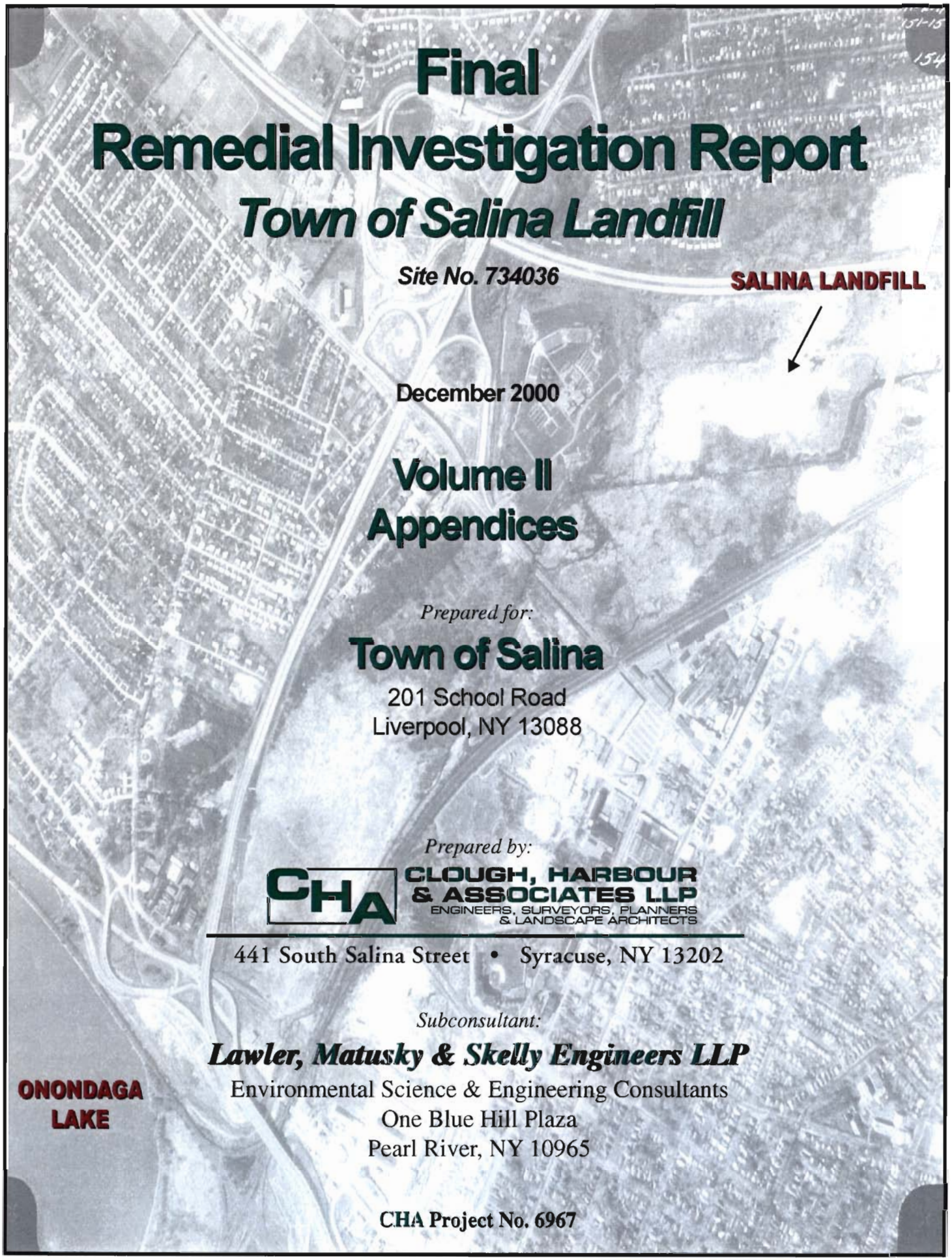
Final
Remedial Investigation Report
Town of Salina Landfill

Site No. 734036



December 2000

Volume II
Appendices

Prepared for:

Town of Salina

201 School Road
Liverpool, NY 13088

Prepared by:

CLOUGH, HARBOUR & ASSOCIATES LLP
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Environmental Science & Engineering Consultants
One Blue Hill Plaza
Pearl River, NY 10965

CHA Project No. 6967

APPENDIX A

Supporting Data-
Ecological Survey

APPENDIX A-1

Agency Information

Faxed 6/19/98

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 LUKER ROAD
CORTLAND, NY 13045

June 19, 1998

Mr. Jack H. Hecht
Project Biologist
Lawler, Matusky & Skelly Engineers LLP
One Blue Hill Plaza, P.O. Box 1509
Pearl River, NY 10965

Dear Mr. Hecht:

This responds to your letter of June 8, 1998, requesting information on the presence of endangered or threatened species in the vicinity of the Salina Landfill in the Town of Salina, Onondaga County, New York.

Except for occasional transient individuals, no Federally listed or proposed endangered or threatened species under our jurisdiction are known to exist in the project impact area. Therefore, no Biological Assessment or further Section 7 consultation under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) is required with the U.S. Fish and Wildlife Service (Service). Should project plans change, or if additional information on listed or proposed species becomes available, this determination may be reconsidered.

The above comments pertaining to endangered species under our jurisdiction are provided pursuant to the Endangered Species Act. This response does not preclude additional Service comments under the Fish and Wildlife Coordination Act or other legislation.

For additional information on fish and wildlife resources or State-listed species, we suggest you contact:

New York State Department of
Environmental Conservation
Region 7
615 Erie Boulevard West
Syracuse, NY 13204-2400
(315) 426-7438

New York State Department of
Environmental Conservation
Wildlife Resources Center - Information Serv.
New York Natural Heritage Program
700 Troy-Schenectady Road
Latham, NY 12110-2400
(518) 783-3932

National Wetlands Inventory (NWI) maps may or may not be available for the project area. However, while the NWI maps are reasonably accurate, they should not be used in lieu of field surveys for determining the presence of wetlands or delineating wetland boundaries for Federal regulatory purposes. Copies of specific NWI maps can be obtained from:

Cornell Institute for Resource Information Systems
302 Rice Hall
Cornell University
Ithaca, NY 14853
Telephone: (607) 255-4864

Work in certain waters and wetlands of the United States may require a permit from the U.S. Army Corps of Engineers (Corps). If a permit is required, in reviewing the application pursuant to the Fish and Wildlife Coordination Act, the Service may concur, with or without stipulations, or recommend denial of the permit depending upon the potential adverse impacts on fish and wildlife resources associated with project implementation. The need for a Corps permit may be determined by contacting Mr. Paul Leuchner, Chief, Regulatory Branch, U.S. Army Corps of Engineers, 1776 Niagara Street, Buffalo, NY 14207 (telephone: [716] 879-4321).

If you require additional information please contact Michael Stoll at (607) 753-9334.

Sincerely,

Mark W. Clough

ACTING FOR

Sherry W. Morgan
Field Supervisor

cc: NYSDEC, Syracuse, NY (Environmental Permits)
NYSDEC, Latham, NY
COE, Buffalo, NY

New York State Department of Environmental Conservation
Division of Fish, Wildlife & Marine Resources
Wildlife Resources Center – New York Natural Heritage Program
700 Troy-Schenectady Road, Latham, New York 12110-2400
Phone: (518) 783-3932 FAX: (518) 783-3916

John P. Cahill
Commissioner

June 19, 1998

Jack H. Hecht
Lawler, Matusky & Skelly Engineers
1 Blue Hill Plaza, PO Box 1509
Pearl River, NY 10965

Dear Mr. Hecht:

We have reviewed the New York Natural Heritage Program files with respect to your recent request for biological information concerning the Remedial Investigation of the Salina Landfill, area as indicated on your enclosed map, including 2.0 miles of the site, located in the Town of Salina, Onondaga County.

Enclosed is a computer printout covering the area you requested to be reviewed by our staff. The information contained in this report is considered sensitive and may not be released to the public without permission from the New York Natural Heritage Program.

Our files are continually growing as new habitats and occurrences of rare species and communities are discovered. In most cases, site-specific or comprehensive surveys for plant and animal occurrences have not been conducted. For these reasons, we can only provide data which have been assembled from our files. We cannot provide a definitive statement on the presence or absence of species, habitats or natural communities. This information should not be substituted for on-site surveys that may be required for environmental assessment.

This response applies only to known occurrences of rare animals and/or significant wildlife habitats. Please contact the appropriate NYS DEC Regional Office, Division of Environmental Permits, at the address enclosed for information regarding any regulated areas or permits that may be required (e.g., regulated wetlands) under State Law.

If this proposed project is still active one year from now we recommend that you contact us again so that we may update this response. Kindly address your requests to the above address,

Sincerely,

Teresa Mackey

Teresa Mackey, Information Services
NY Natural Heritage Program

Encs
cc: Reg. 7, Wildlife Mgr.
Reg. 7, Fisheries Mgr.

USERS GUIDE TO NY NATURAL HERITAGE DATA

New York Natural Heritage Program, 700 Troy-Schenectady Road, Latham NY 12110-2400 phone: (518) 783-3932

NATURAL HERITAGE PROGRAM: The Natural Heritage Program is an ongoing, systematic, scientific inventory whose goal is to compile and m[illegible]ain [illegible] on the rare plants and animals native to New York State, and significant ecological communities. The data provided in the report facilitate sou[illegible]nn[illegible] conservation, and natural resource management and help to conserve the plants, animals and ecological communities that represent New York's natu[illegible]erit[illegible]

DATA SENSITIVITY: The data provided in the report are ecologically sensitive and should be treated in a sensitive manner. The report is for your in-ho[illegible] use and should not be released, distributed or incorporated in a public document without prior permission from the Natural Heritage Program.

NATURAL HERITAGE REPORTS (may contain any of the following types of data):

COUNTY NAME: County where the occurrence of a rare species or significant ecological community is located.
TOWN NAME: Town where the occurrence of a rare species or significant ecological community is located.
USGS 7 ½' TOPOGRAPHIC MAP: Name of 7.5 minute US Geological Survey (USGS) quadrangle map (scale 1:24,000).
LAT: Centrum latitude coordinate of the location of the occurrence. Caution: latitude & longitude must be used with PRECISION (e.g. the location of [illegible] occurrence with M (minute) precision is not precisely known & is thought to occur within a 1.5 mile radius of the latitude/longitude coordinates).
LONG: Centrum longitude coordinate of the location of the occurrence. See also LAT above.
PRECISION: S - seconds: location known precisely. (within a 300' or 1-second radius of the latitude and longitude given.
M - minutes: location known only to within a 1.5 mile (1 minute) radius of the latitude and longitude given.
G - general: location known to within a 5 mile radius of the latitude and longitude given.
SIZE (acres): Approximate acres occupied by the rare species or significant ecological community at this location.
SCIENTIFIC NAME: Scientific name of the occurrence of a rare species or significant ecological community..
COMMON NAME: Common name of the occurrence of a rare species or significant ecological community.
ELEMENT TYPE: Type of element (i.e. plant, animal, significant ecological community, other, etc.)
LAST SEEN: Year rare species or significant ecological community last observed extant at this location.
EO RANK: Comparative evaluation summarizing the quality, condition, viability and defensibility of this occurrence. Use with LAST SEEN and PRECISION
A-E = Extant: A=excellent, B=good, C=marginal, D=poor, E=extant but with insufficient data to assign a rank of A - D.
F = Failed to find. Did not locate species, but habitat is still there and further field work is justified.
H = Historical. Historical occurrence without any recent field information.
X = Extirpated. Field/other data indicates element/habitat is destroyed and the element no longer exists at this location.
? = Unknown.
Blank = Not assigned.

NEW YORK STATE STATUS (animals): Categories of Endangered and Threatened species are defined in New York State Environmental Conservatio[illegible] Law section 11-0535. Endangered, Threatened, and Special Concern species are listed in regulation 6NYCRR 182.5.

E = Endangered Species: any species which meet one of the following criteria:
1) Any native species in imminent danger of extirpation or extinction in New York.
2) Any species listed as endangered by the United States Department of the Interior, as enumerated in the Code of Federal Regulations 50 CFR [illegible].11.
T = Threatened Species: any species which meet one of the following criteria:
1) Any native species likely to become an endangered species within the foreseeable future in NY.
2) Any species listed as threatened by the U.S. Department of the Interior, as enumerated in the Code of the Federal Regulations 50 CFR 17.11.
SC = Special Concern Species: those species which are not yet recognized as endangered or threatened, but for which documented concern exists for their continued welfare in New York. Unlike the first two categories, species of special concern receive no additional legal protection under Environmental Conservation Law section 11-0535 (Endangered and Threatened Species).
P = Protected Wildlife (defined in Environmental Conservation Law section 11-0103): wild game, protected wild birds, and endangered species of wildlife.
U = Unprotected (defined in Environmental Conservation Law section 11-0103): the species may be taken at any time without limit; however a license to take may be required.
G = Game (defined in Environmental Conservation Law section 11-0103): any of a variety of big game or small game species as stated in the Environmental Conservation Law; many normally have an open season for at least part of the year, and are protected at other times.

NEW YORK STATE STATUS (plants): The following categories are defined in regulation 6NYCRR part 193.3 and apply to NYS Environmental Conservation Law section 9-1503.

(blank) = no state status
E = Endangered Species: listed species are those with:
1) 5 or fewer extant sites, or
2) fewer than 1,000 individuals, or
3) restricted to fewer than 4 U.S.G.S. 7 ½ minute topographical maps, or
4) species listed as endangered by U.S. Department of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.
T = Threatened: listed species are those with:
1) 6 to fewer than 20 extant sites, or
2) 1,000 to fewer than 3,000 individuals, or
3) restricted to not less than 4 or more than 7 U.S.G.S. 7 and ½ minute topographical maps, or
4) listed as threatened by U.S. Department of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.
R = Rare: listed species have:
1) 20 to 35 extant sites, or
2) 3,000 to 5,000 individuals statewide.
U = Unprotected
V = Exploitably vulnerable: listed species are likely to become threatened in the near future throughout all or a significant portion of their range within t[illegible]te if causal factors continue unchecked.

NEW YORK STATE STATUS (communities): At this time there are no categories defined for communities.

continued on next page

FEDERAL STATUS (plants and animals): The categories of federal status are defined by the United States Department of the Interior as part of the 1974 Endangered Species Act (see Code of Federal Regulations 50 CFR 17). The species listed under this law are enumerated in the Federal Register vol. 50, no. 188, pp. 39526 - 39527.

(blank) = No Federal Endangered Species Act status.
LE = The taxon is formally listed as endangered.
LT = The taxon is formally listed as threatened.
LELT = The taxon is formally listed as endangered in part of its range and threatened in other parts.
PE = The taxon is proposed as endangered.
PT = The taxon is proposed as threatened.
C1 = Candidate, category 1 - There is sufficient information to list the taxon as endangered or threatened.
C2 = Candidate, category 2 - The taxon may be appropriate for listing but more data are needed.
3A = The taxon considered extinct by the U. S. Fish and Wildlife Service (USFWS).
3B = The taxon is no longer considered taxonomically distinct by the USFWS and thus is not appropriate for listing.
3C = The taxon has been shown to be more abundant, widespread, or better protected than previously thought and therefore not in need of official listing.
* = The taxon is possibly extinct.
** = The taxon is thought to be extinct in the wild but extant in cultivation.
Additional codes:
(C2NL) = Heritage code indicating that the taxon is a candidate in some areas, not listed in other areas.
(E/SA) = Heritage code indicating that the taxon is endangered because of similarity of appearance to other endangered species or subspecies.

FEDERAL STATUS (ecological communities): At this time there are no federal status categories defined for ecological communities.

GLOBAL AND STATE RANKS (animals, plants, ecological communities and others): Each element has a global and state rank as determined by the NY Natural Heritage Program. These ranks carry no legal weight. The global rank reflects the rarity of the element throughout the world and the state rank reflects the rarity within New York State. Infraspecific taxa are also assigned a taxon rank to reflect the infraspecific taxon's rank throughout the world.

GLOBAL RANK:
G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences), or very few remaining acres, or miles of stream) or especially vulnerable to extinction because of some factor of its biology.
G2 = Imperiled globally because of rarity (6 - 20 occurrences, or few remaining acres, or miles of stream) or very vulnerable to extinction throughout its range because of other factors.
G3 = Either rare and local throughout its range (21 to 100 occurrences), or found locally (even abundantly at some of its locations) in a restricted range (e.g. a physiographic region), or vulnerable to extinction throughout its range because of other factors.
G4 = Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.
G5 = Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.
GH = Historically known, with the expectation that it might be rediscovered.
GX = Species believed to be extinct.
GU = Status unknown.

STATE RANK:
S1 = Typically 5 or fewer occurrences, very few remaining individuals, acres, or miles of stream, or some factor of its biology making it especially vulnerable in New York State.
S2 = Typically 6 to 20 occurrences, few remaining individuals, acres, or miles of stream, or factors demonstrably making it very vulnerable in New York State.
S3 = Typically 21 to 100 occurrences, limited acreage, or miles of stream in New York State.
S4 = Apparently secure in New York State.
S5 = Demonstrably secure in New York State.
SH = Historically known from New York State, but not seen in the past 15 years.
SX = Apparently extirpated from New York State.
SA = Accidental or casual in the state.
SE = Exotic, not native to New York State.
SP = Element potentially occurs in the state but there are no occurrences reported.
SR = Reported in the state but without persuasive documentation.
SU = Status unknown.
TAXON (T) RANK: The T-ranks (T1 - T5) are defined the same way the Global ranks (G1 - G5) are but the T-rank only refers to the rarity of the subspecific taxon of the species as a whole.
T1 through T5 = See Global Rank definitions above.
Q = Indicates a question exists whether or not the taxon is a good taxonomic entity.
? = Indicates a question exists about the rank.

OFFICE USE: Information for use by the Natural Heritage Program.

SIGNIFICANT HABITAT DATABASE REPORTS (Use of this database is slowly being discontinued as the data is integrated into Heritage databases)
REPORT ID: Significant habitat file code.
NAME OF AREA: Site name where the significant habitat is located.
TYPE OF AREA: Type of significant habitat.
COUNTY/TOWN OR CITY: County and town where the significant habitat is located.
QUADRANGLE: Name of the USGS 7.5 minute topographic map where the significant habitat is located.
LATITUDE: Latitude coordinate (degrees, minutes, seconds) for the location of the significant habitat.
LONGITUDE: Longitude coordinate for the location of the significant habitat.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL PERMITS REGIONAL OFFICES

REGION	COUNTIES	NAME	ADDRESS AND PHONE NO.
Region 1	Nassau Suffolk	Robert Greene Permit Administrator	Loop Road, Bldg. 40 SUNY Stony Brook, NY 11790-2356 (516) 444-0365
Region 2	New York City	George Danskin Permit Administrator	Hunters Point Plaza 4740 21st Street Long Island City, NY 11101-5407 (718) 482-4997
Region 3	Dutchess Orange Putnam Rockland, Sullivan Ulster, Westchester	Margaret Duke Permit Administrator	21 South Putt Corners Road New Paltz, NY 12561-1696 (914) 256-3059
Region 4	Albany Columbia Delaware Greene, Montgomery, Otsego Rensselaer, Schenectady, Schoharie	William J. Clarke Permit Administrator	1150 N. Westcott Road Schenectady, NY 12306-2014 (518) 357-2234
Region 5	Clinton Essex Franklin Fulton, Hamilton Saratoga, Warren, Washington	Richard Wild Permit Administrator	Route 86 Ray Brook, NY 12977 (518) 897-1234
Region 6	Herkimer Jefferson Lewis Oneida, St. Lawrence	Randy Vaas Permit Administrator	State Office Building 317 Washington Street Watertown, NY 13601 (315) 785-2246
Region 7	Broome Cayuga Chenango Cortland, Madison, Onondaga Oswego, Tioga, Tompkins	Ralph Manna, Jr. Permit Administrator	615 Erie Blvd. West Syracuse, NY 13204-2400 (315) 426-7439
Region 8	Chemung Genesee Livingston Monroe, Ontario, Orleans Schuyler, Seneca, Steuben Wayne, Yates	Albert Butkas Permit Administrator	6274 East Avon-Lima Road Avon, NY 14414 (716) 226-2466
Region 9	Allegany Cattaraugus Chautauqua Erie, Niagara, Wyoming	Steven Doleski Permit Administrator	270 Michigan Avenue Buffalo, NY 14203-2999 (716) 851-7165

NATURAL HERITAGE REPORT on RARE SPECIES and ECOLOGICAL COMMUNITIES

Prepared 17 JUN 1998 by NY Natural Heritage Program, NYS DEC, Latham, New York.

Records with a PRECISION value of "S" are known to be in a location which may be impacted by the proposed action.
Records with a PRECISION value of "M" may possibly occur within the project area in appropriate habitat.
This report contains SENSITIVE information which should be treated in a sensitive manner -- Please see cover letter.

REFER TO THE USERS GUIDE FOR EXPLANTIONS OF CODES, RANKS, AND FIELDS.

* LOCATION SCIENTIFIC NAME & Common Name	NY LEGAL STATUS & HERITAGE RANK	FEDERAL STATUS	PRECISION & ACRES	EORANK & LAST SEEN	GENERAL HABITAT AND QUALITY	TOWN(S) & DETAILED LOCATION	USGS TOPO QUAD LAT & LONG	OFFICE USE
* ONONDAGA SALT MARSH								
INLAND SALT MARSH COMMUNITY	UNPROTECTED G2 S1		M	E 1980	(PROBABLY LOOKS LIKE SPARSELY VEGETATED MUDFLATS ALONG THE ROAD TO THE EDGE OF A POND.).	SALINA. BETWEEN RT. 57 AND ONONDAGA LAKE ON THE NE SIDE OF THE LAKE NEAR DANFORTH POOL.	SYRACUSE WEST 43 04 47 N 76 10 53 W	4307612 2
INLAND SALT POND COMMUNITY	UNPROTECTED G2 S1		M	C? 1980	A POOL FED BY SALT SPRINGS.	SALINA. DANFORTH POOL BETWEEN RT. 57 AND ONONDAGA LAKE ON THE NE SIDE OF THE LAKE.	SYRACUSE WEST 43 04 52 N 76 10 58 W	4307612 3

2 Records Processed

New York State
Breeding Bird Atlas

The enclosed data from the New York State Breeding Bird Atlas represents a cumulative effort from 1980-1985. These data are the result of on-site surveys within each block conducted by numerous volunteers. The intensity level and effort in data collecting varies throughout the State. Some blocks have been more thoroughly searched than others. For these reasons, we cannot provide a definitive statement concerning the absence of a breeding record for a species not listed in a block. We can only provide a listing of species known to be breeding or suspected of breeding in each block.

The highest level of confirmation of breeding recorded during the Atlas was retained in this listing. For example, a record of probable nesting "T2" (Bird Holding Territory) in 1983 would be retained over a possible nesting "X1" (Species Observed in Possible Nesting Habitat) in 1984 and over a probable nesting "P2" (Pair Observed in Suitable Nesting Habitat) in 1985 since "T2" is the highest level of breeding evidence in this example.

Atlas block boundaries can be identified by the New York Transverse Mercator (NYTM) grid, a modification of the Universal Transverse Mercator (UTM) grid. Coordinates for the block are included in the heading on page 1 of each printout. These coordinates correspond to tick marks found on United States Geological Survey (USGS) and New York State Department of Transportation (NYSDOT) 7.5′ quadrangles. In New York west of 78 degrees longitude and in extreme eastern Long Island, east of 72 degrees longitude (Montauk Point and Mystic quadrangles) the NYTM grid differs from the UTM grid. In these areas tick marks are accurate only on the NYSDOT quadrangles. Do not use USGS quadrangles to identify Atlas block boundaries in these areas.

Political jurisdiction(s) within each Atlas block are also included in the heading on page 1. County(ies) and Town(s) or City(ies), American Indian lands, neighboring states and/or Canada are listed if more than five percent (5%) of the area within the block occurs in the jurisdiction. In addition, an estimated percentage of the block area within each jurisdiction is included.

Definitions of the New York State legal status and the Natural Heritage Program (NHP) State ranking are provided on the enclosed sheet entitled "New York State Breeding Bird Atlas Species Status." The NHP rank reflects "believed" rarity within the State. It does not confer any legal protection to the species and is meant only as a "working" list, subject to frequent changes based upon the most recent data available.

Explanation of the breeding code category can be found on the enclosed sheet entitled "New York State Breeding Bird Atlas Key to Breeding Evidence."

Questions concerning these data may be addressed to:

Information Services
New York Natural Heritage Program
N.Y.S.D.E.C.
Wildlife Resources Center
700 Troy-Schenectady Road
Latham, New York 12110-2400

Copies of the published book "The Atlas of Breeding Birds in New York State", Andrle, Robert F. and Janet R. Carroll, Editors, may be purchased directly from Cornell University Press. Call toll free 1-800-666-2211 to order and have billed to your charge card.

New York State Breeding Bird Atlas
Species Status

New York State Legal Status

Endangered - any species which meet one of the following criteria:

1) Any native species in imminent danger of extirpation or extinction in New York.

2) Any species listed as endangered by the United States Department of the Interior, as enumerated in the Code of Federal Regulations 50 CFR 17.11.

Threatened - any species which meet one of the following criteria:

1) Any native species likely to become an endangered species within the foreseeable future in New York.

2) Any species listed as threatened by the United States Department of the Interior, as enumerated in the Code of Federal Regulations 50 CFR 17.11, and not listed as endangered in New York.

Protected-Special Concern - those species which are not yet recognized as endangered or threatened, but for which documented concern exists for their continued welfare in New York and are Federally protected wild birds.

Protected-Game Species - species classified as small game in New York by Environmental Conservation Law, may have an open season for part of the year and are protected at other times.

Protected - those species listed as wild game, protected wild birds, and endangered species as defined in the Environmental Conservation Law.

Unprotected - species which may be taken at any time without limit; however, a license to take may be required.

Natural Heritage Program State Ranks

S1 - Typically 5 or fewer occurrences, very few remaining individuals, acres, or miles of stream, or some other factor of its biology making it especially vulnerable in New York State.

S2 - Typically 6 to 20 occurrences, few remaining individuals, acres, or miles of stream, or factors demonstrably making it very vulnerable in New York State.

S3 - Typically 21 to 100 occurrences, limited acreage, or miles of stream in New York State.

S4 - Apparently secure in New York State.

S5 - Demonstrably secure in New York State.

SH - Historically known from New York State, but not seen in the past 15 years.

SX - Apparently extirpated from New York State.

SE - Exotic, not native to New York State.

SR - State report only, no verified specimens known from New York State.

SU - Status in New York State is unknown.

NR - Not ranked, usually a hybrid species.

NEW YORK STATE BREEDING BIRD ATLAS
KEY TO BREEDING EVIDENCE

CODE DEFINITION OF CRITERIA

Possible Breeding

X1 Species observed in possible nesting habitat but no other indication of breeding noted, or singing male(s) present (or breeding calls heard), in breeding season (based upon one visit).

Probable Breeding

P2 Pair observed in suitable habitat in breeding season.

S2 Singing male present (or breeding calls heard) on more than one date in the same place.

T2 Bird (or pair) apparently holding territory.

D2 Courtship and display, agitated behavior or anxiety calls from adults suggesting probable presence nearby of a nest or young; well-developed brood-patch or cloacal protuberance on trapped adult. Includes copulation.

N2 Visiting probable nest site. Nest building by wrens and woodpeckers.

B2 Nest building or excavation of a nest hole.

Confirmed Breeding

DD Distraction display or injury-feigning.

UN Used nest found.

FE Female with egg in the oviduct.

FL Recently fledged young (including downy young of precocial species - waterfowl, shorebirds).

ON Adult(s) entering or leaving nest site in circumstances indicating occupied nest.

FS Adult carrying fecal sac.

FY Adult(s) with food for young.

NE Identifiable nest and eggs, bird setting on nest or eggs, identifiable eggshells found beneath nest, or identifiable dead nestling(s).

NY Nest with young.

