRIER WALL



INITIAL EXCAVATION AND INSTALLATION OF SLURRY MIXTURE FOR SOIL-BENTONITE BARRIER WALL



GAS VENT RISER AS PART OF GAS VENTING SYSTEM



WET WELL STRUCTURE PRIOR TO INSTALLATION



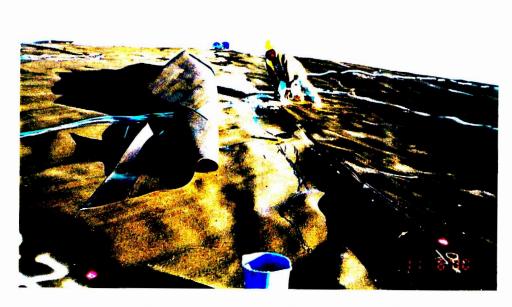
GAS VENTING/LEACHATE COLLECTION SYSTEM GEOCOMPOSITE DEPLOYMENT



LLDPE GEOMEMBRANE DEPLOYMENT



FUSION WELD OF LLDPE GEOMEMBRANE



VACCUM TEST OF LLDPE GEOMEMBRANE PATCH BY SERROT INTERNATIONAL, INC.



DRAINAGE STONE PLACEMENT FOR WEEP DRAIN CONSTRUCTION



BARRIER PROTECTION MATERIAL PLACEMENT



LOW PERMEABILITY CLAY PLACEMENT AND COMPACTION



HYDRATING OF THE SUBGRADE PRIOR TO TOPSOIL PLACEMENT



TOPSOIL PLACEMENT



TRACKING IN TOPSOIL



HYDROSEEDING OF TOPSOIL BELOW THE WEEP DRAIN AND STOCKPILE AREA



DRAINAGE CONTROL STRUCTURE-JUTE MESH WITHIN WEST END DRAINAGE SWALE



INITIAL CLEARING AND GRUBBING OF LANDFILL VIEW OF SOUTHEAST CORNER OF LANDFILL.



CLEARING AND GRUBBING OF TREES, SHRUBS AND BRUSH ALONG NORTH SIDE OF LANDFILL.



FINE-GRADING OF SUBGRADE



DECOMMISSIONING OF EXISTING MONITORING WELL PERFORMED BY SJB DRILLING SERVICES