NEW YORK STATE BREEDING BIRD ATLAS
BREEDING SPECIES OF : VICINITY OF SALINA LANDFILL
1980-1985 DATA AOU CHECKLIST ORDER

COMMON NAME	SCIENTIFIC NAME	BREED-ING CODE	YEAR	NEW YORK LEGAL STATUS	NATURAL HERITAGE PROGRAM STATE RANK
Great Blue Heron	Ardea herodias	X1	83	Protected	S5
Green-backed Heron	Butorides striatus	NY	81	Protected	S5
American Black Duck	Anas rubripes	P2	84	Game Species	S4
Mallard	Anas platyrhynchos	FL	83	Game Species	S5
Sharp-shinned Hawk	Accipiter striatus	X1	82	Protected	S4
Red-tailed Hawk	Buteo jamaicensis	NY	85	Protected	S5
American Kestrel	Falco sparverius	NY	82	Protected	S5
Ring-necked Pheasant	Phasianus colchicus	FL	82	Game Species	SE
Ruffed Grouse	Bonasa umbellus	X1	81	Game Species	S5
American Crow	Corvus brachyrhynchos	NY	81	Game Species	S5
Virginia Rail	Rallus limicola	FL	84	Game Species	S5
Killdeer	Charadrius vociferus	NE	83	Protected	S5
Spotted Sandpiper	Actitis macularia	FL	85	Protected	S5
Upland Sandpiper	Bartramia longicauda	FL	82	Protected-Special Concern	S4
American Woodcock	Scolopax minor	S2	81	Game Species	S5
Rock Dove	Columba livia	NE	84	Unprotected	SE
Mourning Dove	Zenaida macroura	NY	81	Protected	S5
Eastern Screech-Owl	Otus asio	FL	83	Protected	S5
Great Horned Owl	Bubo virginianus	NY	85	Protected	S5
Common Nighthawk	Chordeiles minor	FY	80	Protected-Special Concern	S4
Chimney Swift	Chaetura pelagica	NY	80	Protected	S5
Ruby-throated Hummingbird	Archilochus colubris	X1	85	Protected	S5
Belted Kingfisher	Ceryle alcyon	T2	81	Protected	S5
Red-headed Woodpecker	Melanerpes erythrocephalus	X1	84	Protected	S4
Red-bellied Woodpecker	Melanerpes carolinus	X1	82	Protected	S5
Downy Woodpecker	Picoides pubescens	FY	82	Protected	S5
Hairy Woodpecker	Picoides villosus	FY	82	Protected	S5
Northern Flicker	Colaptes auratus	FY	81	Protected	S5
Eastern Wood-Pewee	Contopus virens	S2	82	Protected	S5
Alder Flycatcher	Empidonax alnorum	S2	82	Protected	S5
Willow Flycatcher	Empidonax traillii	FL	82	Protected	S5
Least Flycatcher	Empidonax minimus	D2	83	Protected	S5
Eastern Phoebe	Sayornis phoebe	S2	83	Protected	S5

NEW YORK STATE BREEDING BIRD ATLAS
BREEDING SPECIES OF : VICINITY OF SALINA LANDFILL
1980-1985 DATA AOU CHECKLIST ORDER

COMMON NAME	SCIENTIFIC NAME	BREED-ING CODE	YEAR	NEW YORK LEGAL STATUS	NATURAL HERITAGE PROGRAM STATE RANK
Great Crested Flycatcher	Myiarchus crinitus	S2	82	Protected	S5
Eastern Kingbird	Tyrannus tyrannus	NE	81	Protected	S5
Horned Lark	Eremophila alpestris	FL	84	Protected	S5
Purple Martin	Progne subis	ON	81	Protected	S5
Tree Swallow	Tachycineta bicolor	FL	83	Protected	S5
Northern Rough-winged Swallow	Stelgidopteryx serripennis	FL	85	Protected	S5
Cliff Swallow	Hirundo pyrrhonota	X1	83	Protected	S5
Barn Swallow	Hirundo rustica	NE	83	Protected	S5
Blue Jay	Cyanocitta cristata	FY	80	Protected	S5
Black-capped Chickadee	Parus atricapillus	NY	80	Protected	S5
White-breasted Nuthatch	Sitta carolinensis	T2	84	Protected	S5
Brown Creeper	Certhia americana	X1	84	Protected	S5
House Wren	Troglodytes aedon	ON	84	Protected	S5
Veery	Catharus fuscescens	X1	83	Protected	S5
Wood Thrush	Hylocichla mustelina	ON	81	Protected	S5
American Robin	Turdus migratorius	NY	82	Protected	S5
Gray Catbird	Dumetella carolinensis	NY	80	Protected	S5
Northern Mockingbird	Mimus polyglottos	FL	84	Protected	S5
Brown Thrasher	Toxostoma rufum	T2	83	Protected	S5
Cedar Waxwing	Bombycilla cedrorum	FY	83	Protected	S5
European Starling	Sturnus vulgaris	NY	80	Unprotected	SE
Warbling Vireo	Vireo gilvus	ON	83	Protected	S5
Red-eyed Vireo	Vireo olivaceus	T2	83	Protected	S5
Blue-winged Warbler	Vermivora pinus	X1	83	Protected	S5
Yellow Warbler	Dendroica petechia	FY	82	Protected	S5
American Redstart	Setophaga ruticilla	FL	83	Protected	S5
Common Yellowthroat	Geothlypis trichas	FL	83	Protected	S5
Hooded Warbler	Wilsonia citrina	X1	83	Protected	S5
Scarlet Tanager	Piranga olivacea	X1	83	Protected	S5
Northern Cardinal	Cardinalis cardinalis	FY	80	Protected	S5
Rose-breasted Grosbeak	Pheucticus ludovicianus	FL	81	Protected	S5
Indigo Bunting	Passerina cyanea	T2	83	Protected	S5
Rufous-sided Towhee	Pipilo erythrophthalmus	FL	85	Protected	S5

NEW YORK STATE BREEDING BIRD ATLAS
BREEDING SPECIES OF : VICINITY OF SALINA LANDFILL
1980-1985 DATA AOU CHECKLIST ORDER

COMMON NAME	SCIENTIFIC NAME	BREED-ING CODE	YEAR	NEW YORK LEGAL STATUS	NATURAL HERITAGE PROGRAM STATE RANK
Chipping Sparrow	Spizella passerina	NE	81	Protected	S5
Field Sparrow	Spizella pusilla	D2	83	Protected	S5
Savannah Sparrow	Passerculus sandwichensis	FY	82	Protected	S5
Grasshopper Sparrow	Ammodramus savannarum	FY	82	Protected-Special Concern	S4
Song Sparrow	Melospiza melodia	FY	80	Protected	S5
Swamp Sparrow	Melospiza georgiana	T2	84	Protected	S5
White-throated Sparrow	Zonotrichia albicollis	X1	81	Protected	S5
Bobolink	Dolichonyx oryzivorus	D2	83	Protected	S5
Red-winged Blackbird	Agelaius phoeniceus	NY	82	Protected	S5
Eastern Meadowlark	Sturnella magna	FY	81	Protected	S5
Common Grackle	Quiscalus quiscula	NY	80	Protected	S5
Brown-headed Cowbird	Molothrus ater	FY	80	Protected	S5
Northern Oriole	Icterus galbula	FY	83	Protected	S5
Purple Finch	Carpodacus purpureus	P2	83	Protected	S5
House Finch	Carpodacus mexicanus	NY	81	Protected	SE
Pine Siskin	Carduelis pinus	NY	81	Protected	S5
American Goldfinch	Carduelis tristis	NE	82	Protected	S5
House Sparrow	Passer domesticus	NY	80	Unprotected	SE

Most Recent - from Kim H. NYSDEC ESU

Rec'd 10 June 9 JBH

ONONDAGA COUNTY

BALDWINSVILLE QUADRANGLE

Eastern American Toad	*Bufo a. americanus*
Gray Treefrog	*Hyla versicolor-chrysoscelis*
Gray Treefrog	*Hyla versicolor*
Northern Spring Peeper	*Pseudacris c. crucifer*
Bullfrog	*Rana catesbeiana*
Green Frog	*Rana clamitans melanota*
Leopard Frog	*Rana pipiens-s. utricularius*
Northern Leopard Frog	*Rana pipiens*
Pickerel Frog	*Rana palustris*
Common Snapping Turtle	*Chelydra s. serpentina*
Painted Turtle	*Chrysemys picta*
Midland Painted Turtle	*Chrysemys picta marginata*
Northern Water Snake	*Nerodia s. sipedon*
Common Garter Snake	*Thamnophis sirtalis*
Eastern Garter Snake	*Thamnophis s. sirtalis*
Maritime Garter Snake	*Thamnophis sirtalis pallidulus*

BREWERTON QUADRANGLE

Eastern American Toad	*Bufo a. americanus*
Gray Treefrog	*Hyla versicolor*
Northern Spring Peeper	*Pseudacris c. crucifer*
Bullfrog	*Rana catesbeiana*
Green Frog	*Rana clamitans melanota*
Leopard Frog	*Rana pipiens-s. utricularius*
Northern Leopard Frog	*Rana pipiens*
Pickerel Frog	*Rana palustris*
Common Snapping Turtle	*Chelydra s. serpentina*
Painted Turtle	*Chrysemys picta*
Eastern Painted Turtle	*Chrysemys p. picta*
Midland Painted Turtle	*Chrysemys picta marginata*
Northern Water Snake	*Nerodia s. sipedon*
Northern Brown Snake	*Storeria d. dekayi*
Common Garter Snake	*Thamnophis sirtalis*
Eastern Garter Snake	*Thamnophis s. sirtalis*

CAMILLUS QUADRANGLE

Spotted Salamander	*Ambystoma maculatum*
Red-spotted Newt	*Notophthalmus v. viridescens*
Northern Dusky Salamander	*Desmognathus fuscus*
Allegheny Dusky Salamander	*Desmognathus ochrophaeus*
Northern Redback Salamander	*Plethodon cinereus*
Northern Slimy Salamander	*Plethodon glutinosus*
Northern Two-lined Salamander	*Eurycea bislineata*
Eastern American Toad	*Bufo a. americanus*
Gray Treefrog	*Hyla versicolor-chrysoscelis*
Gray Treefrog	*Hyla versicolor*
Northern Spring Peeper	*Pseudacris c. crucifer*
Bullfrog	*Rana catesbeiana*
Green Frog	*Rana clamitans melanota*

Bullfrog	*Rana catesbeiana*
Green Frog	*Rana clamitans melanota*
Wood Frog	*Rana sylvatica*
Common Snapping Turtle	*Chelydra s. serpentina*
Northern Water Snake	*Nerodia s. sipedon*

JAMESVILLE QUADRANGLE

Spotted Salamander	*Ambystoma maculatum*
Red-spotted Newt	*Notophthalmus v. viridescens*
Northern Dusky Salamander	*Desmognathus fuscus*
Northern Redback Salamander	*Plethodon cinereus*
Northern Slimy Salamander	*Plethodon glutinosus*
Four-toed Salamander	*Hemidactylium scutatum*
Northern Spring Salamander	*Gyrinophilus p. porphyriticus*
Northern Two-lined Salamander	*Eurycea bislineata*
Eastern American Toad	*Bufo a. americanus*
Gray Treefrog	*Hyla versicolor*
Northern Spring Peeper	*Pseudacris c. crucifer*
Bullfrog	*Rana catesbeiana*
Green Frog	*Rana clamitans melanota*
Wood Frog	*Rana sylvatica*
Leopard Frog	*Rana pipiens-s. utricularius*
Northern Leopard Frog	*Rana pipiens*
Pickerel Frog	*Rana palustris*
Common Snapping Turtle	*Chelydra s. serpentina*
Midland Painted Turtle	*Chrysemys picta marginata*
Northern Water Snake	*Nerodia s. sipedon*
Northern Brown Snake	*Storeria d. dekayi*
Northern Redbelly Snake	*Storeria o. occiptomaculata*
Common Garter Snake	*Thamnophis sirtalis*
Eastern Garter Snake	*Thamnophis s. sirtalis*
Northern Ringneck Snake	*Diadophis punctatus edwardsii*
Smooth Green Snake	*Liochlorophis vernalis*
Black Rat Snake	*Elaphe o. obsoleta*
Eastern Milk Snake	*Lampropeltis t. triangulum*

JORDAN QUADRANGLE

Northern Dusky Salamander	*Desmognathus fuscus*
Allegheny Dusky Salamander	*Desmognathus ochrophaeus*
Northern Redback Salamander	*Plethodon cinereus*
Northern Spring Salamander	*Gyrinophilus p. porphyriticus*
Northern Two-lined Salamander	*Eurycea bislineata*
Eastern American Toad	*Bufo a. americanus*
Gray Treefrog	*Hyla versicolor-chrysoscelis*
Northern Spring Peeper	*Pseudacris c. crucifer*
Bullfrog	*Rana catesbeiana*
Green Frog	*Rana clamitans melanota*
Wood Frog	*Rana sylvatica*
Northern Leopard Frog	*Rana pipiens*
Common Snapping Turtle	*Chelydra s. serpentina*
Midland Painted Turtle	*Chrysemys picta marginata*
Northern Water Snake	*Nerodia s. sipedon*
Northern Brown Snake	*Storeria d. dekayi*

Green Frog	*Rana clamitans melanota*
Wood Frog	*Rana sylvatica*
Northern Leopard Frog	*Rana pipiens*
Common Snapping Turtle	*Chelydra s. serpentina*
Midland Painted Turtle	*Chrysemys picta marginata*
Northern Water Snake	*Nerodia s. sipedon*
Northern Brown Snake	*Storeria d. dekayi*
Common Garter Snake	*Thamnophis sirtalis*
Eastern Garter Snake	*Thamnophis s. sirtalis*
Eastern Milk Snake	*Lampropeltis t. triangulum*

ORAN QUADRANGLE

Spotted Salamander	*Ambystoma maculatum*
Northern Dusky Salamander	*Desmognathus fuscus*
Northern Redback Salamander	*Plethodon cinereus*
Northern Two-lined Salamander	*Eurycea bislineata*
Eastern American Toad	*Bufo a. americanus*
Gray Treefrog	*Hyla versicolor-chrysoscelis*
Gray Treefrog	*Hyla versicolor*
Northern Spring Peeper	*Pseudacris c. crucifer*
Bullfrog	*Rana catesbeiana*
Green Frog	*Rana clamitans melanota*
Leopard Frog	*Rana pipiens-s. utricularius*
Northern Leopard Frog	*Rana pipiens*
Common Snapping Turtle	*Chelydra s. serpentina*
Midland Painted Turtle	*Chrysemys picta marginata*
Northern Water Snake	*Nerodia s. sipedon*
Northern Brown Snake	*Storeria d. dekayi*
Common Garter Snake	*Thamnophis sirtalis*
Eastern Garter Snake	*Thamnophis s. sirtalis*
Eastern Milk Snake	*Lampropeltis t. triangulum*

OTISCO VALLEY QUADRANGLE

Jefferson Salamander	*Ambystoma jeffersonianum*
Northern Dusky Salamander	*Desmognathus fuscus*
Allegheny Dusky Salamander	*Desmognathus ochrophaeus*
Northern Redback Salamander	*Plethodon cinereus*
Northern Two-lined Salamander	*Eurycea bislineata*
Eastern American Toad	*Bufo a. americanus*
Northern Spring Peeper	*Pseudacris c. crucifer*
Green Frog	*Rana clamitans melanota*
Pickerel Frog	*Rana palustris*
Painted Turtle	*Chrysemys picta*
Northern Redbelly Snake	*Storeria o. occiptomaculata*
Common Garter Snake	*Thamnophis sirtalis*

SKANEATELES QUADRANGLE

Spotted Salamander	*Ambystoma maculatum*
Red-spotted Newt	*Notophthalmus v. viridescens*
Northern Dusky Salamander	*Desmognathus fuscus*
Allegheny Dusky Salamander	*Desmognathus ochrophaeus*
Northern Redback Salamander	*Plethodon cinereus*
Northern Slimy Salamander	*Plethodon glutinosus*

Northern Brown Snake	*Storeria d. dekayi*
Common Garter Snake	*Thamnophis sirtalis*
Eastern Garter Snake	*Thamnophis s. sirtalis*
Eastern Milk Snake	*Lampropeltis t. triangulum*

SYRACUSE WEST QUADRANGLE

Spotted Salamander	*Ambystoma maculatum*
Red-spotted Newt	*Notophthalmus v. viridescens*
Northern Dusky Salamander	*Desmognathus fuscus*
Northern Redback Salamander	*Plethodon cinereus*
Northern Slimy Salamander	*Plethodon glutinosus*
Northern Two-lined Salamander	*Eurycea bislineata*
Eastern American Toad	*Bufo a. americanus*
Gray Treefrog	*Hyla versicolor-chrysoscelis*
Northern Spring Peeper	*Pseudacris c. crucifer*
Green Frog	*Rana clamitans melanota*
Northern Leopard Frog	*Rana pipiens*
Common Snapping Turtle	*Chelydra s. serpentina*
Common Musk Turtle	*Sternotherus odoratus*
Wood Turtle	*Clemmys insculpta*
Painted Turtle	*Chrysemys picta*
Northern Water Snake	*Nerodia s. sipedon*
Northern Brown Snake	*Storeria d. dekayi*
Northern Redbelly Snake	*Storeria o. occiptomaculata*
Common Garter Snake	*Thamnophis sirtalis*
Northern Ringneck Snake	*Diadophis punctatus edwardsii*
Eastern Milk Snake	*Lampropeltis t. triangulum*

TULLY QUADRANGLE

Spotted Salamander	*Ambystoma maculatum*
Red-spotted Newt	*Notophthalmus v. viridescens*
Allegheny Dusky Salamander	*Desmognathus ochrophaeus*
Northern Redback Salamander	*Plethodon cinereus*
Northern Two-lined Salamander	*Eurycea bislineata*
Eastern American Toad	*Bufo a. americanus*
Northern Spring Peeper	*Pseudacris c. crucifer*
Bullfrog	*Rana catesbeiana*
Green Frog	*Rana clamitans melanota*
Wood Frog	*Rana sylvatica*
Northern Leopard Frog	*Rana pipiens*
Pickerel Frog	*Rana palustris*
Common Snapping Turtle	*Chelydra s. serpentina*
Painted Turtle	*Chrysemys picta*
Eastern Garter Snake	*Thamnophis s. sirtalis*

82-20-162 (9/95)—7e

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF FISH AND WILDLIFE • SPECIAL LICENSES UNIT
50 WOLF ROAD, ALBANY, NEW YORK 12233-4752

LICENSE NUMBER
LCP98-428

NEW YORK STATE FISH AND WILDLIFE LICENSE

1. License Type LICENSE TO COLLECT OR POSSESS

2. Licensee:

PETER M MCGODDY
LAWLER, MATUSKY & SKELLY ENGINEERS
53 HUDSON AVENUE
NYACK NY 10960

3. DOB 6/6/49

4. Fee 10.00

5. Effective Date 6/17/98

6. Expiration Date 6/30/99

7. County ROCKLAND

8. Region 3

9. STATUTORY AUTHORITY ECL 11-0515(1), 6 NYCRR PART 175

10. CONDITIONS (All conditions on the reverse side and any attached conditions apply to this license.)

A. THE LICENSEE IS AUTHORIZED TO COLLECT, TEMPORARILY POSSESS FOR PHOTO DOCUMENTATION, AND RELEASE AT POINT OF CAPTURE, REPTILES AND AMPHIBIANS (EXCEPT ENDANGERED/THREATENED) AT THE TOWN OF SALINA LANDFILL AND ADJACENT AREAS, IN ONONDAGA COUNTY, FOR SCIENTIFIC PURPOSES.

B. THE LICENSEE IS ALSO AUTHORIZED TO COLLECT IN WATERS WITHINT 1/2 MILE OF THE SALINA TOWN LANDFILL, INCLUDING LEY CREEK AND POSSESS NO MORE THAN TEN (10) OF EACH SPECIES OF FISH AS VOUCHER SPECIMENS AND COLLECT AND POSSESS INVERTEBRATES-MACROINVERTEBRATES FOR SCIENTIFIC PURPOSES.

C. NO ENDANGERED/THREATENED SPECIES MAY BE COLLECTED OR POSSESSED PURSUANT TO THIS LICENSE. WITHIN 72 HOURS FOLLOWING THE INADVERTANT CAPTURE OF ANY ENDANGERED/THREATENED SPECIES THE LICENSEE SHALL NOTIFY THE NYS DEC ENDANGERED SPECIES UNIT, (518) 439-7635.

D. AUTHORIZED COLLECTING GEAR TO INCLUDE HAND CAPTURE, MINNOW TRAPS, SEINE NET, TRAPS NETS, ELECTORFISHING, DIP NETS, KICKNET SURBER AND GRAB SAMPLES.

E. THE LICENSEE AND/OR HIS DESIGNATED AGENTS SHALL NOTIFY THE APPROPRIATE REGIONAL ENVIRONMENTAL CONSERVATION OFFICER AT LEAST 48 HOURS PRIOR TO ANY COLLECTING ACTIVITIES, (315) 426-7423.

F. THE LICENSEE SHALL FILE WITH THE DEPARTMENT ON OR BEFORE FEBRUARY 1, OR NOT LATER THAN NINETY (90) DAYS FOLLOWING THE COMPLETION OF SURVEYS ENVOLVING AMPHIBIANS AND REPTILES, THE LICENSEE SHALL SUBMIT A REPORT DETAILING THE RESULTS TO THE NYS DEC ENDANGERED SPECIES UNIT, WILDLIFE RESOURCES CENTER, 108 GAME FARM ROAD, DELMAR, NEW YORK 12054. FOR FISH COLLECTIONS, THIS REPORT SHALL BE SENT TO THE SPECIAL LICENSES UNIT AND SHOULD LIST, BY COLLECTION DATE AND GEAR, THE NUMBER OF SPECIMENS OF EACH SPECIES COLLECTED AND THE DISPOSITION OF SUCH FISH AFTER COLLECTION.

G. THE LICENSEE MUST SUBMIT A WRITTEN REQUEST FOR RENEWAL OF THIS LICENSE. TO THE NYS DEC SPECIAL LICENSES UNIT, 50 WOLF ROAD, ALBANY, NEW YORK 12233-4752, WITHIN THE MONTH PRIOR TO THE EXPIRATION DATE OF THIS LICENSE. THE WRITTEN REQUEST MUST INCLUDE THE LICENSEES CORRECT ADDRESS.

H. THIS LICENSE IS DEEMED EXPIRED ON THE DATE OF EXPIRATION LISTED ABOVE, UNLESS OTHERWISE NOTIFIED BY THE DEPARTMENT.

Called in 20 July 98 1120 hrs

APPENDIX A-2

State Listed Special
Concern Species

COMMON NIGHTHAWK
(*Chordeiles minor*)

Current New York Status:	Special Concern
Current Federal Status:	Protected under Migratory Bird Treaty Act (MBTA)
Recommended New York Status:	Special Concern

Common nighthawks breed from the southern Yukon, east to southern Labrador and Nova Scotia, to the southern U.S. and into Central America. Wintering occurs entirely in South America (American Ornithologists' Union 1983). The New York State Breeding Bird Atlas reported common nighthawks were found throughout the state, including New York City, but individuals were rarely found away from towns and cities. This species is listed as special concern; declines were first noted around New York City and Westchester County.

Habitat: Common nighthawks can be found in mountains and plains in open and semiopen areas, open coniferous forests, grasslands, burned-over areas, plowed fields, railroad right-of-ways, and around cities and towns (Harrison 1975; Ehrlich et al. 1988).

In New York, rooftops in cities, villages and towns are the most common nesting areas. However, some natural, open areas are still used (NYSDEC 1993). On Long Island, natural breeding sites include "sandy openings in mixed pine-scrub-oak barrens, on bare ground in pastures and fields, on sand dunes, on gravel beaches and on flat rocks and logs in the open" (Bull 1974). Nests are sometimes placed on a stump or fence post up to 8 ft above the ground (Terres 1980).

Biology and life history: Common nighthawks are solitary nesters, forming monogamous pairs which may change every breeding season (Harrison 1975). The courting flight of common nighthawks occurs at dusk. The male calls as he circles, hovers, and soars above the proposed nesting site. The female chooses the nesting site, sometimes returning to the same site in successive years (Harrison 1975).

Two eggs are laid on successive days (Harrison 1975; Ehrlich et al. 1988). In New York, egg dates are May 25 to July 28 (Vertebrate Characterization Abstract 1987). Incubation begins with the laying of the second egg and lasts for approximately 19 days. Both parents incubate, although the female contributes more time to this task (Harrison 1975; Ehrlich et al. 1988). If threatened, the female will perform a distraction display to deter

predators (Ehrlich et al. 1988). The young are semiprecocial, not blind and naked at hatching but not as advanced in development as precocial species. At the time of hatching, the male stops performing aerial displays and devotes more attention to caring for the young. Fledging occurs at 21 days and the offspring are able to feed themselves in 25 to 30 days (Ehrlich et al. 1988).

Limiting factors: Common nighthawks nesting in natural areas are subjected to predators not experienced by rooftop nesters. Populations nesting in a natural environment may be dependent on a habitat that is only temporary.

GRASSHOPPER SPARROW

(Ammodramus savannarum)

Current New York status:	Special Concern
Current Federal Status:	Protected (MBTA)
Recommended New York Status:	Special Concern

Grasshopper sparrows breed from eastern Washington to California east to southern Maine and south to northern Florida. Wintering occurs from central California, southern Arizona, southern New Mexico, Texas, Oklahoma, Arkansas, Tennessee, and North Carolina south through Mexico and northern Central America to northern Costa Rica (American Ornithologists' Union 1983).

Grasshopper sparrows benefited from early colonization of European settlers and clearing of land for farming. This bird was rare and local in precolonial times when much of the state was forested. In this century the species had been fairly common until only recently (Arbib 1988).

Grasshopper sparrow populations fluctuate widely for reasons not well understood. It has been a species of Special Concern in New York State since the early 1980s. Data from the USFWS Breeding Bird Survey routes indicate a significant decline in New York and throughout the Northeast (Robbins et al. 1986). Populations are currently found in greatly reduced numbers in the Hudson Valley, on western Long Island and in the metropolitan area, and are more widely scattered elsewhere. Major concentrations are in the central Appalachians, eastern Ontario, and the western Erie-Ontario plains.

Habitat: Grasshopper sparrows are most common on managed grasslands where clump-forming vegetation occurs such as alfalfa, red clover, and lespedeza (Smith 1968). Meadows, clover fields, and weedy fields also provide habitat. Grasshopper sparrows will desert this habitat, however, when the shrub cover reaches 35% or more (Smith 1968). Some common characteristic of grasshopper sparrow habitat are patches of bare ground and very short vegetation, posts, fence lines and occasionally trees (Wiens 1969). The presence of song perches is an important factor in choosing a breeding territory as well (Laughlin and Kibbe 1985).

Biology and life history: Grasshopper sparrows return to breeding grounds in mid-April to early May, when grasses are high enough to conceal them. Males arrive first and

establish territories by singing from the highest perch available. Territory sizes range from 1.2 to 3.3 acres (Bent 1968).

Nest building begins in late May and is done by both parents. The nest is in a depression in the ground with its rim level with or slightly above the ground. It is well concealed by a canopy of grasses and weeds, and is commonly domed at the rear. The cup is made of orchard grass (*Dactylis glomerata*), red clover (*Trifolium pratense*), alfalfa (*Medicago sativa*) and other surrounding vegetation, and is lined with fine grasses, rootlets and occasionally hair (Bent 1968; Harrison 1975; Arbib 1988).

The clutch consists of four to five eggs. The female incubates for 11 to 13 days while the male sings and defends the territory. Upon leaving the nest, the female runs through the grass on one of several paths before emerging from the vegetation so that she does not reveal the exact location of the nest to potential predators. The same method is used upon returning. When threatened, the female performs a distraction display, luring potential predators away from the nest (Bent 1968; Arbib 1988). Brooding lasts for nine days. Both young and adults become quite inconspicuous during late summer, staying silent and close to the ground. They will not fly unless pressed, and then will return to cover quickly (Bent 1968). The young remain in the territory with the parents until migration (Ehrlich et al. 1988).

Limiting factors: Loss of habitat is the largest threat to grasshopper sparrows in the Northeast. This species was uncommon in the Northeast before the arrival of European settlers. It was not until many acres of land had been cleared for farming that the population began to expand into new areas. Today, however, old farms are being abandoned and agricultural practices are changing. Habitats that grasshopper sparrows initially took advantage of are diminishing and therefore their numbers are diminishing as well.

UPLAND SANDPIPER

(*Bartramia longicauda*)

Current New York status:	Special Concern
Current Federal Status:	Protected (MBTA)
Recommended New York Status:	Threatened

Upland sandpipers breed from north-central Alaska south and east to Maine, including the northern half of the U.S. They winter in South America (American Ornithologists' Union 1983).

Populations of upland sandpiper suffered a decline in the 1870s due to overhunting for its plumes and meat. In the 1920s there were as many as 25 pairs of upland sandpipers breeding on Hempstead Plains on Long Island. The upstate population was found mainly in the mid Hudson-Mohawk Valley region and in the agricultural areas of central and western New York. In 1919 there were up to 20 pairs in Greene County and at least 15 pairs in Cattaraugus County were documented in 1934 (Bull 1974). The upland sandpiper population is widely distributed in New York State, but is generally an uncommon breeder here. There are less than 250 known or suspected breeding sites in the state (Carter 1991). Populations have been documented on Long Island, the St. Lawrence Plains and in Clinton and Rensselaer counties, with primary nesting sites in the farmlands of the Mohawk Valley, the eastern Great Lakes Plains and the Lake Champlain Valley. Farmlands in upstate New York are the only areas in the Northeast supporting fairly widespread populations of breeding upland sandpipers (Carter 1991).

Habitat: Upland sandpipers originally nested in grass prairies. They now inhabit remaining native prairies, dry meadows, blueberry barrens, farmland, hayfields, airport runways and other pasture-like environments (Osborne and Peterson 1984). They prefer level topography and expanses of grass along with a sufficient number of fenceposts for perching.

Upland sandpipers feed almost exclusively on insects they pluck from vegetation and sometimes from the ground. Common items in their diet are grasshoppers, crickets, weevils and other small invertebrates. On occasion, they will also eat seeds from weeds, grasses, and grains such as wheat (Carter 1991).

Biology and life history: Upland sandpipers are loosely colonial and will often nest in the same location for successive years. They arrive from wintering grounds in mid-April to early May and begin to nest two to three weeks afterwards. Nests in colonies are scattered, with 1.5 to 15 acres (0.6 to 6.1 ha) separating each nest. The nest is a shallow depression in the ground about 10-13 cm in diameter and 5 cm deep. It is lined with dry grass and is well camouflaged by surrounding grasses, which sometimes overhang the nest. The normal clutch size is four eggs, sometimes three, and, rarely, five. Incubation lasts an average of 24 days, with extremes ranging from 21 to 28 days. Upland sandpiper chicks are precocial and leave the nest within 24 hrs of hatching. One or both adults tend the nest until the young fledge at about 30 to 34 days of age. Migration takes place shortly after the young have fledged, usually in August. Although the lifespan is unknown, the longest recorded survival of a banded upland sandpiper is five years (Clapp et al. 1982).

Limiting factors: The main problems facing upland sandpipers are the loss of primary grassland habitat, changes in agricultural uses and reforestation.

Airport populations are a good example of how these birds can be successful in a human-created environment. The largest breeding sites in Delaware, New Jersey, Connecticut and Massachusetts are all at airports. Grasses there provide sufficient area for nesting and protection, and resemble native prairie habitats. The upland sandpiper's ability to use anthropogenic habitats and its tendency to return to the same site year after year make this species a good candidate for habitat management (Laughlin and Kibbe 1985).

APPENDIX A-3

Site Photographs

Photo 1. Reedgrass/purple loosestrife marsh between the NYS Thruway and the landfill

Photo 2.
Open water as artificial intermittent stream within reedgrass/purple loosestrife marsh

Photo 3. Main landfill area

Photo 4. Cut off landfill area

Photo 5. Narrow emergent marshes on Ley Creek upstream areas

Photo 6. Shallow mixed emergent marshes along Ley Creek downstream section

Photo 7. Shallow emergent cattail marshes along Ley Creek downstream section

Photo 8. Leachate seep - note oily sheen in foreground and lack of vegetation, partially due to shading

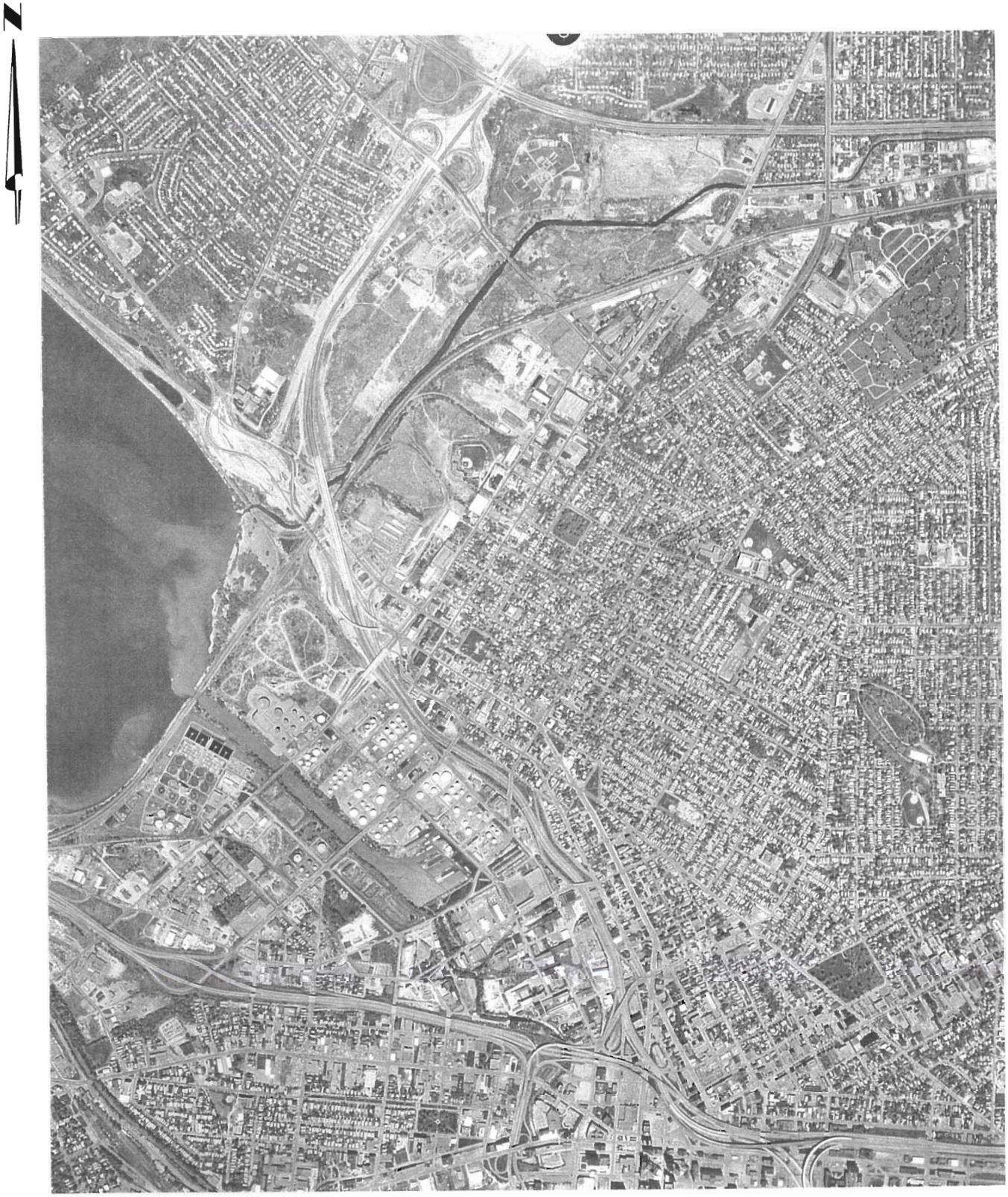
Photo 9. Marking leachate seep - note orange color of surface sediments - between cattails and sedges of emergent marsh

APPENDIX B

Supporting Data-
Field Investigation

APPENDIX B-1

Historical Aerial Photographs



LMS Lawler, Matusky & Skelly Engineers, LLP
Environmental Science & Engineering Consultants

CHA CLOUGH, HARBOUR & ASSOCIATES LLP
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS

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1985 AERIAL PHOTOGRAPH

SCALE: 1"=2000'

TOWN OF SALINA REMEDIAL INVESTIGATION

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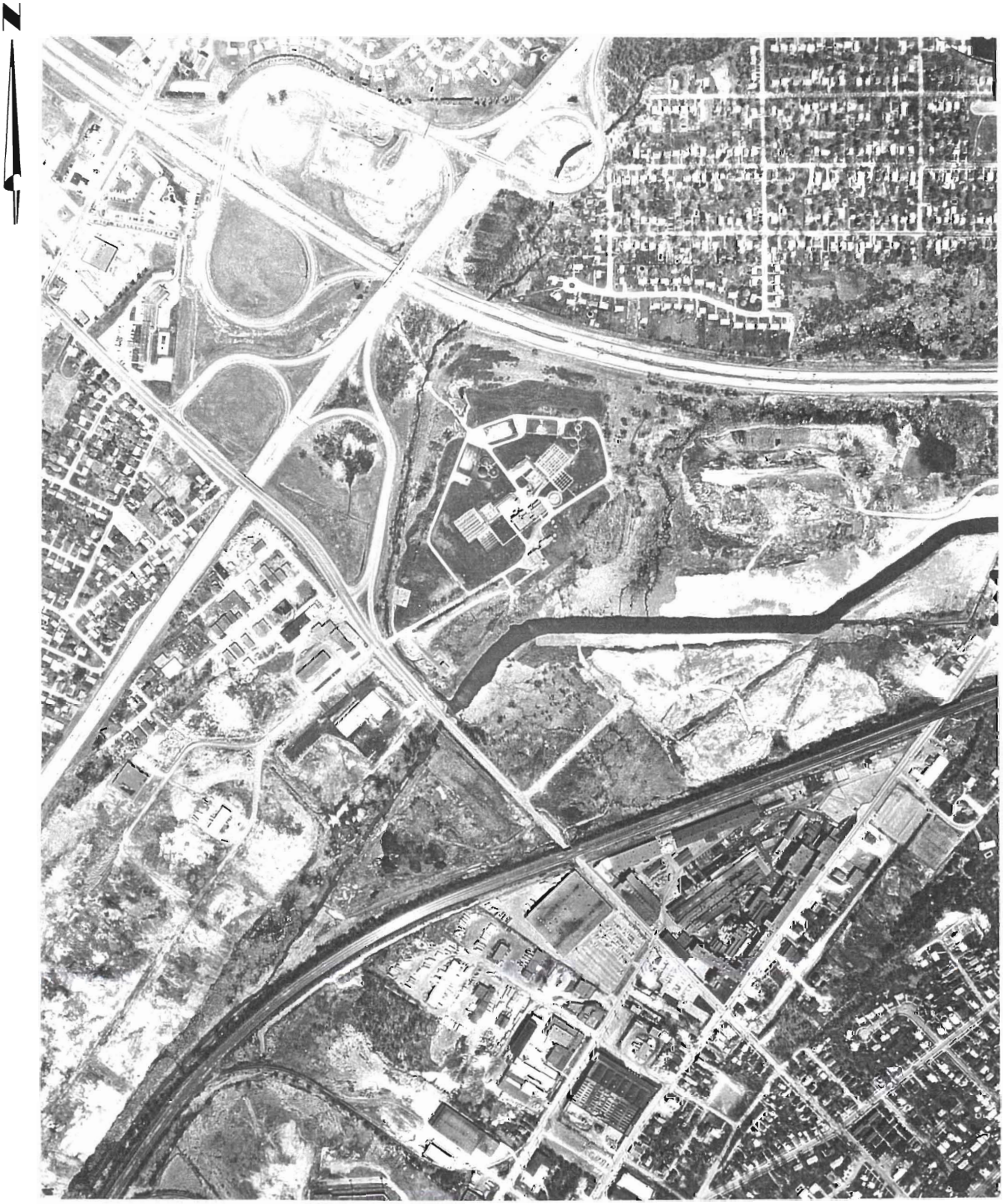
1981 AERIAL PHOTOGRAPH

SCALE: 1"=800'

TOWN OF SALINA REMEDIAL INVESTIGATION



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1972 AERIAL PHOTOGRAPH

SCALE: 1"=800'

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1967 AERIAL PHOTOGRAPH

SCALE: 1"=800'

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1964 AERIAL PHOTOGRAPH

SCALE: 1"=1000'

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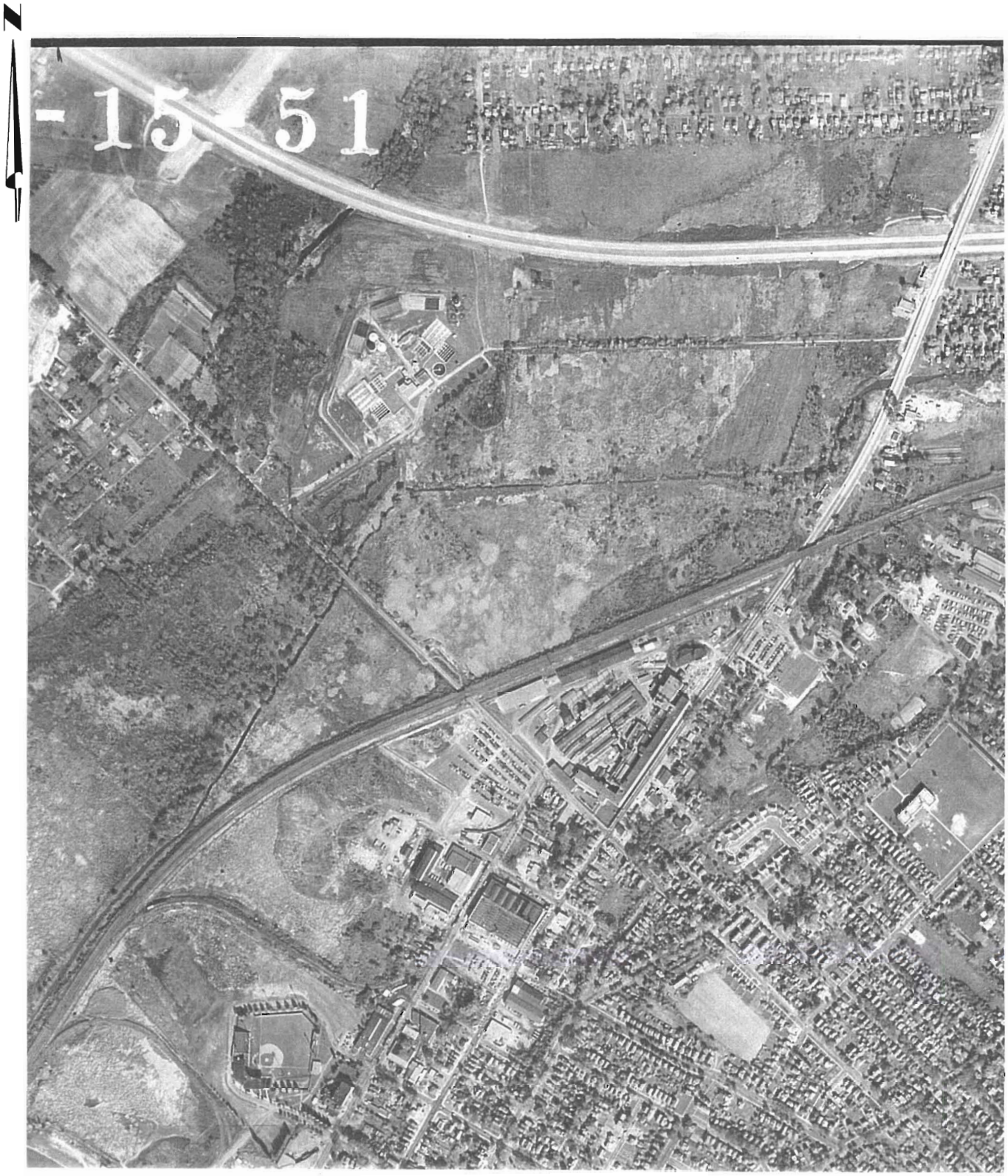
1959 AERIAL PHOTOGRAPH

SCALE: 1"=600'

TOWN OF SALINA REMEDIAL INVESTIGATION



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1951 AERIAL PHOTOGRAPH

SCALE: 1"=1200'

TOWN OF SALINA REMEDIAL INVESTIGATION

APPENDIX B-2

Test Pit Logs

TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 1 **Date:** 8/4/98 **Location:** southwest corner of landfill

Length: 13 ft. **Width:** 2ft. **Depth:** 7.4 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** 6.9 ft. **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 0.7 ft. **Depth to Waste Bottom: 3.2 ft.**

Types and Percentage of Waste: shoes, glass, plastic, metal, tires, organics

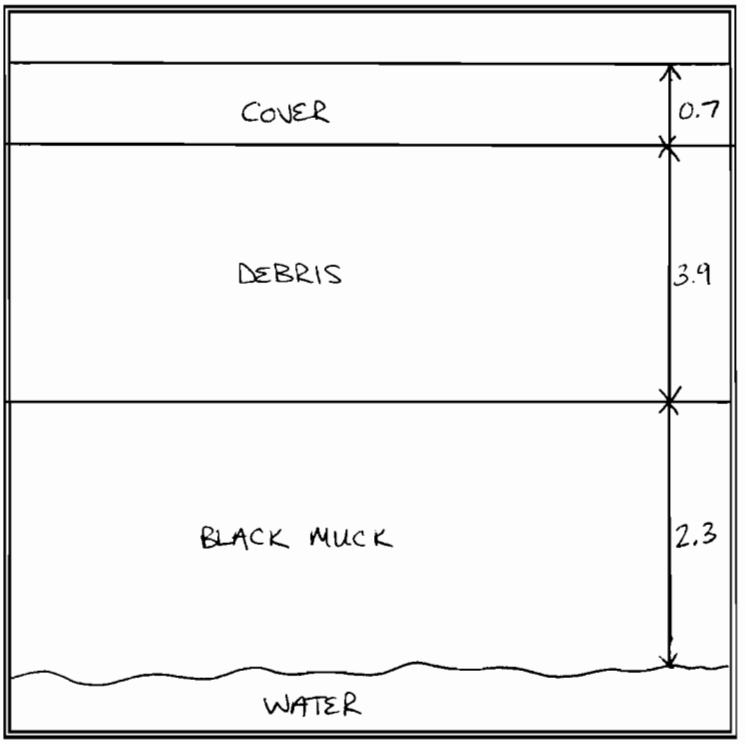
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 2 **Date:** 8/4/98 **Location:**

Length: 8 ft. **Width:** 2ft. **Depth:** 7.4 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth: 3.5 ft.** **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 0.0 ft. **Depth to Waste Bottom: 3.5 ft.**

Types and Percentage of Waste: shoes, glass, clothes, plastics

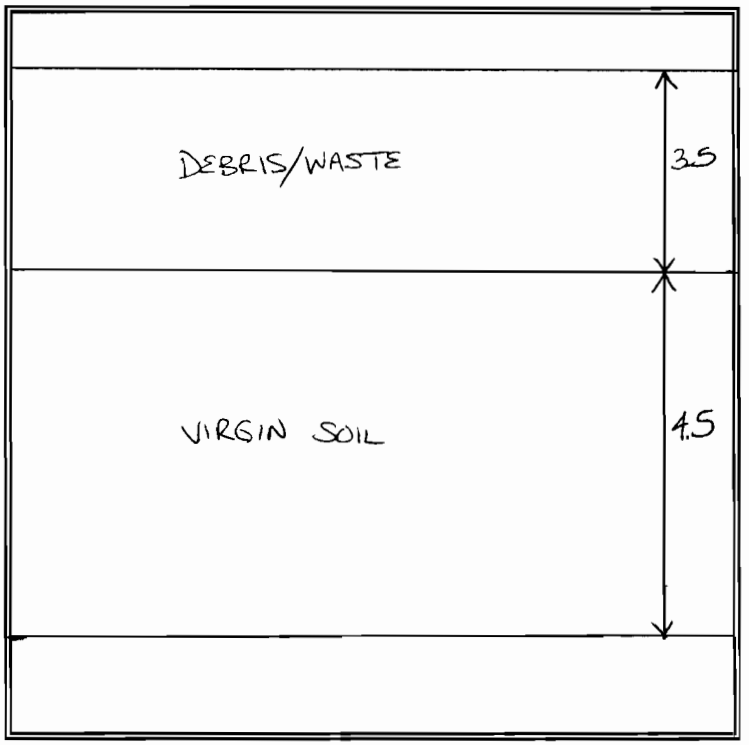
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
8.5 ft. from Ley Creek banks
HNu and Quad Alarm readings normal

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 3 **Date:** 8/4/98 **Location:**

Length: 12 ft. **Width:** 2ft. **Depth:** 7 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** 6.6 **ft.** **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 0.5 **ft.** **Depth to Waste Bottom:** 2.6 **ft.**

Types and Percentage of Waste: shoes, glass, clothes, plastics, metals

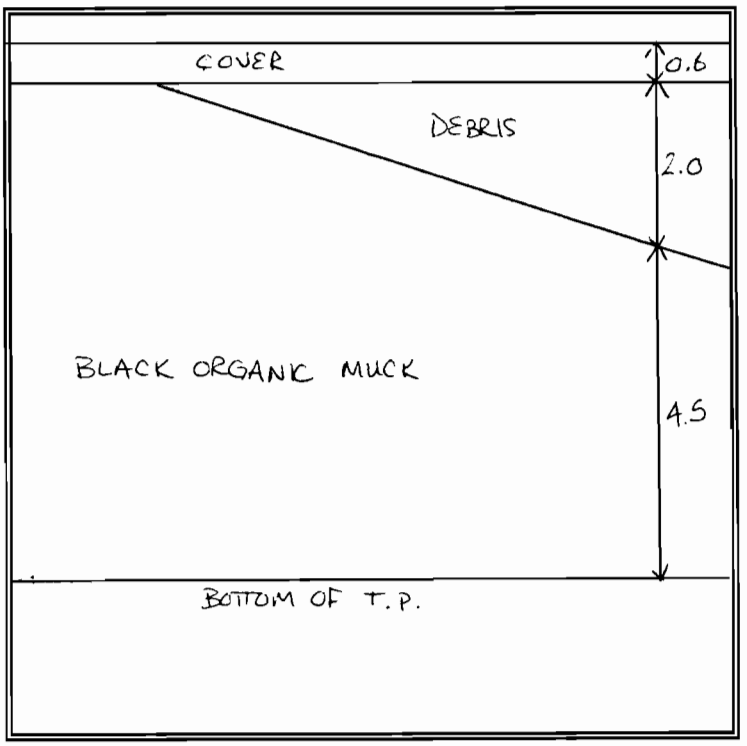
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 4 **Date:** 8/4/98 **Location:** 10 ft. south of WP2

Length: 18.7 ft. **Width:** 2ft. **Depth:** 7.8 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** pools **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.5 **ft.** **Depth to Waste Bottom:** 6.0 **ft.**

Types and Percentage of Waste: paper, glass, plastics, metals

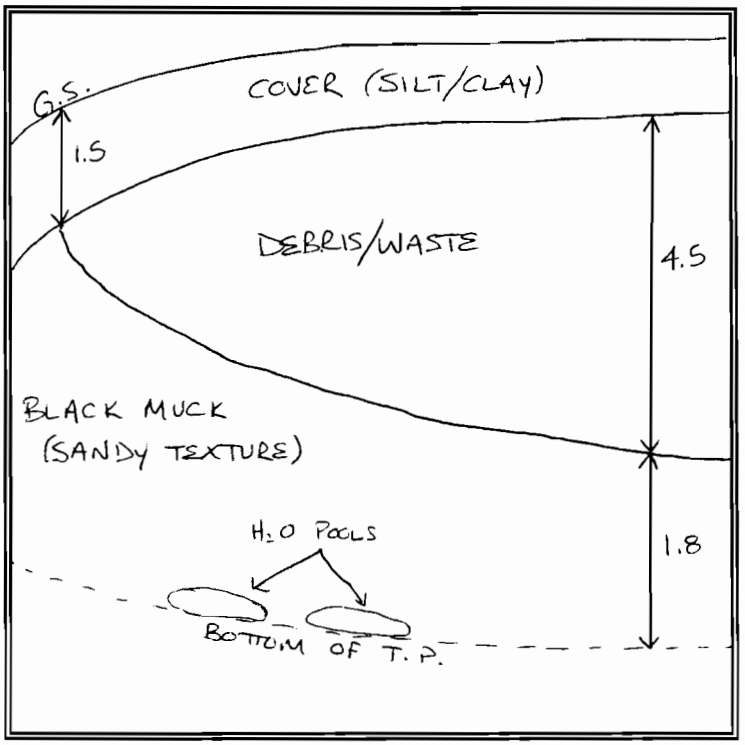
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Debris is thick at north end of test pit
Limit of Waste reached at approximately 10 ft. from Ley Creek edge
Water pooling in bottom of test pit

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 5 **Date:** 8/5/98 **Location:** south of WP3

Length: 11.4 ft. **Width:** 2 ft. **Depth:** 5.0 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** pools **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.2 **ft.** **Depth to Waste Bottom:** 4.4 **ft.**

Types and Percentage of Waste: paper, glass, plastics

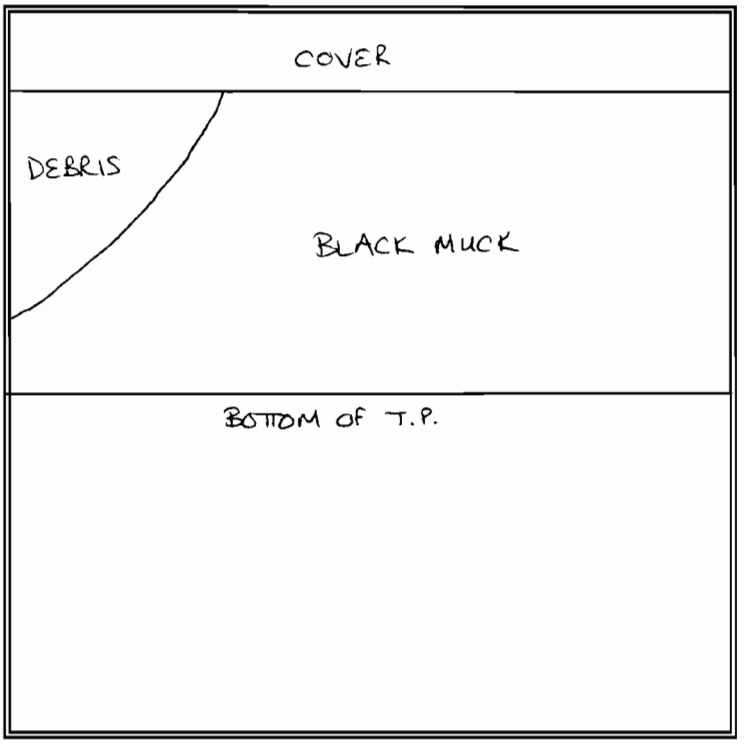
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Oily sheen on surface of water pools
Waste consists of pockets of black oily residue
Limit of Waste reached at approximately 17 ft. from Ley Creek edge

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 6 **Date:** 8/5/98 **Location:** south of WP4

Length: 14.5 ft. **Width:** 2 ft. **Depth:** 8.0 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** 0.6 ft **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.1 ft. **Depth to Waste Bottom:** 7.0 ft.

Types and Percentage of Waste: glass, metal, tires, asphalt shinges, plastic

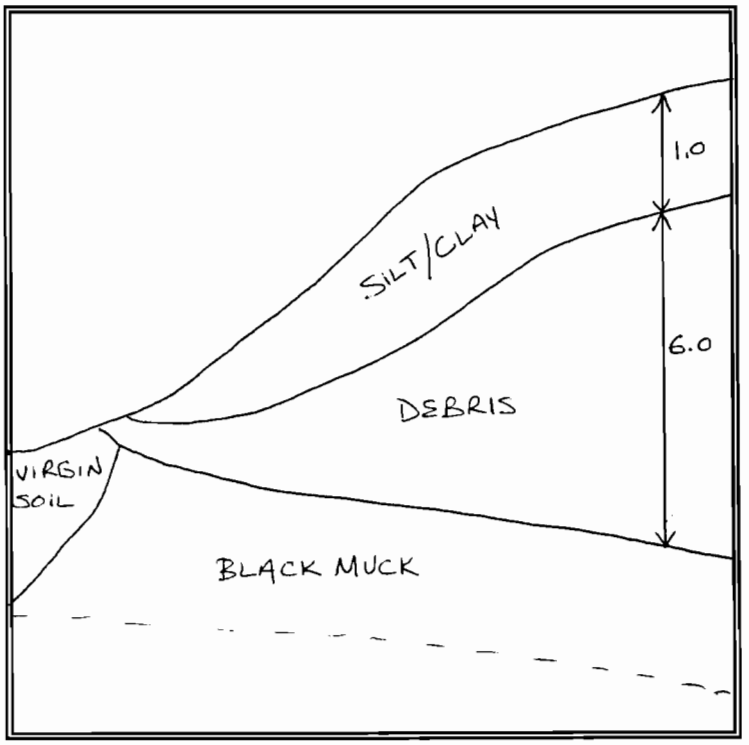
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Test pit parallel to leachate seep area
Black oily residue on all debris
Limit of Waste reached at approximately 12 ft. from Ley Creek edge

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 7 **Date:** 8/5/98 **Location:** 100 ft. west of MW5 & MW5D

Length: 18 ft. **Width:** 2 ft. **Depth:** 7.5 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** 1.4 ft **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.1 ft. **Depth to Waste Bottom:** 7.0 ft.

Types and Percentage of Waste: plastic & glass

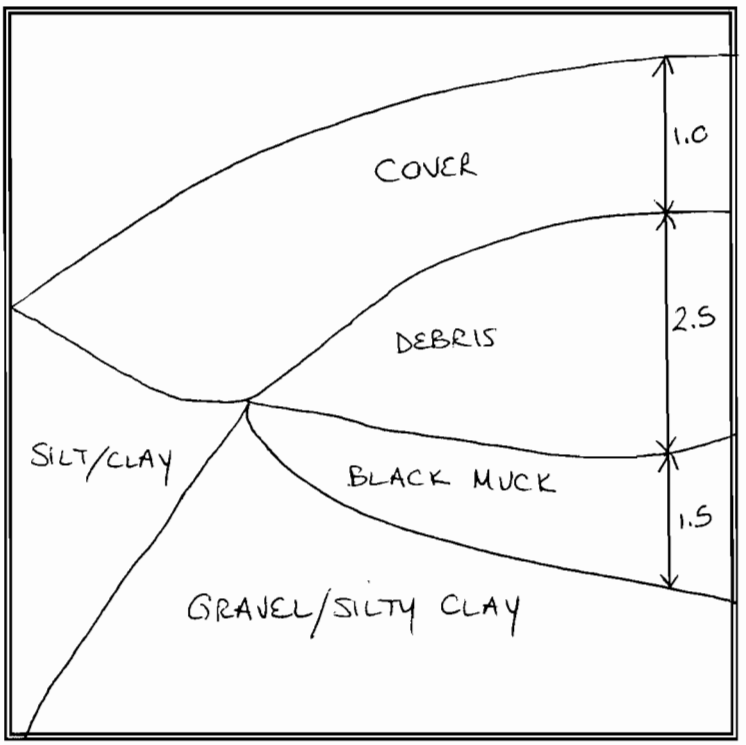
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Oily sheen on water pooling in bottom of test pit
Water flows rapidly into test pit
Limit of Waste found.

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 8 **Date:** 8/5/98 **Location:**

Length: 40 ft. **Width:** 2 ft. **Depth:** 12 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** 1.4 ft **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.8 ft. **Depth to Waste Bottom:** 6.9 ft.

Types and Percentage of Waste: plastic, glass, metal cans, paper

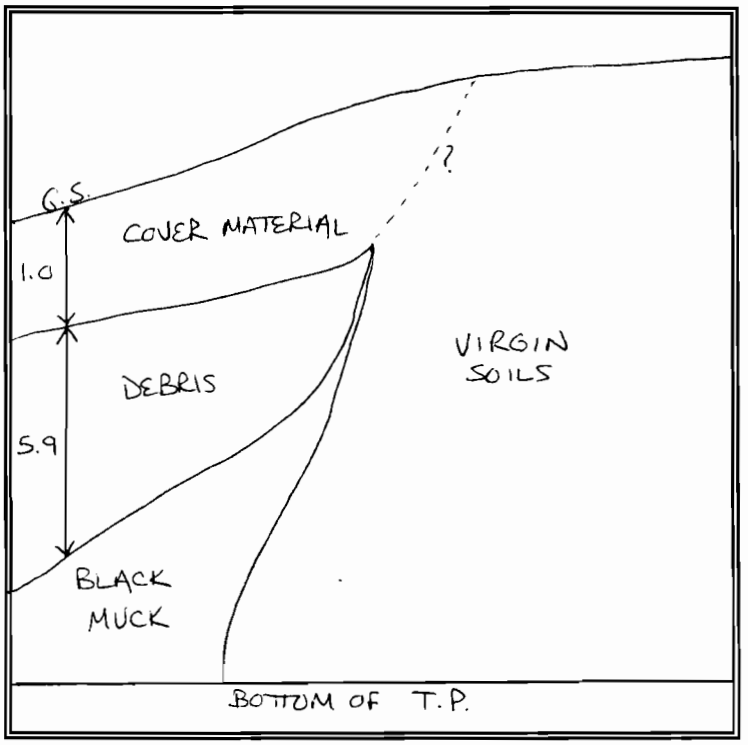
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Oily sheen on water pooling in bottom of test pit
Limit of waste found and marked with stake

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 9 **Date:** 8/5/98 **Location:** 30 ft. to the west of power pole (NM1)

Length: 14 ft. **Width:** 2 ft. **Depth:** 9 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** 1.4 ft **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.7 ft. **Depth to Waste Bottom:** 5.2 ft.

Types and Percentage of Waste: plastic, glass, paper, organics

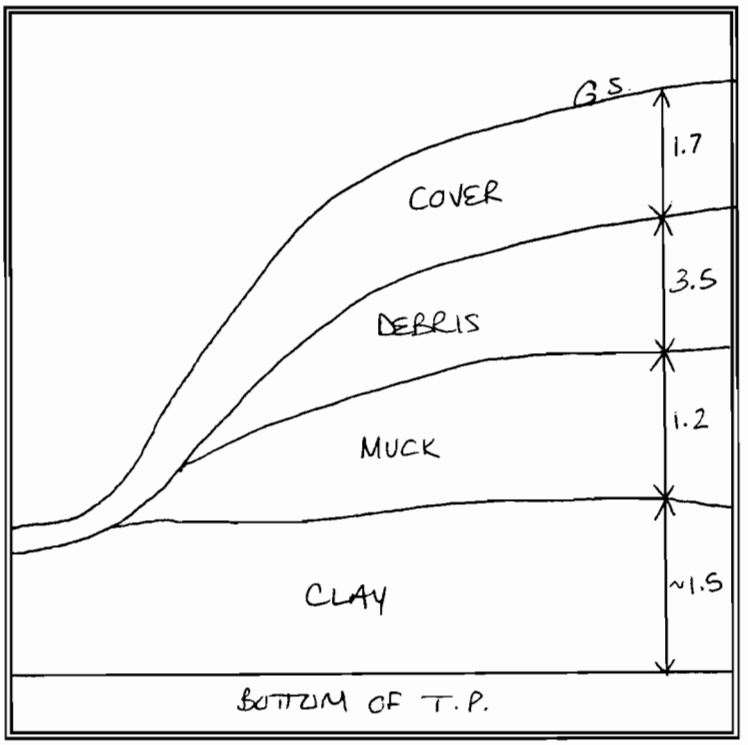
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
No waste on bottom of slopeOily
Limit of Waste encountered approximately 15 ft. off edge of Ley Creek

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 10 **Date:** 8/5/98 **Location:** 5ft. to the west of WP5

Length: 12.5 ft. **Width:** 2 ft. **Depth:** 14.9 ft.

Water in Pit? ☒*No* ☐*Yes* **Depth:** NA **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.7 ft. **Depth to Waste Bottom:** 15 ft.

Types and Percentage of Waste: plastic, glass, paper, organics, tires, metal

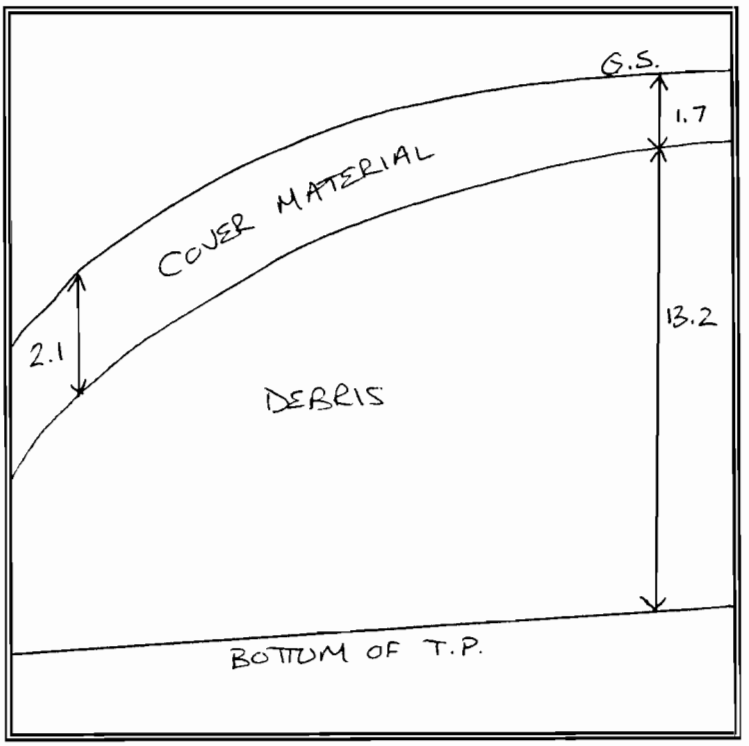
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
No waste on bottom of slope
Limit of waste encountered approximately 15-20 ft. off edge of Ley Creek

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 11 **Date:** 8/6/98 **Location:** next to MW 12D

Length: 8 ft. **Width:** 2 ft. **Depth:** 5.7 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** 3.8 ft **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.0 ft. **Depth to Waste Bottom:** 4.1 ft.

Types and Percentage of Waste: tires, glass, wood, plastic, black residue

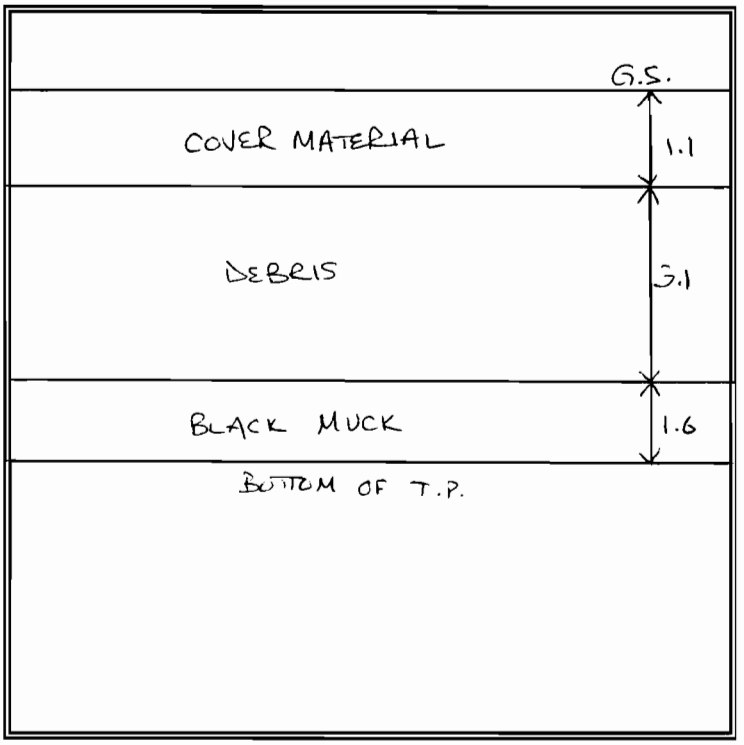
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Limit of waste not encountered

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 12 **Date:** 8/6/98 **Location:** 20 ft. south of MW12

Length: 15 ft. **Width:** 2 ft. **Depth:** 4.5 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** 3.5 ft **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.0 ft. **Depth to Waste Bottom:** 3.5 ft.

Types and Percentage of Waste: glass, wood, plastic

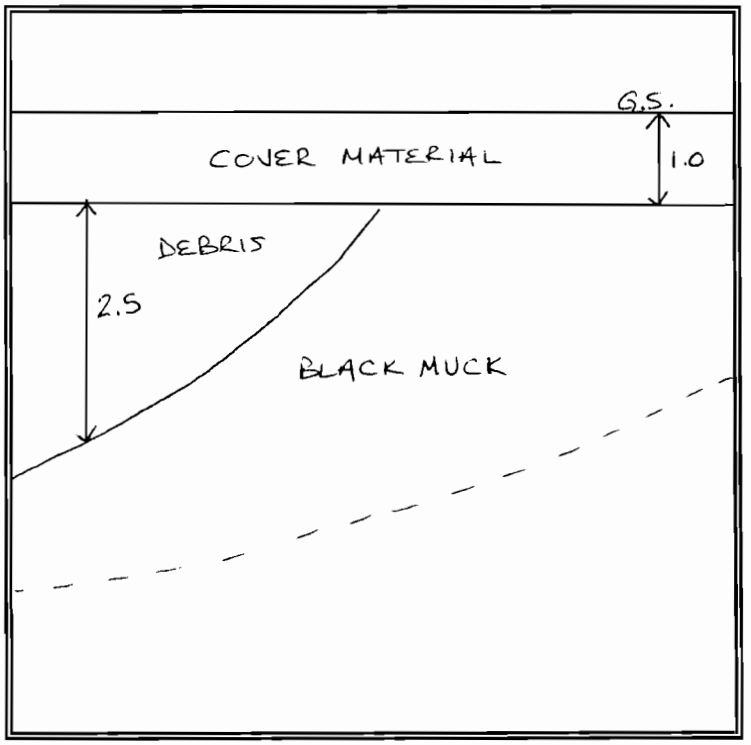
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Limit of waste found and marked
Oily sheen on surface of water formation in test pit

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 13 **Date:** 8/6/98 **Location:** 20 ft. south of MW12

Length: 14 ft. **Width:** 2 ft. **Depth:** 5.5 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** 1.3 ft **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 0.8 ft. **Depth to Waste Bottom:** 5.0 ft.

Types and Percentage of Waste: glass, tires, wood, plastic

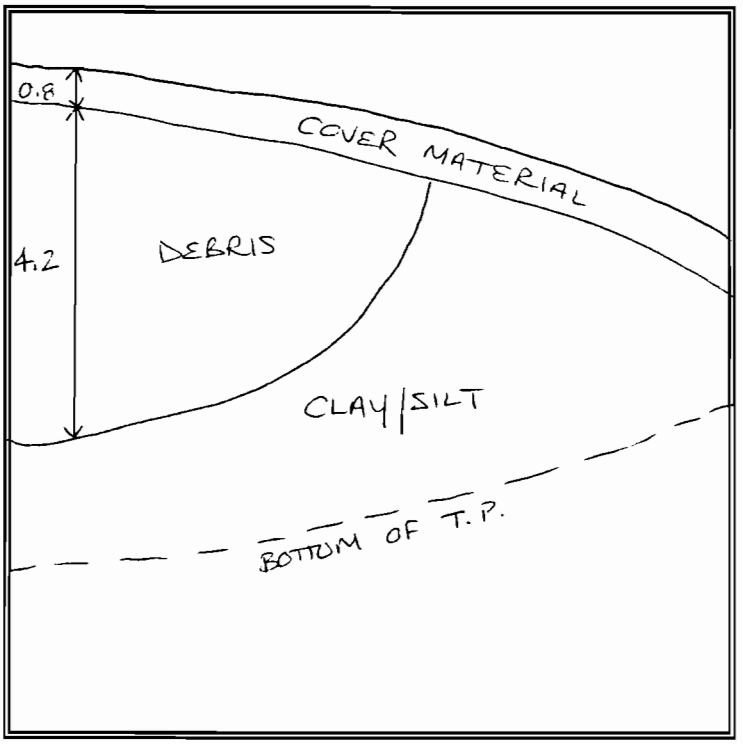
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Limit of Waste found and marked with stake
Oily sheen on surface of water formation in test pit

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 14 **Date:** 8/6/98 **Location:** northwest corner of landfill

Length: 250 ft. **Width:** 2 ft. **Depth:** 6.0 ft.

Water in Pit? ☒*No* ☐*Yes* **Depth:** 1.3 ft **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 0.6 ft. **Depth to Waste Bottom:** 2.2 ft.

Types and Percentage of Waste: glass, paper, plastic, petroleum

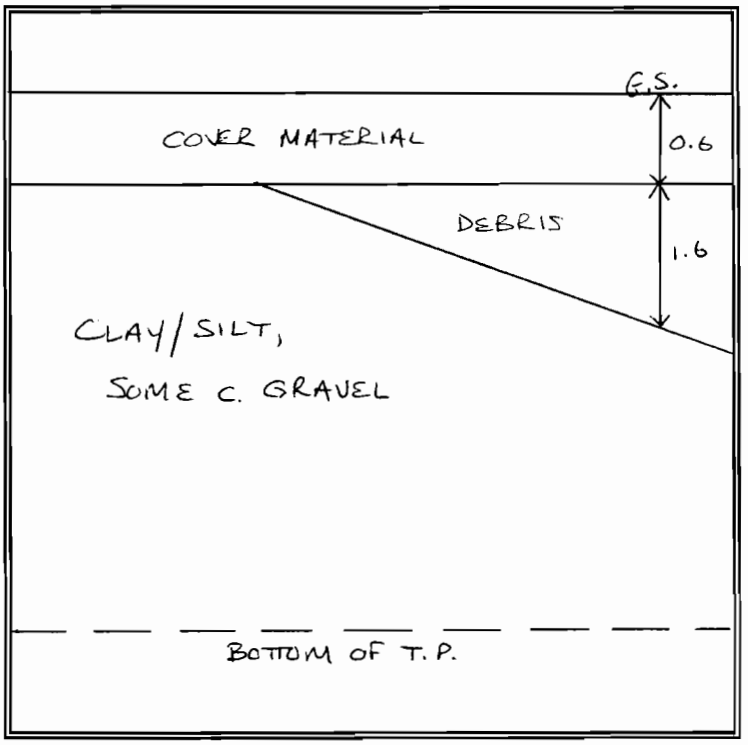
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Limit of Waste found and marked with stake several hundred feet off of landfill slope
Sample Taken from location at 11:43

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 15 **Date:** 8/6/98 **Location:** midway between MW2 and MW3

Length: 27 ft. **Width:** 2 ft. **Depth:** 13 ft.

Water in Pit? ☒*No* ☐*Yes* **Depth:** 0.6 ft **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.2 ft. **Depth to Waste Bottom:** Bottom of test pit

Types and Percentage of Waste: metal, refrigerator, glass, plastic, wood, tires

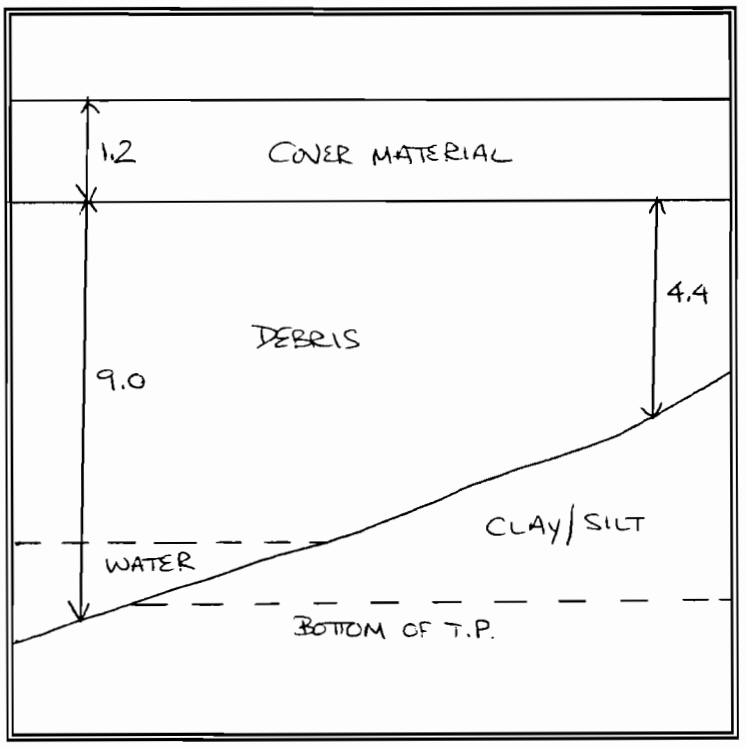
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Limit of Waste found and marked with stake
Yellow sandy material approximately 7 ft. deep that is hard and compact

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 16 **Date:** 8/6/98 **Location:** Culvert(W) in middle of landfill

Length: 5 ft. **Width:** 2 ft. **Depth:** 4 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** pools **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.2 ft. **Depth to Waste Bottom:** Bottom of test pit

Types and Percentage of Waste: metal, glass, plastic

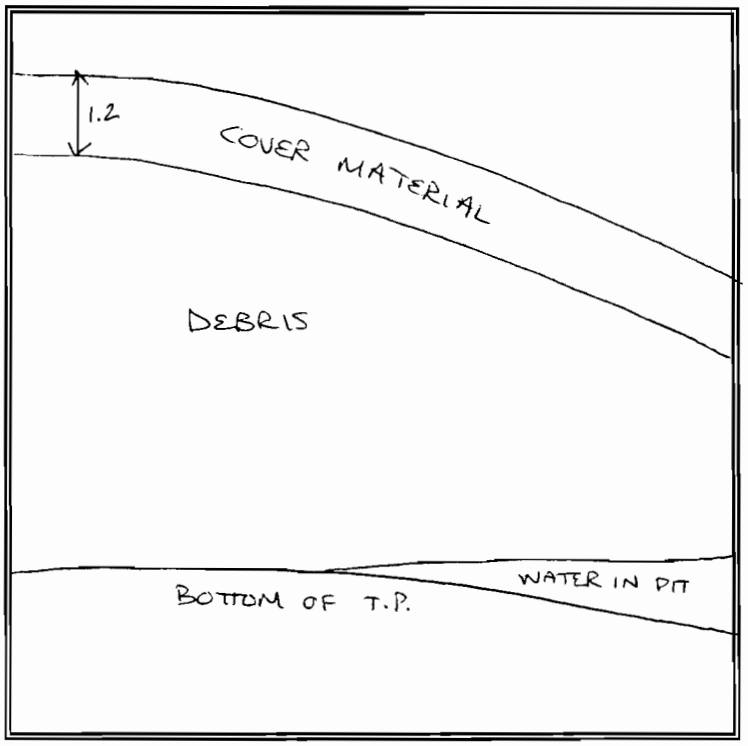
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Limit of Waste not found
Aerial photos show waste up to culvert

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 17 **Date:** 8/6/98 **Location:** Culvert(E) in middle of landfill

Length: 8 ft. **Width:** 2 ft. **Depth:** 10 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** trickles in **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 4 ft. **Depth to Waste Bottom:** Bottom of test pit

Types and Percentage of Waste: oil, paper, plastic, wires

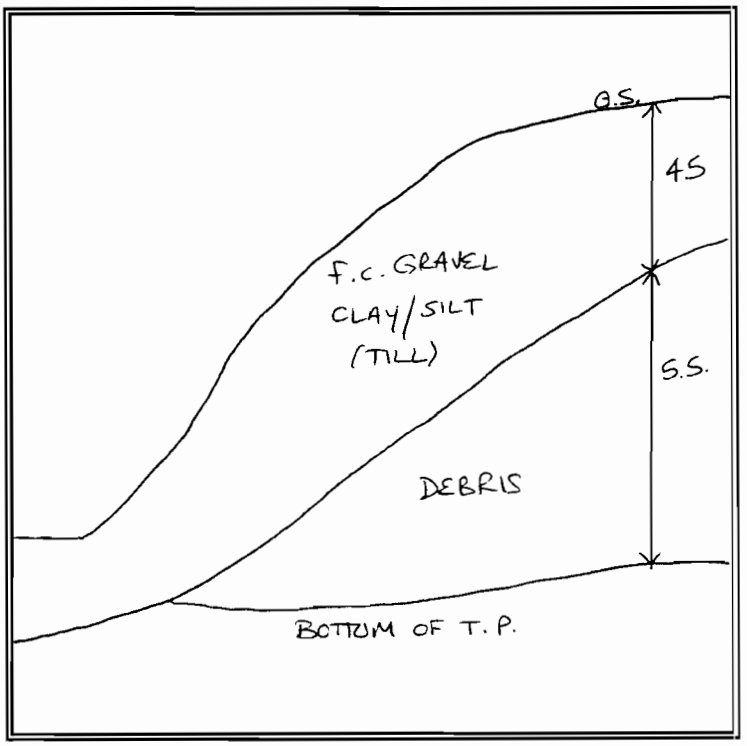
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Limit of Waste not found
Waste is located everywhere west and east of culvert

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 18 **Date:** 8/6/98 **Location:** 50 ft. south of MW-0 and MW-0D

Length: 8 ft. **Width:** 2 ft. **Depth:** 6ft.

Water in Pit? ☒*No* ☐*Yes* **Depth:** NA **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.5 ft. **Depth to Waste Bottom:** Bottom of test pit

Types and Percentage of Waste: metal, plastic, paper, wood, videotapes

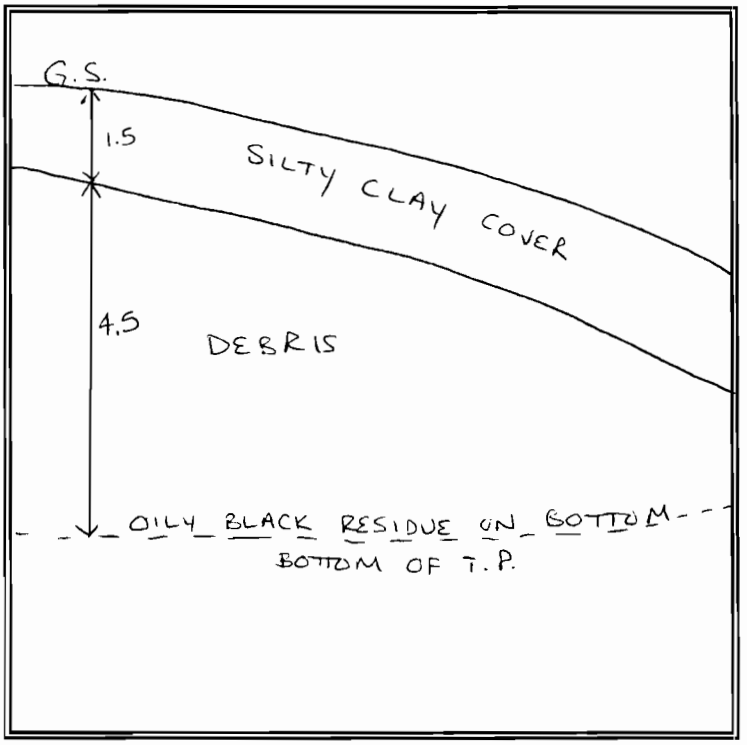
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Limit of Waste not found

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 19 **Date:** 8/6/98 **Location:** 100 ft. southeast of MW-0

Length: 8.5 ft. **Width:** 2 ft. **Depth:** 8.0 ft.

Water in Pit? ☒*No* ☐*Yes* **Depth:** NA **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.5 ft. **Depth to Waste** 6.0-6.5

Types and Percentage of Waste: construction and demolition waste, plastic, metal

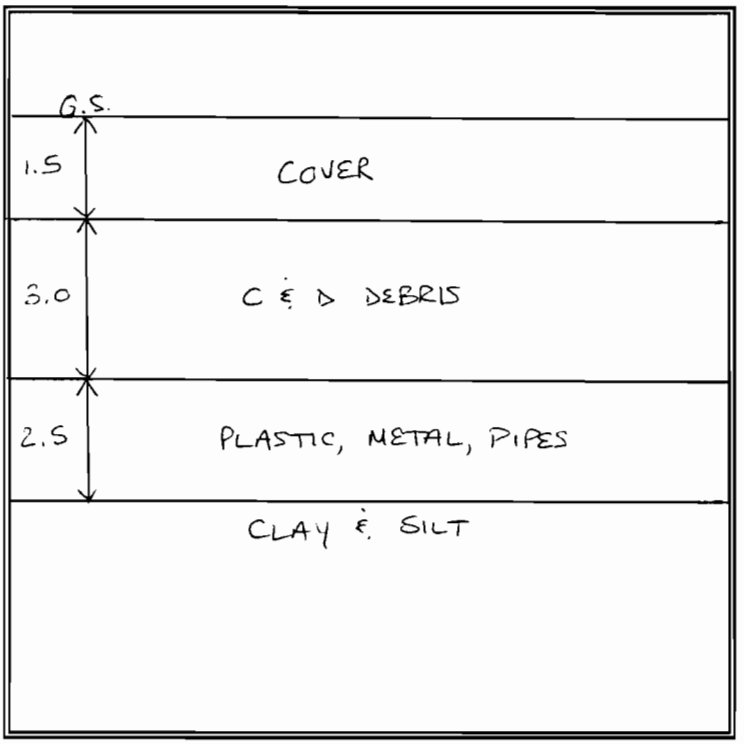
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Limit of Waste not found
Below C&D waste was typical municipal waste

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 20 **Date:** 8/6/98 **Location:** End of driveway behind blue block bldg.

Length: 8.5 ft. **Width:** 2 ft. **Depth:** 8.0 ft.

Water in Pit? ☒*No* ☐*Yes* **Depth:** NA **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.5 ft. **Depth to Waste** 6.0-6.5

Types and Percentage of Waste: construction and demolition waste, plastic, metal

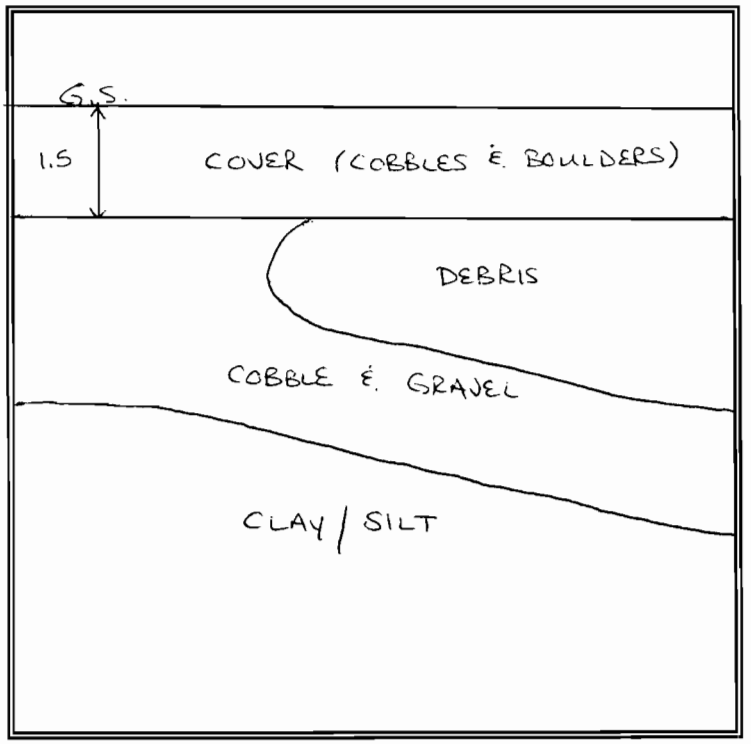
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Limit of Waste found and marked with stake
Below C&D waste was typical municipal waste

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 21 **Date:** 8/7/98 **Location:** NW corner LF perpendicular. to Thruway

Length: 23.0 ft. **Width:** 2 ft. **Depth:** 12.5 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** trickling in **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 2.1 ft. **Depth to Waste** 9.4 ft.

Types and Percentage of Waste: tires, glass, plastic, metal containers

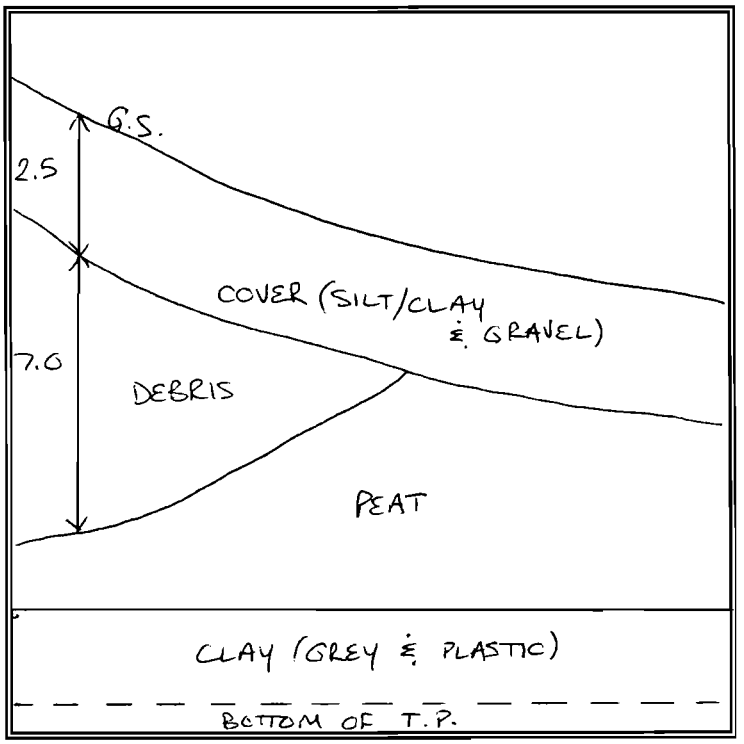
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Limit of Waste found and marked with stake
Buckeye Pipeline representative staked pipeline-limit of waste 15ft. south of pipeline

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 22 **Date:** 8/7/98 **Location:** Just E of 4 legged power pole

Length: 12.0 ft. **Width:** 2 ft. **Depth:** 7.5 ft.

Water in Pit? ☒*No* ☐*Yes* **Depth:** trickling in **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.5 ft. **Depth to Waste** 6.2 ft.

Types and Percentage of Waste: tires, glass, plastic, metal containers, petroleum smell

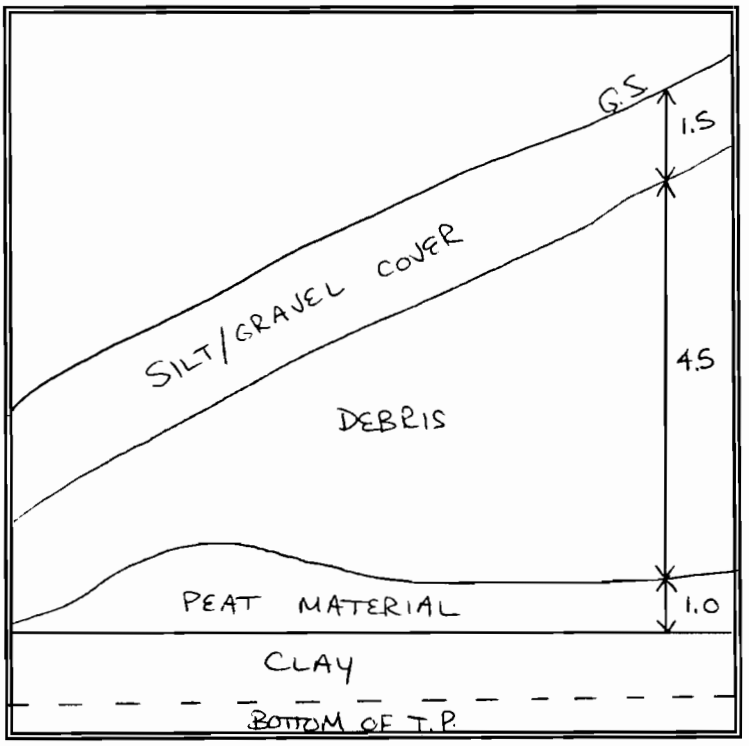
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Limit of Waste not found-unable to determine due to Buckeye Pipeline
Buckeye Pipeline representative staked pipeline-excavated to 3ft. south of pipeline

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 23 **Date:** 8/7/98 **Location:** 50 ft. North of MW-1

Length: 13.0 ft. **Width:** 2 ft. **Depth:** 7.0 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** 0.6 ft. **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.0 ft. **Depth to Waste:** 4.9 ft.

Types and Percentage of Waste: tires, plastic, metal sheets, wire, petroleum smell

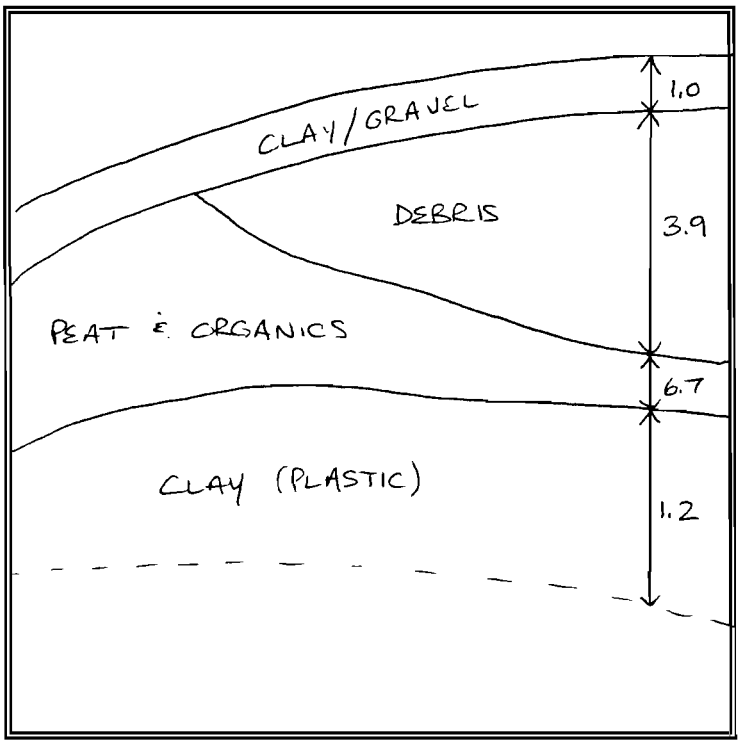
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Limit of Waste found and marked with stake
Buckeye Pipeline representative staked pipeline-limit of waste 17ft. South of pipeline

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 24 **Date:** 8/7/98 **Location:** 25 ft. north of MW-0 and MW-0D

Length: 21.0 ft. **Width:** 2 ft. **Depth:** 7.0 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** trickles in **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.5 ft. **Depth to Waste:** 3.6 ft.

Types and Percentage of Waste: clothes, paper, food, metal, plastic

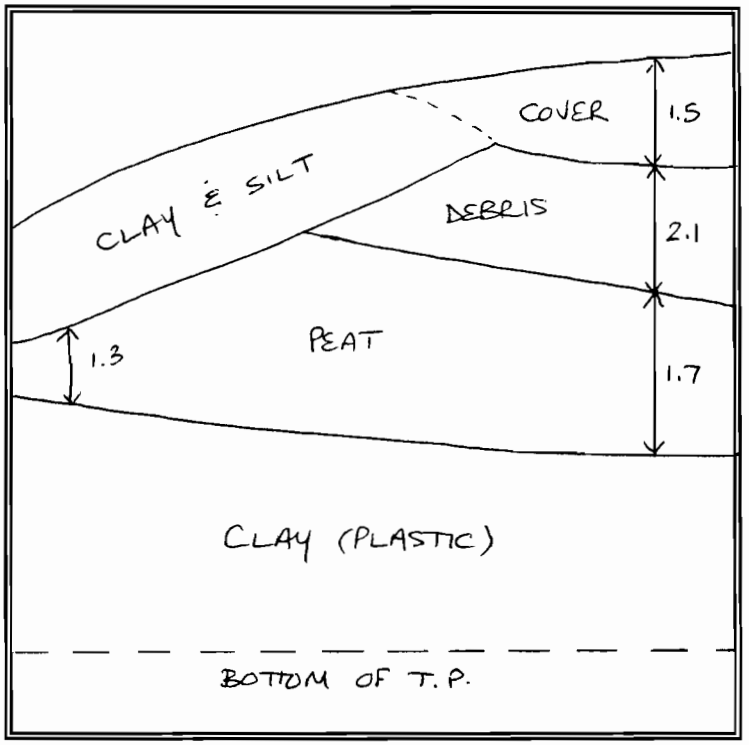
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Limit of Waste found and marked with stake
Buckeye Pipeline representative staked pipeline-limit of waste 15ft. South of pipeline

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 25 **Date:** 8/7/98 **Location:** Across from Exit 36 sign on Thruway

Length: 15.5 ft. **Width:** 2 ft. **Depth:** 6.5 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** trickles in **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 2.0 ft. **Depth to Waste:** 3.5-4.0 ft.

Types and Percentage of Waste: shoes, plastic, tires, metal, paper

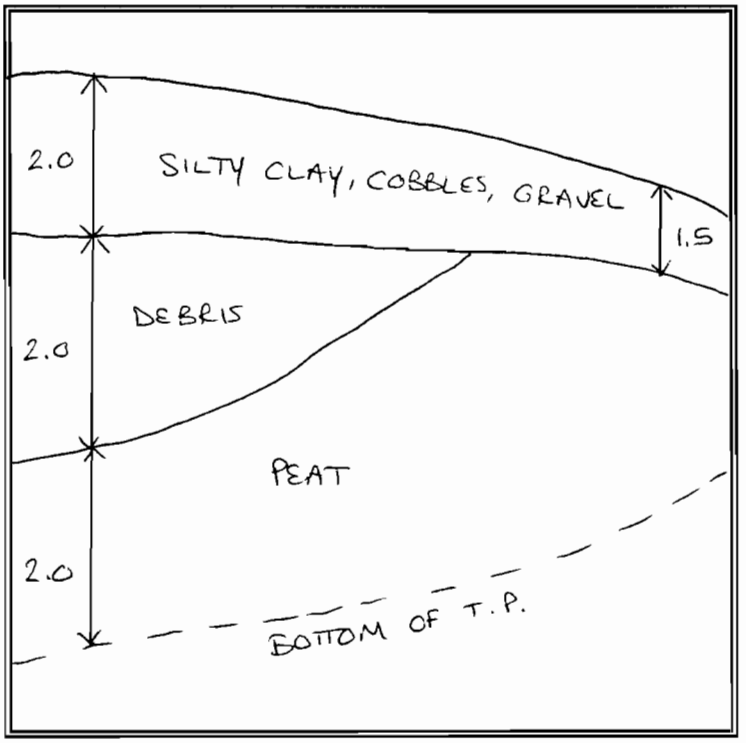
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Limit of Waste found and marked with stake
Buckeye Pipeline representative staked pipeline-limit of waste 7ft. South of pipeline
Petroleum odor

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 26 **Date:** 8/7/98 **Location:** 50 ft. East of MW-10

Length: 4 ft. **Width:** 2 ft. **Depth:** 2.5 ft.

Water in Pit? ☒*No* ☐*Yes* **Depth:** NA **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.5 ft. **Depth to Waste:** 2.5 ft.

Types and Percentage of Waste: plastic, metal containers

Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Commments:
HNu and Quad Alarm readings normal
Approximate height above Ley Creek: 20 ft.
Had to stop excavation due to the uncovering of turtle eggs.
Limit of Waste was not found but most probably at the edge of Ley Creek

Test Pit Profile

TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 27 **Date:** 8/7/98 **Location:** WP-6

Length: 14 ft. **Width:** 2 ft. **Depth:** 10 ft.

Water in Pit? ☒*No* ☐*Yes* **Depth:** NA **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 2.5 ft. **Depth to Waste:** 8.5 ft.

Types and Percentage of Waste: plastic & metal containers, clothes, glass

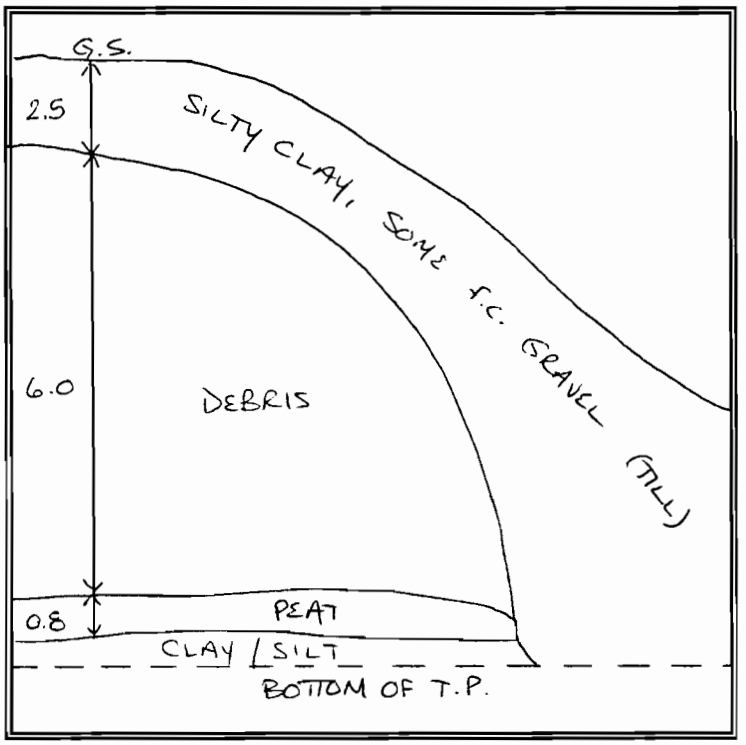
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Limit of Waste was found at the bottom of bank at the edge of Ley Creek
Stake placed at limit of waste

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 28 **Date:** 8/7/98 **Location:** 10 ft. South of MW-9

Length: 13 ft. **Width:** 2 ft. **Depth:** 8.0 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** 2.5 **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 0.5 ft. **Depth to Waste:** 4.5 ft.

Types and Percentage of Waste: plastic & metal containers, clothes, glass

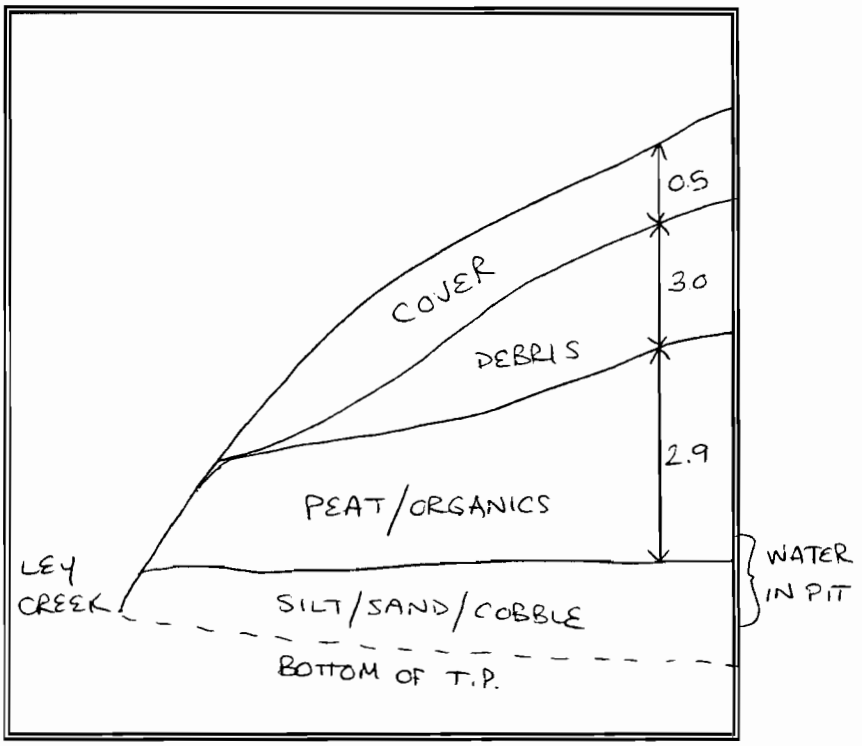
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Limit of Waste was found 5 ft from the edge of Ley Creek
Stake placed at limit of waste

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 29 **Date:** 8/7/98 **Location:** Next to Concrete Pad near Wolf Rd.

Length: 35 ft. **Width:** 2 ft. **Depth:** 5.0 ft.

Water in Pit? ☒*No* ☐*Yes* **Depth:** NA **Waste Encountered?** ☒*No* ☐*Yes*

Depth to Top of Waste: NA **Depth to Waste:** NA

Types and Percentage of Waste: plastic & metal containers, clothes, glass

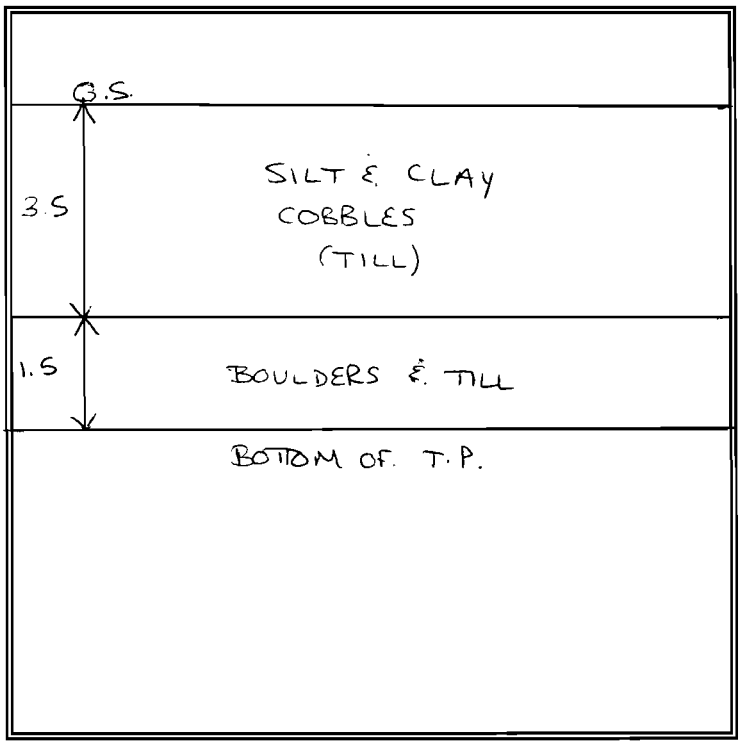
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Limit of Waste was not found

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 30 **Date:** 8/7/98 **Location:** Next to Concrete Pad near Wolf Rd.

Length: 50 ft. **Width:** 2 ft. **Depth:** 6.0-10.0 ft.

Water in Pit? ☒*No* ☐*Yes* **Depth:** NA **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.5 ft. **Depth to Waste:** 3.0 ft.

Types and Percentage of Waste: glass, clothes, metal, plastic, black oily residue

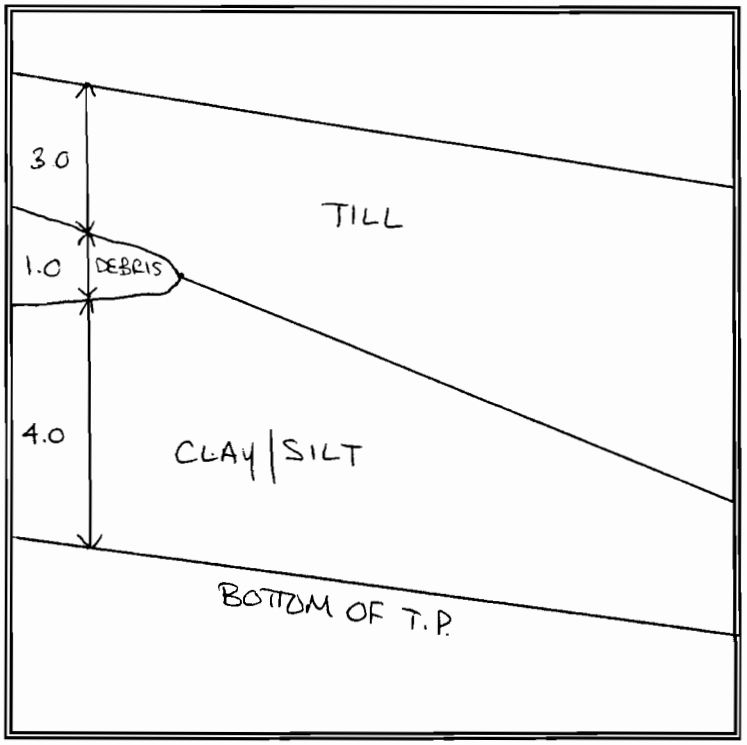
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Limit of Waste was found and marked with stake
Western end of TP-30 has 4 to 5 feet of waste, narrows out to the further East

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 31 **Date:** 8/7/98 **Location:** 10 ft. West of MH-9

Length: 22 ft. **Width:** 2 ft. **Depth:** 13.0 ft.

Water in Pit? ☒*No* ☐*Yes* **Depth:** NA **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.5 ft. **Depth to Waste:** 7.5 ft.

Types and Percentage of Waste: tires, C&D waste, petroleum, metal, paper products

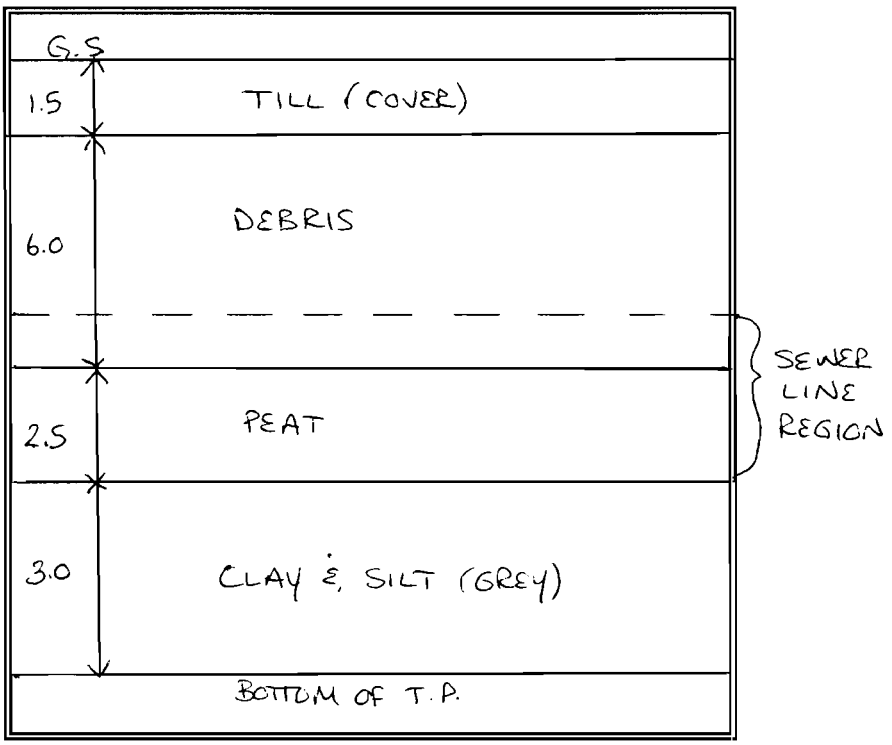
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Limit of Waste was not found
This test pit is used to sample soils around abandoned sanitary sewer line
Sample taken at 11:07

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 32 **Date:** 8/9/98 **Location:** Between OCR property stakes

Length: 88 ft. **Width:** 2 ft. **Depth:** 7.0 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** 4.5 ft. **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 0.6 ft. **Depth to Waste:** Bottom of test pit

Types and Percentage of Waste: tires, C&D waste, petroleum, metal, paper products

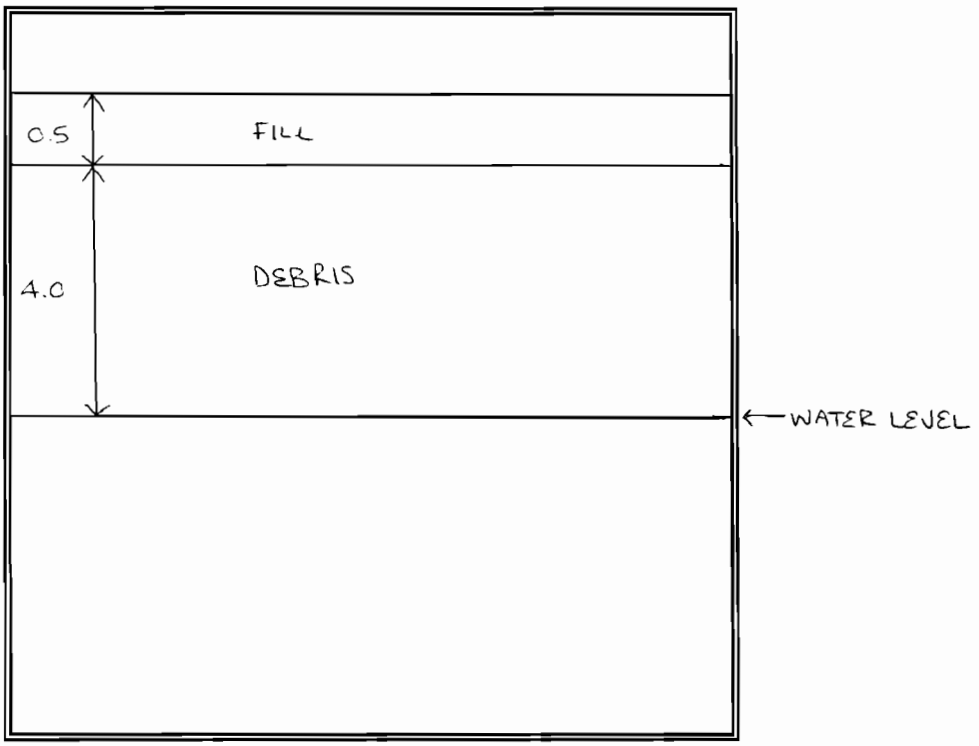
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Oily sheen on water in hole and on debris excavated
This test pit is used to sample soils around abandoned sanitary sewer line
Unable to located sewer line

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 33 **Date:** 8/9/98 **Location:** 75 ft. West of group of 3 small trees

Length: 50 ft. **Width:** 2 ft. **Depth:** 11-14 ft.

Water in Pit? ☒*No* ☐*Yes* **Depth:** NA **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.2 ft. **Depth to Waste:** 2.7-3.0 ft.

Types and Percentage of Waste: cloth, paper, plastic, metal containers

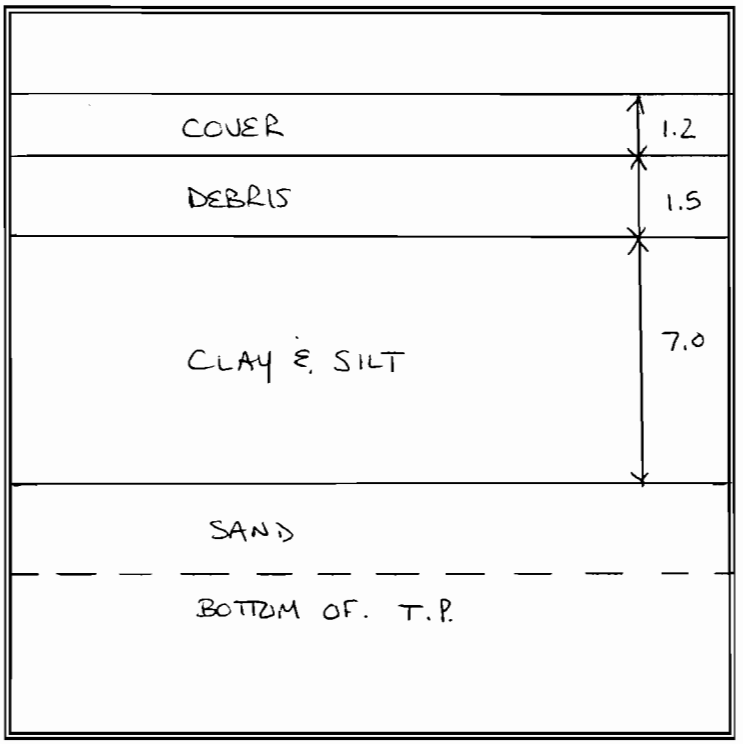
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
This test pit is used to sample soils around abandoned sanitary sewer line
Sample taken at 17:00

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 34 **Date:** 8/11/98 **Location:** 30 ft. SE of NM 8841-13

Length: 10 ft. **Width:** 2 ft. **Depth:** 14 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** 1.8 ft. **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.7 ft. **Depth to Waste:** 10.5 ft.

Types and Percentage of Waste: tires, plastic, metal, paper

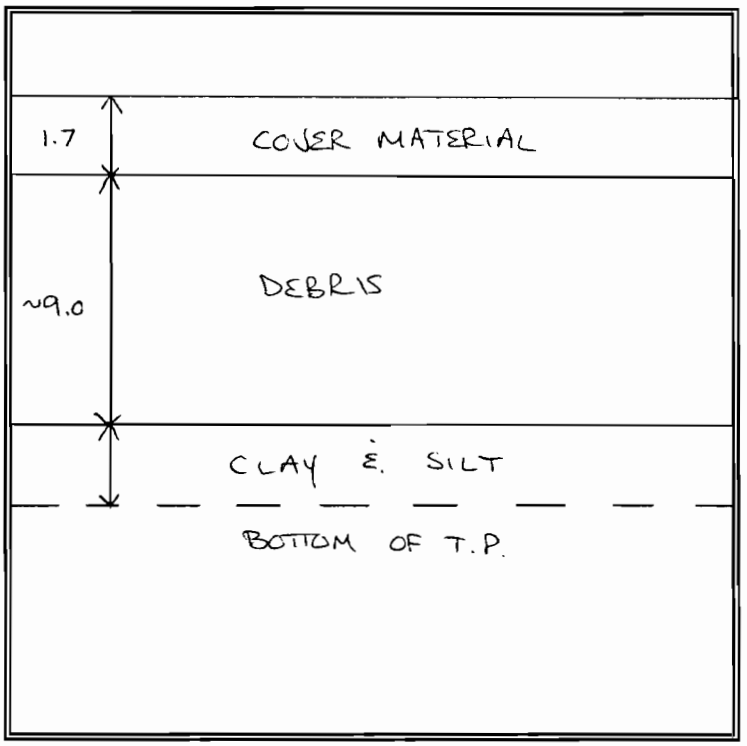
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu readings normal
Strong Petroleum Odor: LEL-82
Three to Five foot layer of tires

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 35 **Date:** 8/11/98 **Location:** SS of Ley Creek: 15' E of NM71

Length: 14.5 ft. **Width:** 2 ft. **Depth:** 9.0 ft.

Water in Pit? ☒*No* ☐*Yes* **Depth:** NA **Waste Encountered?** ☒*No* ☐*Yes*

Depth to Top of Waste: NA **Depth to Waste:** NA

Types and Percentage of Waste: cloth, paper, plastic, metal containers

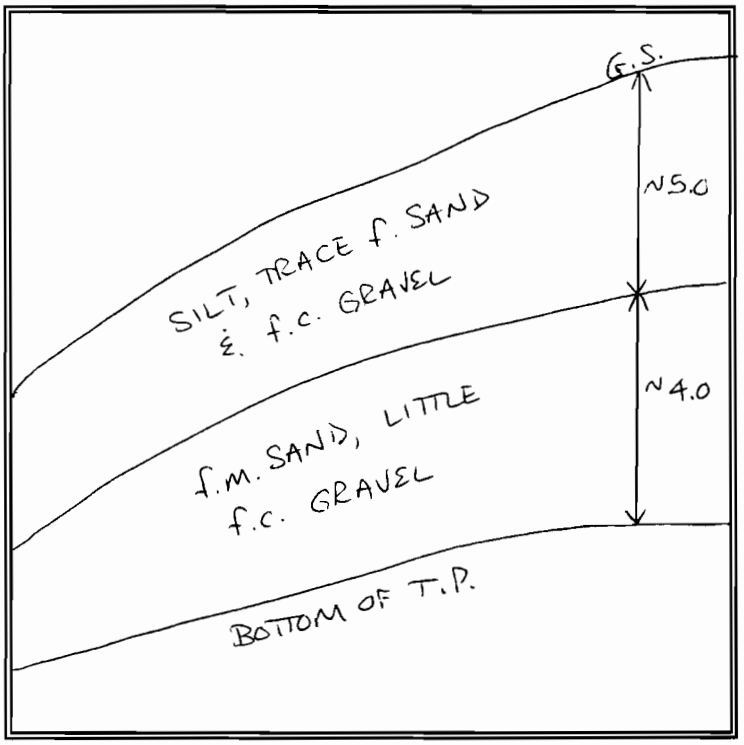
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 36 **Date:** 8/11/98 **Location:** SS of Ley Creek: 15' MW of B-12

Length: 15.0 ft. **Width:** 2 ft. **Depth:** 7.5-8.0 ft.

Water in Pit? ☒*No* ☐*Yes* **Depth:** NA **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.8 ft. **Depth to Waste:** 4.0-4.5 ft.

Types and Percentage of Waste: paper, plastic, wires, metal containers

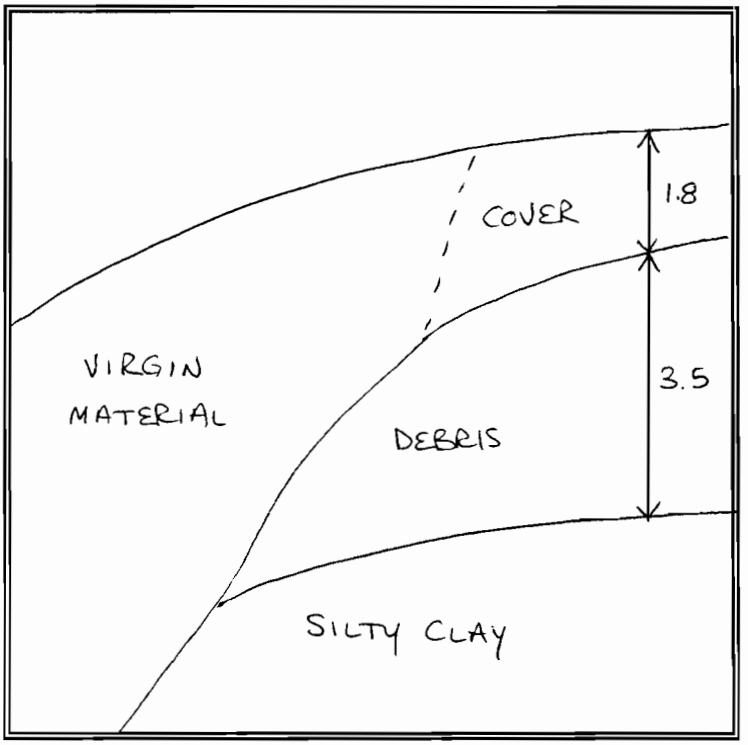
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Waster layer begins midway up bank off of Ley Creek

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 37 **Date:** 8/11/98 **Location:** SS of Ley Creek: Next to MW-7

Length: 10.0 ft. **Width:** 2 ft. **Depth:** 9.0 ft.

Water in Pit? ☒*No* ☐*Yes* **Depth:** NA **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 0.0 ft. **Depth to Waste:** 7.5 ft.

Types and Percentage of Waste: tires, vinyl siding, plastic bags, metal containers

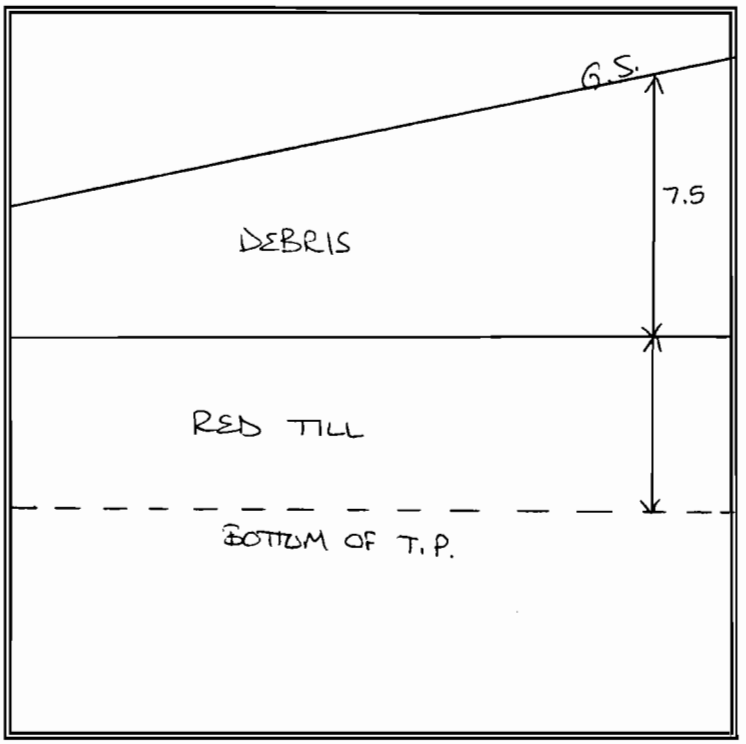
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
No limit of waste found

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 38 **Date:** 8/11/98 **Location:** SS of Ley Creek: 15' N of triple poles

Length: 25.0 ft. **Width:** 2 ft. **Depth:** 10.0 ft.

Water in Pit? ☒*No* ☐*Yes* **Depth:** NA **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 2.0 ft. **Depth to Waste:** 2.2 ft.

Types and Percentage of Waste: very few glass bottles

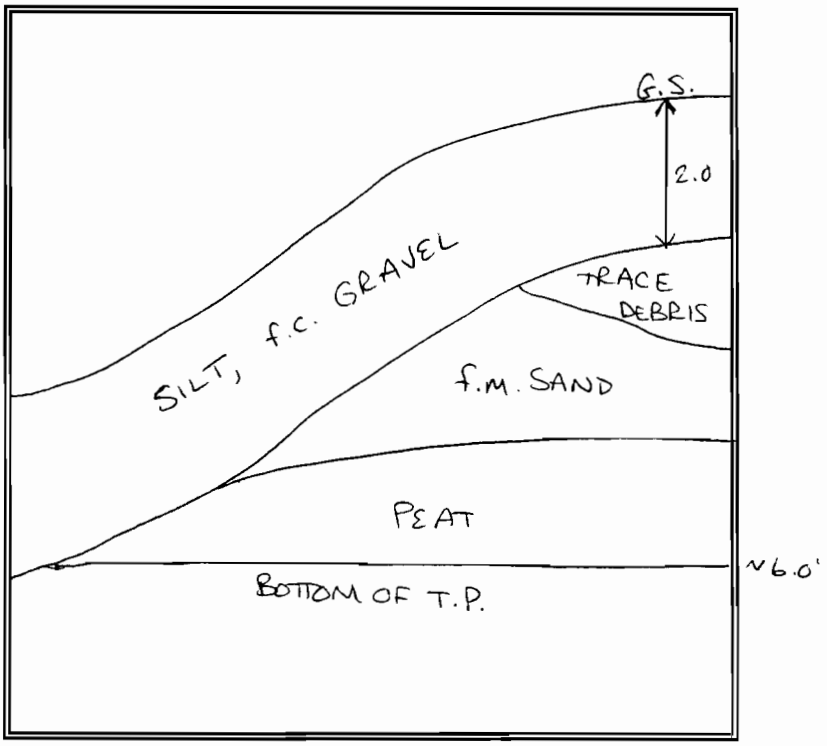
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Limit of waste found and marked with stake

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 39 **Date:** 8/11/98 **Location:** SS of Ley Creek: 100' S of triple poles

Length: 14.0 ft. **Width:** 2 ft. **Depth:** 7.0 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** 1.0 ft **Waste Encountered?** ☒*No* ☐*Yes*

Depth to Top of Waste: NA **Depth to Waste:** NA

Types and Percentage of Waste: NA

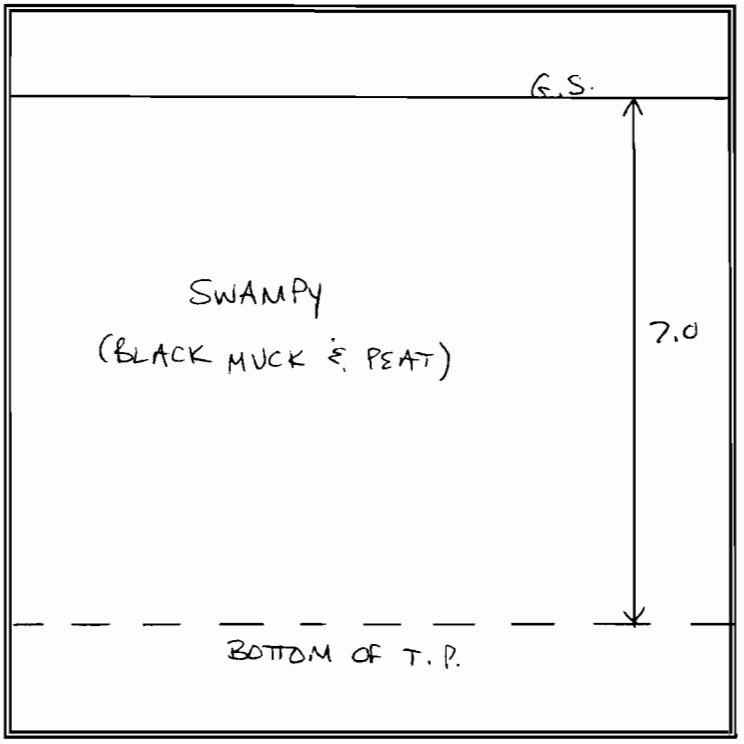
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Limit of waste found and marked with stake (Edge of bank to Ley Creek)

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 40 **Date:** 8/11/98 **Location:** SS of Ley Creek: 25' E of double poles

Length: 20.0 ft. **Width:** 2 ft. **Depth:** 9.0 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** 0.5 ft **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 0.0 ft. **Depth to Waste:** 5.0 ft.

Types and Percentage of Waste: glass containers, plastic, paper, wood

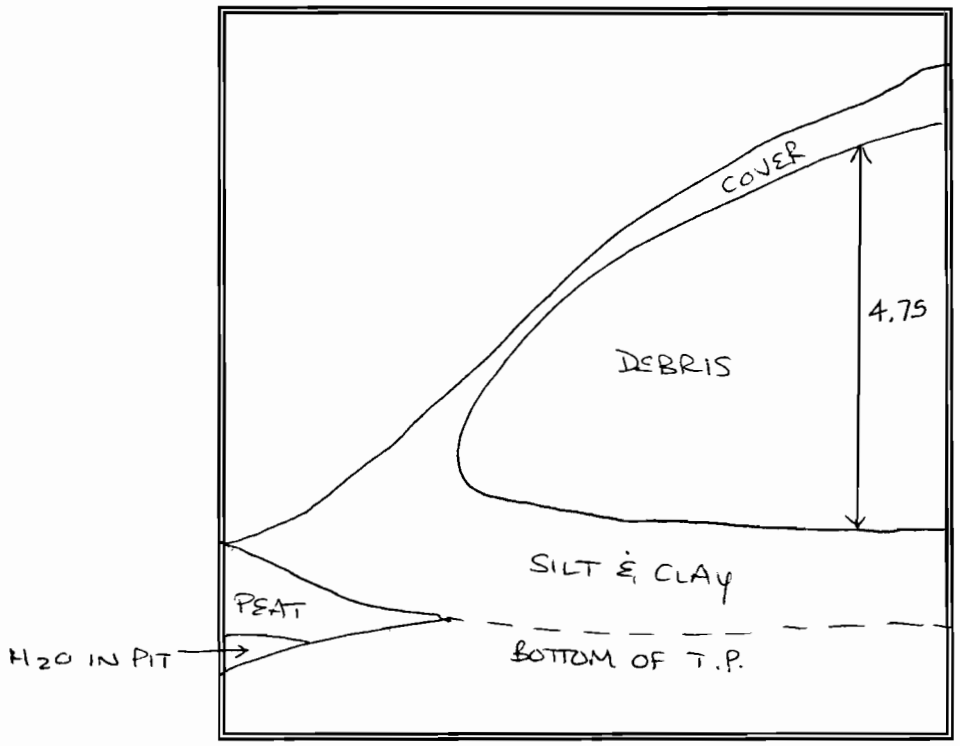
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Limit of waste found and marked with stake

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 41 **Date:** 8/11/98 **Location:** SS of Ley Creek: ESL-56824

Length: 15.0 ft. **Width:** 2 ft. **Depth:** 8.0 ft.

Water in Pit? ☒*No* ☐*Yes* **Depth:** NA **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.5 ft. **Depth to Waste:** 4.8 ft.

Types and Percentage of Waste: glass containers, shoes, metal, plastic, wires

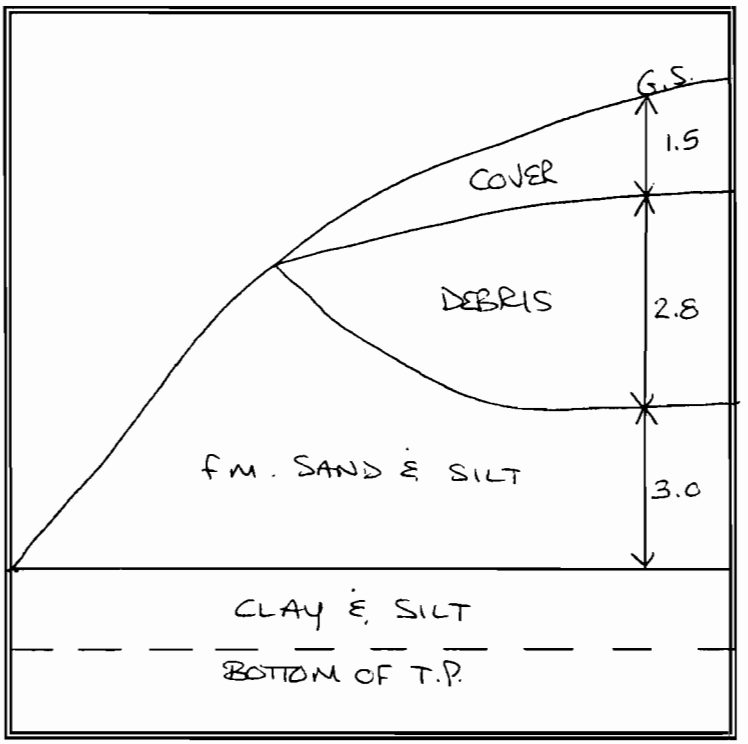
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
HNu and Quad Alarm readings normal
Limit of waste found and marked with stake
Limit of waste is 35 to 40 ft. from Ley Creek

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 42 **Date:** 8/18/99 **Location:** Near old TP-8 & 22' North of MW-5

Length: 25.0 ft. **Width:** 3-4 ft. **Depth:** 14.0 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** ≈8.0 ft. **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 2.5 ft. **Depth to Waste Bottom:** ≈10.0 ft.

Types and Percentage of Waste: Household ≈75%

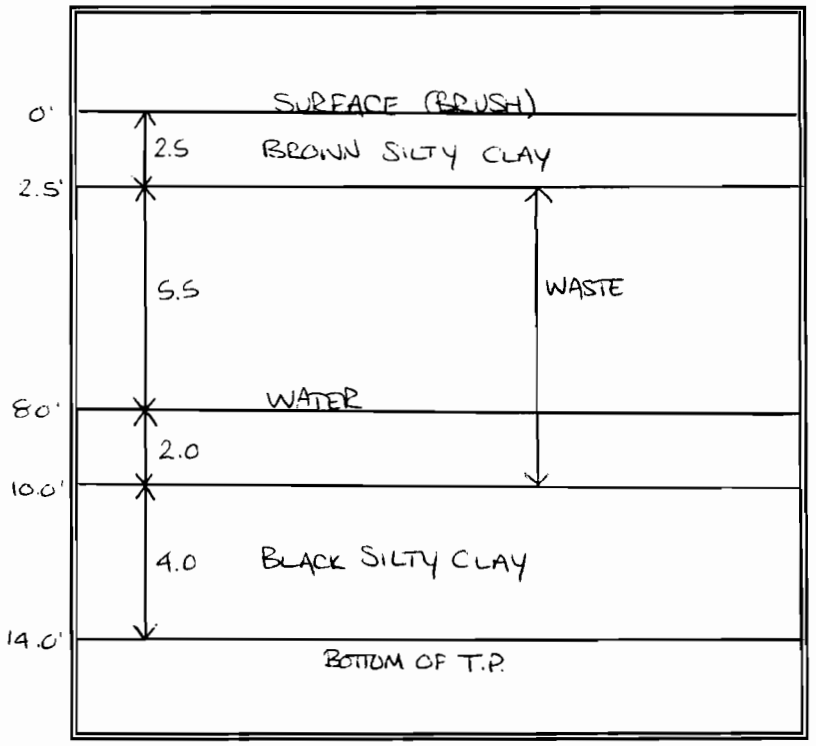
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
Blackish soil in and below waste
Till changing to brown at about 14.0 ft.
Strong petroleum odor noted but no reading on PID

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 43 **Date:** 8/18/99 **Location:** Between MW-5 & Ley Creek

Length: 15.0 ft. **Width:** 4.0 ft. **Depth:** 14.0 ft.

Water in Pit? ☒*No* ☐*Yes* **Depth:** NA **Waste Encountered?** ☒*No* ☐*Yes*

Depth to Top of Waste: NA **Depth to Waste Bottom:** NA

Types and Percentage of Waste: NA

Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
Clean Test Pit
Clay & Silt approximately 20.0 ft. from Creek
No odor

Test Pit Profile

NO PROFILE DRAWN

TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 44 **Date:** 8/18/99 **Location:** 58 ft. North of TP-42 in clearing

Length: 18.0 ft. **Width:** 4.0 ft. **Depth:** 21.0 ft.

Water in Pit? ☒*No* ☐*Yes* **Depth:** NA **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 2.5 ft. **Depth to Waste Bottom:** 16.0 ft.

Types and Percentage of Waste: (Waste included black soil) Plastic/Wood 100%

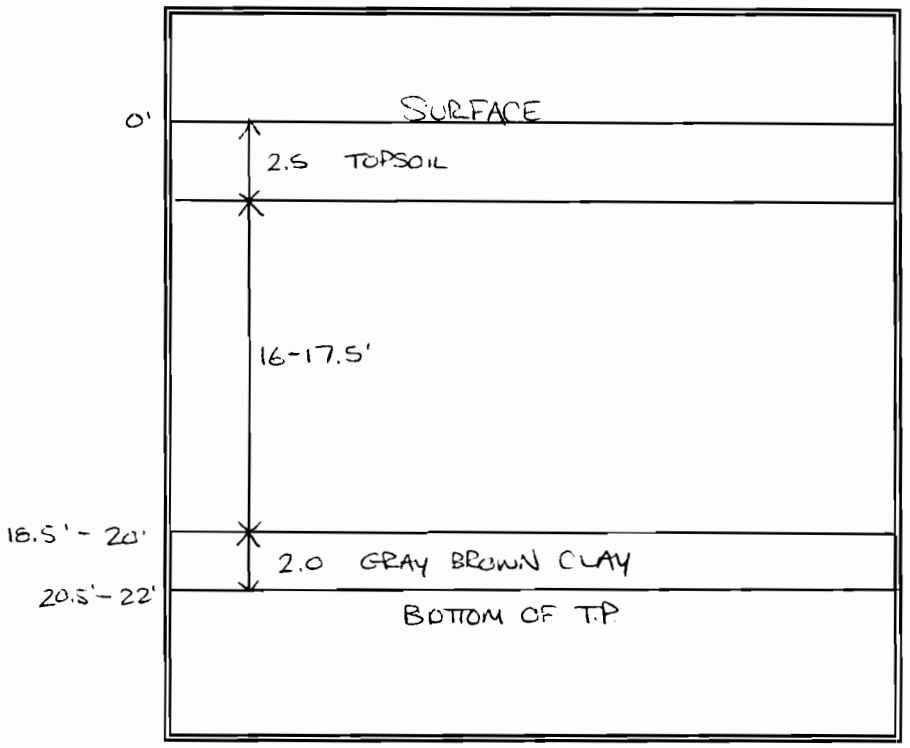
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
Very little domestic debris (garbage) in pit
Seemed to be a layer of plastic bags about 4.0 ft. down
No reading on PID, but old petroleum odor noted

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 45 **Date:** 8/18/99 **Location:** 65 ft. east of MW-5

Length: 16.0 ft. **Width:** 4.0 ft. **Depth:** 14.6 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** 5.5 ft **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 2.0 ft. **Depth to Waste Bottom:** 10.0 ft.

Types and Percentage of Waste: Contaminated Soil (80%) Plastic/Metal/Wood (20%)

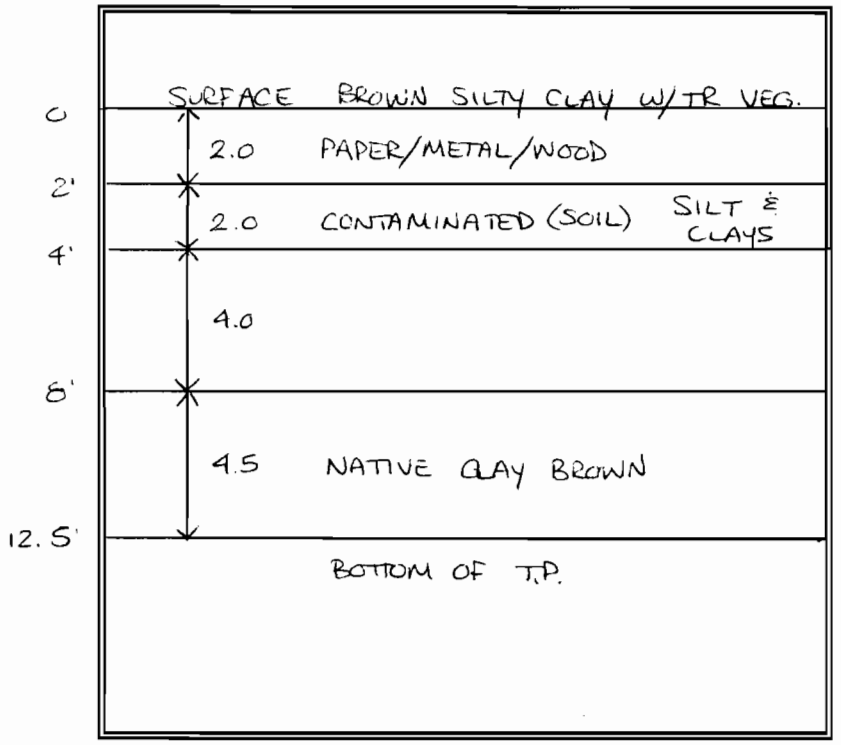
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
Sticky black clay at approximately 7.0 ft.
Old sickly petroleum odor noted
Sample collected from 7-9' below grade (sample initially placed in plastic bag)
Headspace reading in bag of 29.7 ppm measured with PID

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 46 **Date:** 8/18/99 **Location:** 56 ft. west of MW-5 (North most)

Length: 12.0 ft. **Width:** 4.0 ft. **Depth:** 10.0 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** 6.0 ft **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 4.0 ft. **Depth to Waste Bottom:** > 10.0 ft.

Types and Percentage of Waste: Tires/Metal/Plastic/Glass/Wood/Cans/Contaminated Clay Soil

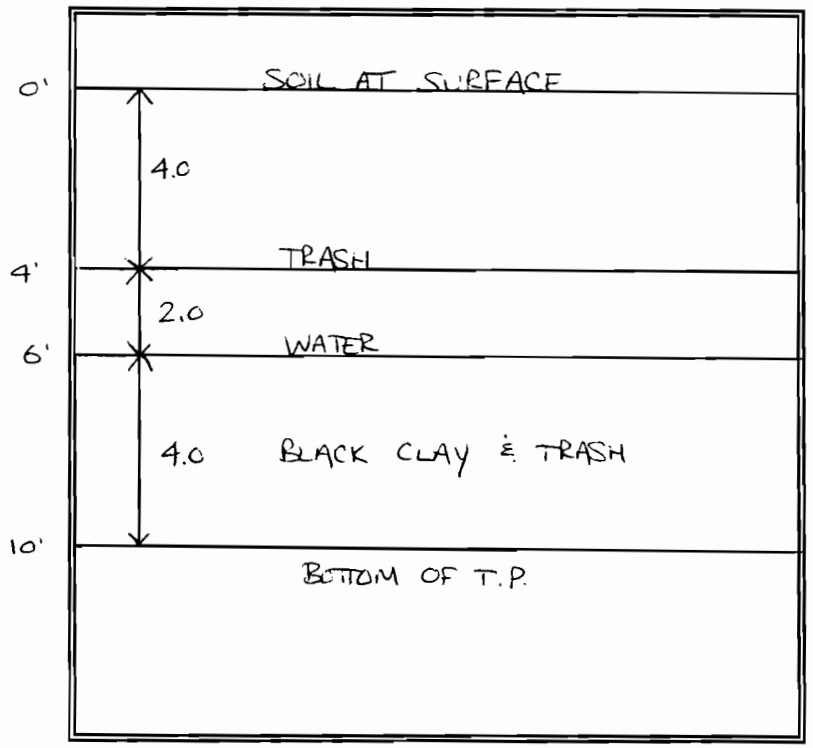
Drums Found? ☐*No* ☒*Yes* **# of Drums:** 1 **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: Ripped apart

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☒*No* ☐*Yes*

Comments:
Water came in fast—too deep to keep digging
Strong petroleum odor
Sample collected from 6-8' below grade
20 ppm headspace in bag as measured with PID

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 47 **Date:** 8/18/99 **Location:** 200 ft. west of MW-2

Length: 12.0 ft. **Width:** 4.0 ft. **Depth:** 13.0 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** 8.0 ft. **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 2.5 ft. **Depth to Waste Bottom:** 11.0 ft.

Types and Percentage of Waste: Construction debris/wood/metal/wire/plastic/tires/insulation/carpet/culvert material/90%

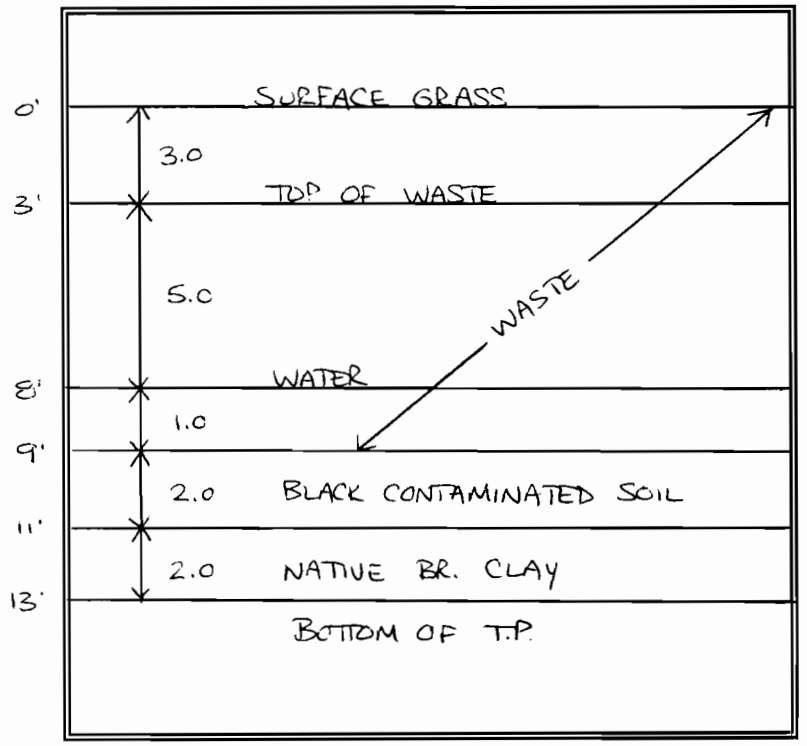
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
Petroleum odor noted (35 ppm headspace in bag)
Sample collected from 8-10' below grade
All types of waste from bed springs to tires
Water present within the waste

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 48 **Date:** 8/20/99 **Location:** Offsite

Length: 21.0 ft. **Width:** 4.0 ft. **Depth:** 10.0 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** 10.0 ft. **Waste Encountered?** ☒*No* ☐*Yes*

Depth to Top of Waste: NA **Depth to Waste Bottom:** NA

Types and Percentage of Waste: NA

Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
Started furthest point west—dark gray silty sandy material—hit brown sand under roadway to Thruway fence—Natural

Test Pit Profile

NO PROFILE DRAWN

TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 49 **Date:** 8/20/99 **Location:** Offsite

Length: 30.0 ft. **Width:** 4.0 ft. **Depth:** 7.0 ft.

Water in Pit? ☐*No* ☒*Yes* **Depth:** 7.0 ft **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.5 ft. **Depth to Waste Bottom:** 4.5 ft.

Types and Percentage of Waste: Plastic/banding/wood/metal/glass/muffler

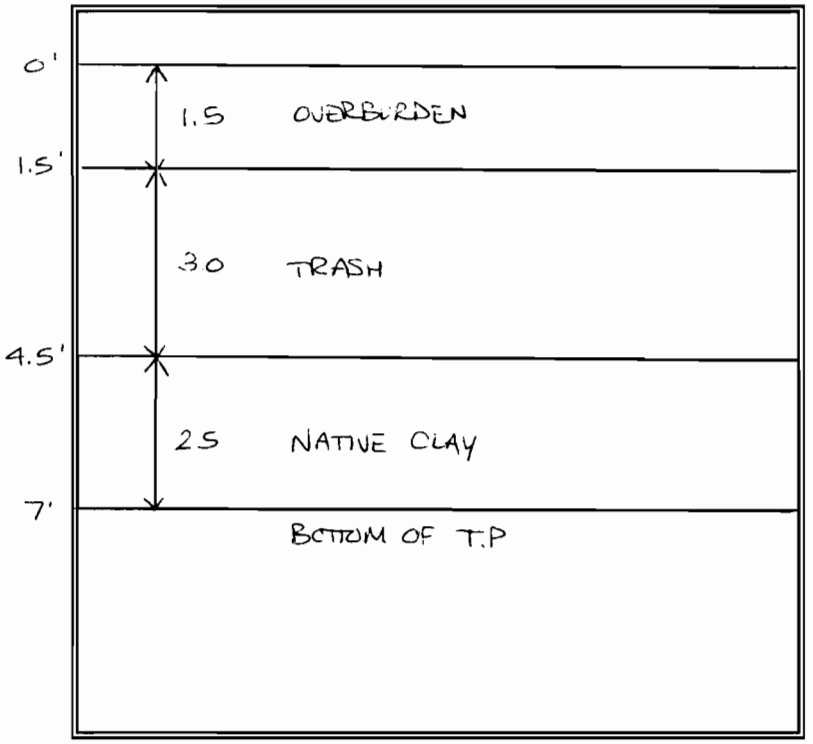
Drums Found? ☐*No* ☒*Yes* **# of Drums:** 1 **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: Flat & old

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
TP-49 had 3" PVC pipe with an electric wire along side running into trench approximately 1.5 ft. down.
Traced back towards woods—ended in TP-49 area & may have been part of a job trailer's hook up in the past.

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 50 **Date:** 8/20/99 **Location:** Offsite

Length: 20.0 ft. **Width:** 4.0 ft. **Depth:** 9.0 ft.

Water in Pit? ☒*No* ☐*Yes* **Depth:** NA **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.5-2.0 ft. **Depth to Waste Bottom:** 7.0 ft.

Types and Percentage of Waste: Felt paper/tires/wire/plastic/banding/rugs

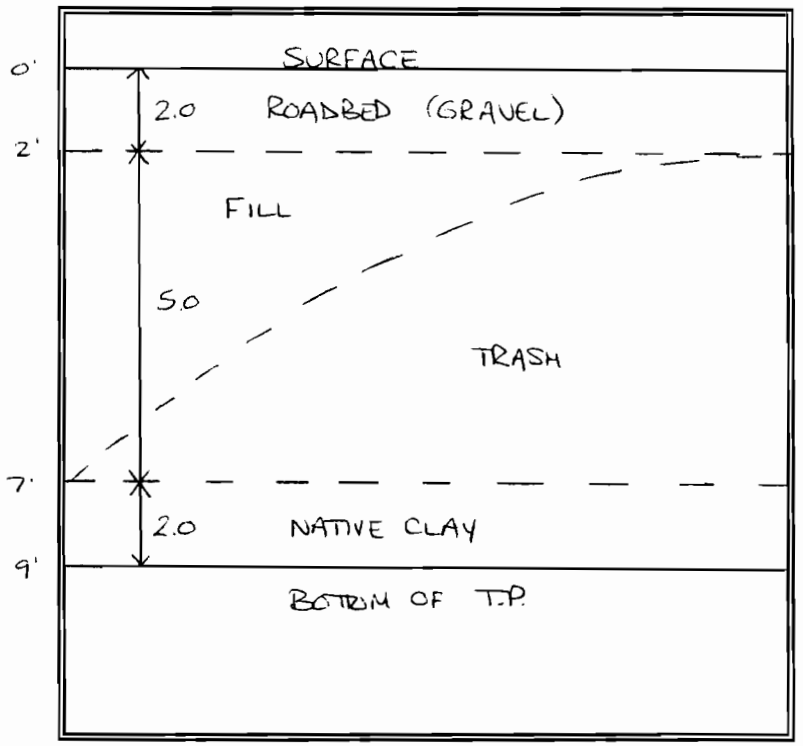
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
Trench is perpendicular to the landfill-waste pinches out at access road to Thruway (25 ft. south of gate)
Some dark gray clayey soil under road bed

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 51 **Date:** 8/20/99 **Location:** Town of Salina Landfill

Length: 10.0 ft. **Width:** 4.0 ft. **Depth:** 4.0 ft.

Water in Pit? ☒*No* ☐*Yes* **Depth:** NA **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 1.5-2.0 ft. **Depth to Waste Bottom:** 3.0-3.5 ft.

Types and Percentage of Waste: Plastic/metal/wood (90%)

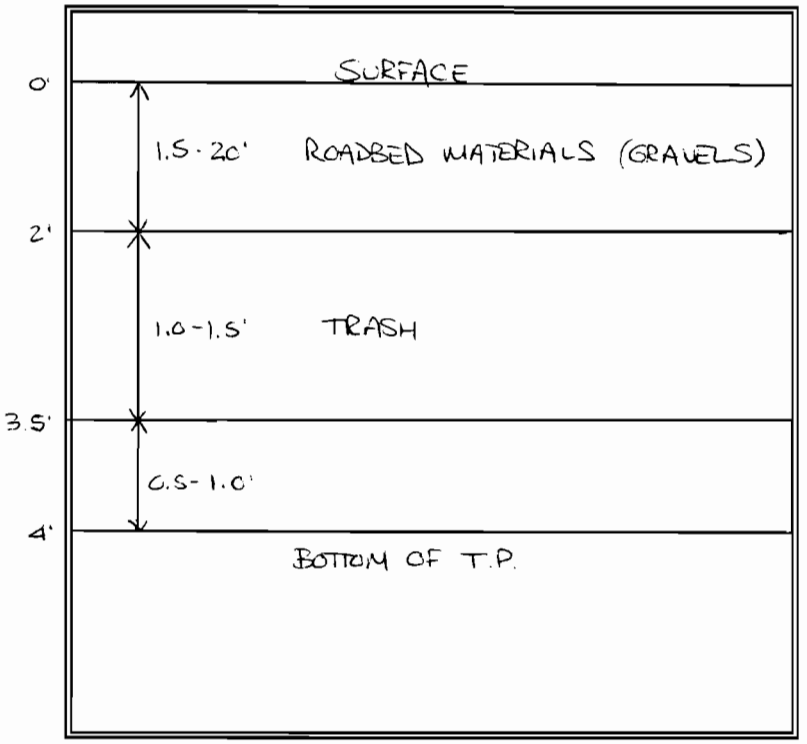
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
5 ft. from large dead willow tree near pond

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 52 **Date:** 8/20/99 **Location:** Town of Salina Landfill Offsite

Length: 25.0 ft. **Width:** 4.0 ft. **Depth:** 12.0 ft.

Water in Pit? ☒*No* ☐*Yes* **Depth:** NA **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 6" **Depth to Waste Bottom:** 7.0 ft.

Types and Percentage of Waste: Concrete/wire/plastic/metal

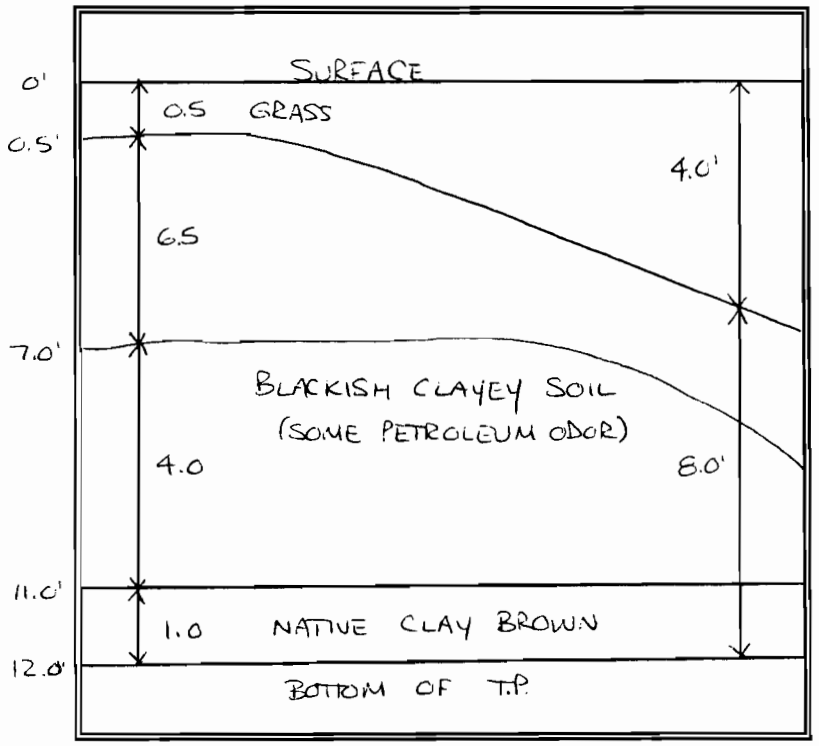
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
C&D trash—no domestic garbage
Trash tapers out toward pond area at edge of embankment

Test Pit Profile



TOWN OF SALINA LANDFLL RI/FS TEST PIT INFORMATION SHEET

Test Pit #: 53 **Date:** 8/20/99 **Location:** Town of Salina Landfill

Length: 12.0 ft. **Width:** 4.0 ft. **Depth:** 8.0 ft.

Water in Pit? ☒*No* ☐*Yes* **Depth:** NA **Waste Encountered?** ☐*No* ☒*Yes*

Depth to Top of Waste: 3.0-4.0 ft **Depth to Waste Bottom:** 8.0-3.0 ft.

Types and Percentage of Waste: Plastic/wood/metal/rug

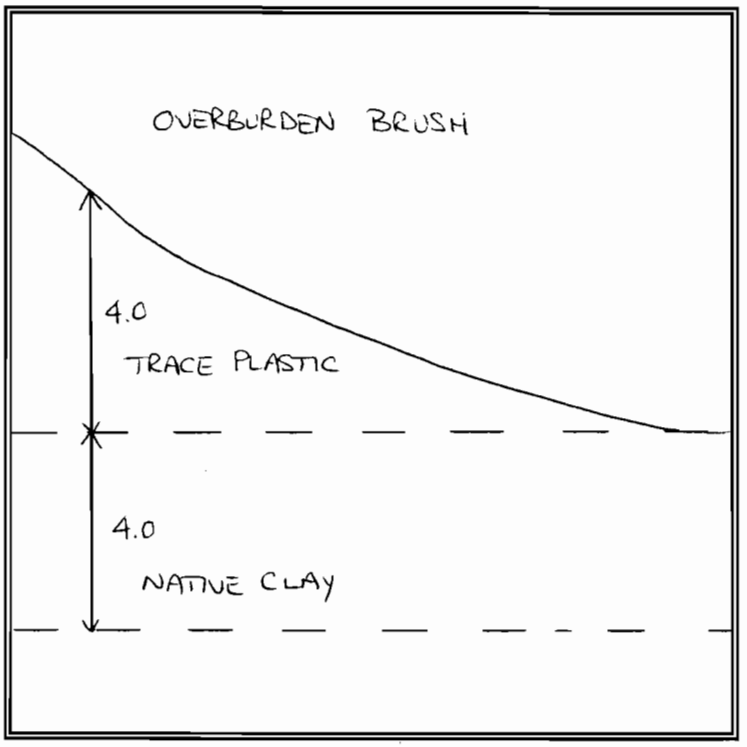
Drums Found? ☒*No* ☐*Yes* **# of Drums:** NA **Material in Drums?** ☒*No* ☐*Yes*

Condition and Comments on Drums: NA

Pictures Taken? ☒*No* ☐*Yes* **Location Marked by Stake:** ☐*No* ☒*Yes*

Comments:
Tapers down and pinches out (see profile below)

Test Pit Profile



APPENDIX B-3

Geotechnical Soil Data

RECEIVED
OCT 27 1999
CLOUGH HARBOUR & ASSOCIATES
SYRACUSE, NY

parratt wolff inc

October 22, 1999

Dr. Christopher Burns, P.G.
Clough, Harbour & Associates LLP
109 South Warren Street
State Tower Building, Suite 1300
Syracuse, New York 13202

Re: B-99188
Town of Salina, Landfill
Town of Salina, New York
Site Number 7-34-036

Dear Dr. Burns:

Enclosed is a resubmittal of the results of laboratory testing performed at your request on four tube soil samples obtained by a Parratt-Wolff, Inc. drilling crew on August 23, 1999 for the above referenced project. Results include:

1.	Sieve Analysis ASTM D422 & D1140	2 each
2.	Hydraulic Conductivity - Flexible Wall ASTM D5084	2 each

Note: The original testing schedule was to perform 4 each Hydraulic Conductivities but, due to the nature of the material (in a very dry state and loose conditions) we were only able to obtain two each samples for testing.

All requested tests have been completed on the previously received sample(s) for the above project. All sample remains are scheduled to be disposed of on November 11, 1999. Please notify Parratt-Wolff, Inc. by letter or telephone prior to November 11, 1999 if you would prefer to pick up the sample(s) or that the sample(s) be retained by Parratt-Wolff, Inc. for an additional period of time.

Thank you for this opportunity to work with you.

Very truly yours,

PARRATT - WOLFF, INC.

Virginia J. Thoma
Manager - Laboratory Services
VJT/bap
encs:

C:MSWORKS\LETTERS\99\B99188.WPS

☑ P.O. Box 56, 5879 Fisher Road, East Syracuse, NY 13057 Telephone 315-437-1429 or 800-782-7260 FAX 315-437-1770
☐ P.O. Box 1029, 501 Millstone Drive, Hillsborough, NC 27278 Telephone 919-644-2814 or 800-627-7920 FAX 919-644-2817

Report Date: October 11, 1999

Test Start Date 9/12/99

Measurement of Hydraulic Conductivity
of Saturated Porous Materials
Using a Flexible Wall Permeameter
ASTM D5084

Project No: B-99188 / Project Title: Clough, Harbour & Associates, Town of Salina Landfill
Town of Salina, New York Site # 7-34-036

ST No: -- / Lab ID#: 12302 / Test Sample Location: Northwest Quad

Depth/Lift/Elev.: 1'5"-2' / Type of Sample: Undisturbed X Remolded --

Method of Compaction: -- / Percent Compaction: --

Dry Unit Weight (PCF): Maximum: -- Initial: 135.2 / Moisture Content (% of Dry Weight): Optimum: -- Initial: 5.0

Initial Height (cm): 10.4 / Initial Diameter (cm): 6.0 / Initial Gradient: 20.3

Initial Degree of Saturation (B Value)(%): -- / Permeant Liquid Used: Deaired Deionized H_2O

Confining Pressure (PSI): 71.0 / Test (head) Pressure (PSI): 68.0 / Tail (back) Pressure (PSI): 65.0

Final Degree Of Saturation (B Value)(%): 100 / Final Dry Unit Weight (PCF): 144.6 / Final Gradient: 20.3

Final Height (cm): 10.4 / Final Diameter (cm): 5.8 / Final Moisture Content (% of Dry Weight): 9.5

Final Four Determinations k (cm/sec)

9.44×10^{-8}	9.45×10^{-8}	9.47×10^{-8}	9.48×10^{-8}

Mean Value of Final Four Consecutive Determinations:

Coefficient of Permeability k (cm/sec): 9.46×10^{-8} Project Specifications: --

Notes:

Report Date: October 11, 1999

Test Start Date 9/11/99

Measurement of Hydraulic Conductivity
of Saturated Porous Materials
Using a Flexible Wall Permeameter
ASTM D5084

Project No: B-99188 / Project Title: Clough, Harbour & Associates, Town of Salina Landfill Town of Salina, New York Site # 7-34-036

ST No: -- / Lab ID#: 12303 / Test Sample Location: Northeast Quad #1

Depth/Lift/Elev.: 0' - 6" / Type of Sample: Undisturbed X Remolded --

Method of Compaction: -- / Percent Compaction: --

Dry Unit Weight (PCF): Maximum: -- Initial: 110.0 / Moisture Content (% of Dry Weight): Optimum: -- Initial: 7.2

Initial Height (cm): 10.55 / Initial Diameter (cm): 6.05 / Initial Gradient: 20.0

Initial Degree of Saturation (B Value)(%): -- / Permeant Liquid Used: Deaired Deionized H_2O

Confining Pressure (PSI): 71.0 / Test (head) Pressure (PSI): 68.0 / Tail (back) Pressure (PSI): 65.0

Final Degree Of Saturation (B Value)(%): 96 / Final Dry Unit Weight (PCF): 120.2 / Final Gradient: 20.1

Final Height (cm): 10.50 / Final Diameter (cm): 5.80 / Final Moisture Content (% of Dry Weight): 17.0

Final Four Determinations k (cm/sec)

9.20×10^{-5}	9.34×10^{-5}	9.34×10^{-5}	9.35×10^{-5}

Mean Value of Final Four Consecutive Determinations:

Coefficient of Permeability k (cm/sec): 9.32×10^{-5} Project Specifications: --

Notes:

SIEVE ANALYSIS OF SOIL / AGGREGATE

PROJECT TITLE Town of Salina, Landfill, Town of Salina, New York
Site Number 7-34-036

PROJECT # B-99188

REPORT # 1

TEST METHOD ASTM D422 & D1140

REPORT DATE October 11, 1999

		Sieve Size - Percent Passing Sieve													
Lab I.D. #	Sample	3/4"	1/2"	3/8"	1/4"	#4	#10	#30	#40	#60	#100	#200			
12298	B-23 24.0' - 26.0'	100	98.5	98.5	96.6	95.6	92.7	91.7	91.4	78.6	32.0	23.0			
12299	B-24 22.0' - 24.0'	--	--	--	--	100	99.9	99.7	99.7	89.9	32.1	17.2			

Sample mass, as received, meets minimum requirements of test method: Yes ____ No X

Prewashed: Yes X No ____

Remarks:

Performed By: RL

Checked By: V.J. Thoma

APPENDIX B-4

Boring Logs and Well
Construction Diagrams

CLOUGH, HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 6967.07.24 July 1998

LOCATION: Salina,NY

CLIENT: Town of Salina

CONTRACTOR: American Auger

DRILLER: Ryan Baye | INSPECTOR: J. Trasher

START DATE: 7/7/98 | FINISH DATE: 7/8/98

SURFACE ELEV.: 374.09 | CHECKED BY: J. Trasher

Town of Salina Landfill

SUBSURFACE LOG

HOLE NUMBER MW-6

DRILL FLUID: None | DRILLING METHOD: Hollow Stem Augers

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH	CASING BOTTOM	HOLE BOTTOM
	7/8/98	14:15	11.5		18'

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" VALUE	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, water Return, etc.	WATER LEVELS AND/OR WELL DATA
S1	2.0'	0.8'	7-6-6-6	12				**CLAY AND SILT**, Some f.c. gravel, reddish brown, moist **(CL-ML)**			
S2	2.0	1.8	7-7-6-8	13							
								DEBRIS, Some Clayey Silt, little f. gravel, black, moist **(FILL)**	370		
S3	2.0	1.0	6-6-9-7	15				**SILTY CLAY**, Some Paper Debris, trace f. gravel, brown, moist **(ML-CL)**			
S4	2.0	1.8	10-13-11-11	24				grades to trace paper debris			
S5	2.0	1.5	4-6-5-4	11				**f.m.SAND**, trace clayey silt, trace f. gravel, brown, wet **(SP)**			
						10					
S6	2.0	1.3	13-15-17-9	32				**f.m.SAND and f.c.GRAVEL**, little clayey silt, brown, saturated **(SP-GP)**			▼
S7	2.0	0.8	13-12-12-13	24							
									360		
S8	2.0	1.4	17-13-14-12	27							
S9	2.0	0.2	7-9-13-8	22				grades to trace clayey silt			
								Final Depth: 18.0 ft			
						20					
									350	No more debris/waste encountered after 5.0 ft.	
						30					

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CLOUGH, HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 6967.07.24 July 1998

Salina Landfill RI/FS
SUBSURFACE LOG
HOLE NUMBER MW-7

LOCATION: Town of Salina, New York

CLIENT: **Town of Salina**

CONTRACTOR: American Auger, Inc.

DRILLER: Ryan Baye | INSPECTOR: J. Trasher

START DATE: 7/8/98 | FINISH DATE: 7/8/98

SURFACE ELEV.: 384.36 | CHECKED BY: C. Burns

DRILL FLUID: None | DRILLING METHOD: Hollow Stem Augers

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH	CASING BOTTOM	HOLE BOTTOM
	7/8/98	12:00	20.5		26.0

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" Value &/or RQD (%)	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	HNu Readings PPM	WATER LEVELS AND/OR WELL DATA
S1	2.0	0.8	2-2-3-4	5				**SILT and CLAY**, Some to little f. Gravel, Some Wood, brown, m. stiff, moist **(ML-CL)**			
S2	2.0'	0.9	8-10-10-9	20				similar material, lt. brown, v. stiff			
S3	2.0'	0.7	5-6-6-9	12				similar material, Some f. Gravel, little f. sand, gray-brown, stiff	380		
S4	2.0'	1.4	3-4-6-5	10							
S5	2.0'	0.4	6-50/0	50+						Hitting Tires with Spoon	
S6	2.0'	1.0	2-3-2-2	5		10		similar material, trace tire debris, m. stiff			
S7	2.0'	0.5	4-6-5-10	11							
S8	2.0'	0.4	3-4-3-4	7				similar material, stiff, wet	370		▽
S9	2.0'	0.9	8-8-10-14	18				similar material, trace f. gravel, Some Metal Debris, petroleum odor, black, v. stiff, wet			
S10	2.0'	1.4	7-10-9-8	19				**FINE to MEDIUM SAND**, trace silt and clay, no debris, lt. brown, v. stiff, wet **(SP)**			
S11	2.0'	1.6	14-9-12-11	21		20		**f.m. SAND and SILT**, lt. brown, v. stiff, wet, no debris **(SP-ML)**			
S12	2.0'	1.4	7-9-6-8	15				**CLAY and SILT**, Some f. Sand, little to trace f. gravel, red-brown, v. stiff, wet **(CL-ML)**			
S13	2.0'	1.7	8-10-16-7	26					360		
								drilling and sampling complete at 26.0 ft BGS			
						30					

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CLOUGH, HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 6967.07.24 July 1998

Town of Salina Landfill
SUBSURFACE LOG
HOLE NUMBER MW-8

LOCATION: Salina,NY

CLIENT: Town of Salina

CONTRACTOR: American Auger

DRILLER: Ryan Baye | INSPECTOR: J. Trasher

START DATE: 7/9/98 | FINISH DATE: 7/9/98

SURFACE ELEV.: 373.49 | CHECKED BY: J. Trasher

DRILL FLUID: None | DRILLING METHOD: Hollow Stem Augers

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH	CASING BOTTOM	HOLE BOTTOM
	7/9/98	10:15	8.5'		16'

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" VALUE	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, water Return, etc.	WATER LEVELS AND/OR WELL DATA
S1	2.0'	0.9'	2-2-5-15	7				**SILT**, Some f.m. Sand, little f. gravel and tree root, brown, moist **(ML)**			
S2	2.0	1.6	20-17-14-12	31				**TILL**, Some Clayey Silt and f.c. Gravel, little f.m.s sand, reddish, brown, dry **(TILL)**	370	HNu readings ranging from 0.3 to 0.8	
S3	2.0	0.3	4-3-2-4	5				**CLAYEY SILT**, Some f. Gravel, little black residue and f. sand, black, wet **(CL-ML)**			
S4	2.0	0.9	6-8-3-1	11				grades to some black residue and saturated			
S5	2.0	0.8	2-2-2-2	4				**SILTY CLAY**, little f.m. sand and f. gravel, black, saturated **(ML-CL)**		Oily residue on the outside of split spoon	▼
						10					
S6	2.0	1.2	2-1-1-2	2						Sulfer smell eminated from well	
S7	2.0	1.8	4-6-3-5	9				**f.m.SAND**, Some Clayey Silt, trace f. gravel, brown, saturated (SP)	360		
S8	2.0	1.7	4-3-5-7	8							
								Final Depth: 16.0 ft			
						20					
									350		
						30					
									340		

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CLOUGH, HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 6967.07.24 July 1998

Town of Salina Landfill
SUBSURFACE LOG
HOLE NUMBER MW-9

LOCATION: Salina,NY

CLIENT: Town of Salina

CONTRACTOR: American Auger

DRILLER: Ryan Baye | INSPECTOR: J. Trasher

START DATE: 6/29/98 | FINISH DATE: 6/29/98

SURFACE ELEV.: 371.25 | CHECKED BY: J. Trasher

DRILL FLUID: None | DRILLING METHOD: Hollow Stem Augers

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH	CASING BOTTOM	HOLE BOTTOM
	6/29/98	12:00	5.5		16.0

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" VALUE	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, water Return, etc.	WATER LEVELS AND/OR WELL DATA
S1	2.0'	0.5'	1-10-21-7	31				**CLAY AND SILT**, Some f.m.c. Sand, trace f. gravel, brown, moist **(CL-ML)**	370		
S2	2.0	0.7	5-7-1-1	8				**fm. SAND**, Some Clayey Silt, trace f.c. gravel, black, moist **(SP)**			
S3	2.0	0.2	2-2-4-3	6							▼
S4	2.0	0.4	4-6-3-5	9				grades to wet			
S5	2.0	2.0	2-2-1-1	3		10					
S6	2.0	1.5	2-2-3-8	5					360		
S7	2.0	1.4	9-10-11-14	21				**TILL**, Some f.c. Gravel, little silt and clay and f.m. sand, brown, saturated **(TILL)**			
								Final Depth: 16.0 ft		Augered down to 16 feet to set screen for monitoring well. No sample taken at the 14-16 foot interval.	
						20			350		
						30			340		

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CLOUGH, HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 6967.07.24 July 1998

LOCATION: Town of Salina, New York

CLIENT: **Town of Salina**

CONTRACTOR: American Auger, Inc.

DRILLER: Ryan Baye | INSPECTOR: J. Trasher

START DATE: 7/6/98 | FINISH DATE: 7/6/98

SURFACE ELEV.: 379.35 | CHECKED BY: C. Burns

Salina Landfill RI/FS

SUBSURFACE LOG

HOLE NUMBER MW-10

DRILL FLUID: None | DRILLING METHOD: Hollow Stem Augers

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH	CASING BOTTOM	HOLE BOTTOM

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" Value &/or RQD (%)	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	HNu Readings PPM	WATER LEVELS AND/OR WELL DATA
S1	2.0	1.0	4-10-6-8	16				**SILT and CLAY**, little m.c. sand, red-brown, v. stiff, moist **(ML-CL)**			
S2	2.0'	1.4	13-10-14-23	24							
								similar material, brown, tree debris, stiff			
S3	2.0'	1.2	4-4-3-4	7							
								similar material, Some f. Gravel, red-brown, stiff			
S4	2.0'	1.8	3-4-4-3	8							
S5	2.0'	0.4	5-6-6-8	12					370		
						10		**f. SAND and GRAVEL**, trace silt and clay, red-brown, v. stiff, wet **(SP-GP)**			
S6	2.0'	1.2	10-12-15-12	27							
								SILT and CLAY, Some f. Gravel, trace m.c. sand, red-brown, hard, moist **(ML-CL)**			
S7	2.0'	1.8	36-48-46-44	94							
								similar material, little f. sand, hard			
S8	2.0'	1.7	39-42-44-39	86							
S9	2.0'	0.9	21-30-20-19	50							
								f.m.c. SAND, Some f. gravel, little silt and clay, red-brown, v. stiff to hard, moist (SP)			
S10	2.0'	1.1	10-14-16-21	30					360		∇
						20		similar material, hard, wet			
S11	2.0'	1.0	10-13-24-12	37							
S12	2.0'	1.8	14-17-12-19	29							
								Drilling and Sampling Complete at 24.0 ft BGS			
									350		
						30					

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CLOUGH, HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 6967.07.24 July 1998

Town of Salina Landfill
SUBSURFACE LOG
HOLE NUMBER MW-12

LOCATION: Salina,NY	
CLIENT: Town of Salina	
CONTRACTOR: American Auger	
DRILLER: Ryan Baye	INSPECTOR: J. Trasher
START DATE: 7/21/98	FINISH DATE: 7/21/98
SURFACE ELEV.: 368.22	CHECKED BY: J. Trasher

DRILL FLUID: None | DRILLING METHOD: Hollow Stem Augers

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH	CASING BOTTOM	HOLE BOTTOM
	7/21/98	12:15	1.75		18'

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" VALUE	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, water Return, etc.	WATER LEVELS AND/OR WELL DATA
S1	2.0'	0.4'	2-5-2-2	7				**CLAYEY SILT**, Some Debris and Organics, brown, wet **(CL-ML)**			▼
S2	2.0	0.0	6-8-8-12	16						No Recovery: spoon full of brown slurry	
S3	2.0	0.6	1-1-1-1	2				grades to little debris and organics			
S4	2.0	1.0	1-2-1-1	3				**PEAT**, brown, saturated **(PEAT)**			
									360		
S5	2.0	1.2	1-1-2-1	3						HNu readings negligible	
						10					
S6	2.0	1.4	1-3-2-2	5						Well located in low swampy area	
								SANDY SILT, little clay, gray, wet **(ML)**			
S7	2.0	1.4	1-3-4-6	7				**SILTY CLAY**, little f.m. sand, gray, saturated **(ML-CL)**			
S8	2.0	2.0	4-8-8-6	16							
S9	2.0	2.0	7-8-5-7	13							
								Final Depth: 18.0 ft	350		
						20					
									340		
						30					

CLOUGH, HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 6967.07.24 July 1998

Town of Salina Landfill
SUBSURFACE LOG
HOLE NUMBER MW-14

LOCATION: Salina,NY

CLIENT: Town of Salina

CONTRACTOR: American Auger

DRILLER: Ryan Baye | INSPECTOR: J. Trasher

START DATE: 6/30/98 | FINISH DATE: 7/01/98

SURFACE ELEV.: 388.30 | CHECKED BY: J. Trasher

DRILL FLUID: None | DRILLING METHOD: Hollow Stem Augers

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH	CASING BOTTOM	HOLE BOTTOM
	7/01/98	12:15	29.7		38'

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" VALUE	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, water Return, etc.	WATER LEVELS AND/OR WELL DATA
S1	2.0'	1.2'	8-6-11-12	17		**m.c. SAND**, Some f.c. Gravel, little silt, orange/brown, wet **(SP)**			
S2	2.0	0.6	23-12-12-5	24		**CLAYEY SILT**, Some f.c. Gravel, trace m.c. sand, brown, dry **(ML)**			
S3	2.0	1.5	21-7-13-5	20		**DEBRIS/WASTE**, Some clayey Silt, trace f. gravel, brown, moist **(WASTE)**			
S4	2.0	0.6	8-21-50/0	71+		grades to wet			
S5	2.0	1.3	10-12-14-18	26		grades to Some f.c. Gravel and saturated	380		
S6	2.0	0.3	50/3	50+	10	grades to little clayey silt			
S7	2.0	0.7	5-10-10-21	20					
S8	2.0	1.2	4-6-5-6	11		**m.c. SAND**, Some Debris/Waste, black, oily, wet **(SP)**			
S9	2.0	0.0	10-8-6-4	14				No Recovery: spoon full of sandy slurry	
S10	2.0	0.6	4-8-6-10	14		**WOOD**, Some m.c. Sand, little silt and clay, black, wet **(FILL)**	370	Perched landfill water from 5 to 13 ft.	
S11	2.0	0.8	3-3-4-3	7	20	grades to trace m.c. sand			
S12	2.0	0.9	5-5-5-3	10		**m.c. SAND**, Some Silt and Clay, trace debris, black, wet **(SP)**		No more debris/waste encountered after 23 ft.	
S13	2.0	0.8	7-8-11-14	19		grades to little silt and clay			
S14	2.0	0.7	9-15-10-13	25		**CLAYEY SILT**, little m.c. sand, black, wet **(CL-ML)**			
S15	2.0	1.1	3-6-4-3	10		grades to little f. gravel and saturated	360		▼
S16	2.0	1.4	6-7-8-8	15	30				
S17	2.0	1.8	4-5-5-4	10					

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CLOUGH, HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 6967.07.24 July 1998

LOCATION: Salina,NY

CLIENT: Town of Salina

CONTRACTOR: American Auger

DRILLER: Ryan Baye | INSPECTOR: J. Trasher

START DATE: 6/30/98 | FINISH DATE: 6/30/98

SURFACE ELEV.: 389.17 | CHECKED BY: J. Trasher

Town of Salina Landfill

SUBSURFACE LOG

HOLE NUMBER MW-15

DRILL FLUID: None | DRILLING METHOD: Hollow Stem Augers

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH	CASING BOTTOM	HOLE BOTTOM
	6/30/98	12:15	18.8		30'

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" VALUE	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, water Return, etc.	WATER LEVELS AND/OR WELL DATA
S1	2.0'	1.3'	4-8-8-14	16		**f.c. GRAVEL** Some clayey Silt, little, m.c. sand, brown, dry **(GP)**			
S2	2.0	0.5	5-8-9-10	17		grades to Some Debris/Waste			
S3	2.0	0.6	5-9-10-10	19		**DEBRIS/WASTE** little fc. gravel and clayey silt, brown, moist (WASTE)			
S4	2.0	0.2	4-5-4-7	9					
S5	2.0	0.8	14-8-10-22	18			380		
					10				
S6	2.0	0.0	100/0	100+					
S7	2.0	0.6	11-4-7-10	11		**f.m. SAND** little clayey silt and f. gravel, black, wet **(SP)**			
S8	2.0	0.4	21-13-12-11	25		**f.c. GRAVEL** Some Silt and Clay, trace f. sand, brown, moist **(GP)**			
S9	2.0	0.6	7-7-10-8	17					
S10	2.0	0.6	4-8-6-10	14		grades to Some f. Sand, little silt and clay, wet **(GP)**	370	Gas vapors noticed escaping boring.	▼
					20				
S11	2.0	0.4	12-4-4-8	8		grades to Some Organics		End of debris/waste. Most debris in this location is organic in nature.	
S12	2.0	0.6	6-10-11-18	21		**SILT and CLAY** Some f.c. Gravel, little f.m. sand, brown, saturated **(ML-CL)**		HNu meter not operating properly.	
S13	2.0	0.2	7-9-9-16	18					
S14	2.0	0.0	4-5-4-6	9					
S15	2.0	0.8	8-10-10-4	20			360		
					30	Final Depth: 30.0 ft			

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CLOUGH, HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 6967.07.24 July 1998

Town of Salina Landfill
SUBSURFACE LOG
HOLE NUMBER MW-OD

LOCATION: Salina,NY	
CLIENT: Town of Salina	
CONTRACTOR: American Auger	
DRILLER: Ryan Baye	INSPECTOR: J. Trasher
START DATE: 7/22/98	FINISH DATE: 7/29/98
SURFACE ELEV.: 374.76	CHECKED BY: J. Trasher

DRILL FLUID: None | DRILLING METHOD: Hollow Stem Augers

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH	CASING BOTTOM	HOLE BOTTOM
	7/29/98	12:00	8.5		40'

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" VALUE	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, water Return, etc.	WATER LEVELS AND/OR WELL DATA
S1	2.0'	1.4'	5-8-8-8	16				**f. SAND and SILT**, little organic material, dry, gray **(SP-ML)**			
S2	2.0	1.0	5-6-11-5	17							
S3	2.0	1.3	14-10-5-3	15				grades to wet	370		
S4	2.0	1.5	1-2-3-4	5				**f.m. SAND**, Some Peat (organic material), wet, gray **(SP)**			
S5	2.0	0.9	7-8-7-10	15				**CLAY**, Some Silt, little peat, saturated, gray **(CL)**			▼
						10					
S6	2.0	2.0	3-1-5-7	6							
S7	2.0	2.0	2-1-2-1	3				grades to trace silt			
S8	2.0	2.0	2-2-2-3	4					360		
S9	2.0	2.0	3-2-2-1	4				**CLAYEY SILT**, gray, saturated **(CL-ML)**		No samples taken from 18 to 20 feet. Augering through grout from casing placement. HNu readings negligible, all below 0.5	
S10	2.0										
						20					
S11	2.0							**CLAY**, trace silt and f. sand, wet **(CL)**			
S12	2.0	1.6	2-2-2-5	3				**m.c. SAND**, little silty clay, brown, wet **(SP)**			
S13	2.0	2.0	3-3-3-2	5				**SITLY CLAY**, Some f.m. Sand, red-brown, wet **(ML-CL)**	350		
S14	2.0	1.8	4-2-4-2	6							
S15	2.0	1.8	3-4-3-2	7							
						30					
S16	2.0	2.0	4-5-6-5	14				**f.m. SAND**, Some Silt and f. Gravel, red, saturated **(SP)**			
S17	2.0	1.8	7-6-6-5	14				grades to little silty clay			

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CLOUGH, HARBOUR & ASSOCIATES LLP

Town of Salina Landfill
SUBSURFACE LOG
HOLE NUMBER MW-OD

PROJECT NUMBER: 6967.07.24 July 1998

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" VALUE	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, water Return, etc.	WATER LEVELS AND/OR WELL DATA
S18	2.0	2.0	4-4-3-4	7				grades to little f. gravel, brown	340		
S19	2.0	1.2	6-7-7-6	13							
S20	2.0	2.0	6-7-7-5	14							
						40		Final Depth: 40 ft.			
									330		
						50					
									320		
						60					
									310		
						70					

CLOUGH, HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 6967.07.24 July 1998

Town of Salina Landfill
SUBSURFACE LOG
HOLE NUMBER MW-5D

LOCATION: Salina,NY

CLIENT: Town of Salina

CONTRACTOR: American Auger

DRILLER: Ryan Baye | INSPECTOR: J. Trasher

START DATE: 7/23/98 | FINISH DATE: 7/28/98

SURFACE ELEV.: 373.07 | CHECKED BY: J. Trasher

DRILL FLUID: None | DRILLING METHOD: Hollow Stem Augers

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH	CASING BOTTOM	HOLE BOTTOM
	7/28/98	9:00	6.5		40'

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" VALUE	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, water Return, etc.	WATER LEVELS AND/OR WELL DATA
S1	2.0'	1.4'	8-8-7-4	15				**SILTY CLAY**, Some f. Gravel, red-brown, dry **(CL-ML)**			
								grades to some peat, black			
S2	2.0	1.6	8-2-2-4	4					370		
S3	2.0	1.7	2-1-2-3	3				grades to little roots and organic matter, dark brown			
S4	2.0	2.0	3-3-3-2	6				**PEAT**, brown, saturated **(PEAT)**			▼
S5	2.0	1.6	3-2-2-2	4				**SILTY CLAY**, brown-gray, saturated **(ML-CL)**			
						10					
S6	2.0	2.0	3-2-2-3	4							
S7	2.0	2.0	5-3-3-3	6					360		
S8	2.0	2.0	3-3-3-3	6							
S9	2.0	2.0	2-2-2-2	4							
S10	2.0									No samples taken from 18 to 20 feet. Augering through grout from casing placement.	
						20					
S11	2.0		2-2-3-13					**CLAY**, trace silt and f. sand, wet **(CL)**		HNu readings negligible	
S12	2.0	2.0	2-2-4-8	3				**mc. SAND**, little silty clay, brown, wet **(SP)**	350		
S13	2.0	2.0	5-4-8-7	5				**SITLY CLAY**, Some f.m. Sand, red-brown, wet **(ML-CL)**			
S14	2.0	2.0	9-11-14-23	6				**fm. SAND**, Some Silt and f. Gravel, red, saturated **(SP)**			
S15	2.0	2.0	21-13-19-23	7							
						30					
S16	2.0	2.0	21-13-19-21	14							
S17	2.0	1.0	3-10-16-12	14				grades to little silty clay	340		

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CLOUGH, HARBOUR & ASSOCIATES LLP

Town of Salina Landfill
SUBSURFACE LOG
HOLE NUMBER MW-5D

PROJECT NUMBER: 6967.07.24 July 1998

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" VALUE	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, water Return, etc.	WATER LEVELS AND/OR WELL DATA
S18	2.0	1.8	30-29-20-26	7				grades to little f. gravel, brown			
S19	2.0	1.2	40-34-37-36	13							
S20	2.0	2.0	11-28-40-39	14							
						40		Final Depth: 40 ft.			
									330		
						50					
									320		
						60					
									310		
						70					

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CLOUGH, HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 6967.07.24 July 1998

Town of Salina Landfill
SUBSURFACE LOG
HOLE NUMBER MW-12D

LOCATION: Salina,NY	
CLIENT: Town of Salina	
CONTRACTOR: American Auger	
DRILLER: Ryan Baye	INSPECTOR: J. Trasher
START DATE: 7/22/98	FINISH DATE: 7/22/98
SURFACE ELEV.: 368.19	CHECKED BY: J. Trasher

DRILL FLUID: None | DRILLING METHOD: Hollow Stem Augers

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH	CASING BOTTOM	HOLE BOTTOM
	7/22/98	9:00	1.5		52'

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" VALUE	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, water Return, etc.	WATER LEVELS AND/OR WELL DATA
S1	2.0'	0.4'	2-5-2-2	7		**CLAYEY SILT**, Some Debris and Organics, brown, wet **(CL-ML)**			▼
S2	2.0	0.0	6-8-8-12	16					
S3	2.0	0.6	1-1-1-1	2		grades to little debris and organics			
S4	2.0	1.0	1-2-1-1	3		**PEAT**, brown, saturated **(PEAT)**			
							360		
S5	2.0	1.2	1-1-2-1	3					
					10				
S6	2.0	1.4	1-3-2-2	5					
						SANDY SILT, little clay, gray, wet **(SM)**			
S7	2.0	1.4	1-3-4-6	7		**SILTY CLAY**, little f.m. sand, gray, saturated **(ML-CL)**			
S8	2.0	2.0	4-8-8-6	16					
S9	2.0	2.0	7-8-5-7	13					
							350		
S10	2.0								
					20			No samples taken from 18 to 22 feet. Augering through grout from casing placement.	
S11	2.0								
						CLAY, trace silt, gray, moist **(CL)**			
S12	2.0	2.0	1-1-2-1	3					
S13	2.0	2.0	2-2-3-2	5					
S14	2.0	2.0	2-3-3-1	6					
							340		
S15	2.0	2.0	3-4-3-2	7				HNu readings negligible	
					30				
S16	2.0	2.0	4-7-7-5	14					
						SILTY CLAY, trace f. sand, gray, wet **(ML-CL)**			
S17	2.0	1.0	6-7-7-5	14					

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CLOUGH, HARBOUR & ASSOCIATES LLP

Town of Salina Landfill
SUBSURFACE LOG
HOLE NUMBER MW-12D

PROJECT NUMBER: 6967.07.24 July 1998

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" VALUE	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, water Return, etc.	WATER LEVELS AND/OR WELL DATA
S18	2.0	1.8	3-3-4-3	7				**SILTY SAND** trace clay pockets, gray, wet **(SM)**			
S19	2.0	1.2	5-6-7-4	13							
S20	2.0	2.0	6-7-7-5	14				**f.m. SAND** Some Silt, gray, wet **(SP)**	330		
						40					
S21	2.0	1.8	7-8-6-5	14							
S22	2.0	2.0	4-5-5-11	10							
S23	2.0	1.0	17-25-9-14	34							
S24	2.0	2.0	3-5-11-25	16				**f.m.c. SAND** little f. gravel, brown, saturated **(SP)**			
S25	2.0	2.0	17-26-19-23	45					320		
						50				Well located in low swampy area	
S26	2.0	2.0	40-50/2	50+							
								Final Depth: 52.0 ft			
									310		
						60					
									300		
						70					

CLOUGH, HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 6967.07.24 July 1998

Salina Landfill RI/FS
SUBSURFACE LOG
HOLE NUMBER B-10

LOCATION: Town of Salina, New York

CLIENT: **Town of Salina**

CONTRACTOR: American Auger, Inc.

DRILLER: Ryan Baye | INSPECTOR: J. Trasher

START DATE: 7/14/1998 | FINISH DATE: 7/15/98

SURFACE ELEV.: 386.33 | CHECKED BY: J. Trasher

DRILL FLUID: None | DRILLING METHOD: Hollow Stem Augers

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH	CASING BOTTOM	HOLE BOTTOM

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" Value &/or RQD (%)	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	HNu Readings PPM	WATER LEVELS AND/OR WELL DATA
S1	2.0'	1.7	5-10-12-20	22				**SILT and CLAY**, Some f. Gravel, little f.m. sand, brown, v. stiff, moist, with organics **(ML-CL)**		HNu-0.0; O2-20.8; LEL-0; CO- (-1); H2S-0	
S2	2.0'	0.4	50/4"	NA							
S3	2.0'	0.1	4-4-10-16	14							
S4	2.0'	0.2	50/4"	NA					380		
S5	2.0'	1.2	9-19-21-36	40				**DEBRIS**, little clay and silt, trace f. gravel, black-brown, compact, moist **(FILL)**		HNu-0.3; O2-20.8; CO-0; LEL- (-1); H2S-0	
S6	2.0'	0.3	16-9-9-36	18		10				LEL-214	
S7	2.0'	0.0	6-12-17-35	29						LEL-227	
S8	2.0'	0.2	6-9-7-7	16							
S9	2.0'	1.5	8-6-7-6	13				**CLAY and SILT**, Some f.m.c. Sand and Gravel, brown, stiff, moist **(CL-ML) (FILL)**	370		
S10	2.0'										∇
S11	2.0'	0.9	4-6-50/3"	56+		20		**DEBRIS**, Some Clay, little f. gravel, black, v. compact, wet **(FILL)**			
S12	2.0'	0.4	9-14-14-18	28							
S13	2.0'	0.0	6-9-12-18	21							
S14	2.0'	0.4	9-6-7-8	13				**SILT and CLAY**, Some f. Gravel, brown, stiff, wet **(ML-CL)**	360		
S15	2.0'	1.7	9-8-7-5	15							
S16	2.0'	1.6	5-7-3-9	10		30		**CLAY**, gray, m. stiff, wet **(CL-ML)**			
S17	2.0'	1.7	4-3-4-2	7							

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CLOUGH, HARBOUR & ASSOCIATES LLP

Salina Landfill RI/FS
SUBSURFACE LOG
HOLE NUMBER B-10

PROJECT NUMBER: 6967.07.24 July 1998

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" Value &/or RQD (%)	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	HNu Readings PPM	WATER LEVELS AND/OR WELL DATA
S18	2.0'	2.0	3-4-2-1	6							
S19	2.0'	1.8	2-2-3-2	5					350		
S20	2.0'	2.0	2-3-2-1	5							
						40					
S21	2.0'	1.8	3-4-2-4	6							
S22	2.0'	2.0	3-5-3-6	8							
S23	2.0'	1.9	3-5-4-2	9							
S24	2.0'	1.5	2-3-1-2	4					340		
S25	2.0'	1.3	4-3-6-3	9							
						50					
S26	2.0'	0.9	5-7-3-3	10				**SILT and CLAY**, Some f. Sand, gray, wet **(ML-SP)**			
S27	2.0'	2.0	7-5-5-5	49							
S28	2.0'	1.8	6-9-4-9	13				**f.m. SAND and SILT**, little clay, gray, m. stiff, wet **(ML-SP)**			
S29	2.0'	1.6	7-4-6-6	10					330		
S30	2.0'	0.0	7-6-8-10	14							
						60					
S31	2.0'	1.5	8-8-10-12	18							
S32	2.0'		10-17-12-14	29				**f.m. SAND**, little clay, little silt, orange/brown, m. compact wet **(SP)**			
S33	2.0'	1.2	7-6-9-13	15							
S34	2.0'	0.4	6-7-10-7	17					320		
S35	2.0'	1.5	7-9-10-8	19							
						70					
S36	2.0'	0.8	11-14-5-8	19				similar material, little f. gravel, gray to black, wet **(SP)**			

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CLOUGH, HARBOUR & ASSOCIATES LLP

Salina Landfill RI/FS
SUBSURFACE LOG
HOLE NUMBER B-10

PROJECT NUMBER: 6967.07.24 July 1998

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" Value &/or RQD (%)	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	HNu Readings PPM	WATER LEVELS AND/OR WELL DATA
S37	2.0'	2.0	12-13-19-12	32							
S38	2.0'	1.8	7-7-7-8	14							
S39	2.0'	2.0	11-16-39-32	55					310		
S40	2.0'	1.9	7-11-17-14	28							
						80					
S41	2.0'	1.5	18-26-43-50/5"	69							
S42	2.0'		6-10-13-12	23							
S43	2.0'	2.0	15-28-39-47	67				similar material, lt. brown			
S44	2.0'	2.0	12-23-17-21	40					300		
S45	2.0'	2.0	10-9-20-24	29							
						90					
S46	2.0'	2.0	3-7-9-4	16							
S47	2.0'	2.0	17-21-50/3"	71+							
S48	2.0'		11-9-21-24	30							
S49	2.0'		21-23-19-24	42					290		
								Drilling and Sampling Complete at 98.0 ft BGS			
						100					
									280		
						110					

CLOUGH, HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 6967.07.24 July 1998

Salina Landfill RI/FS
SUBSURFACE LOG
HOLE NUMBER B-11

LOCATION: Town of Salina, New York

CLIENT: **Town of Salina**

CONTRACTOR: American Auger, Inc.

DRILLER: Ryan Baye | INSPECTOR: J. Trasher

START DATE: 7/20/1998 | FINISH DATE: 7/21/98

SURFACE ELEV.: 375.59 | CHECKED BY: C. Burns

DRILL FLUID: None | DRILLING METHOD: Hollow Stem Augers

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH	CASING BOTTOM	HOLE BOTTOM

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" Value &/or RQD (%)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	HNu Readings PPM	WATER LEVELS AND/OR WELL DATA
S1	2.0'	0.8	8-27-17-21	44	**SILT and CLAY**, little f. sand, little f. gravel, brown, hard, moist **(ML-CL)**			
S2	2.0'	0.1	12-6-5-3	11				
S3	2.0'	0.4	10-10-21-8	31	**DEBRIS**, little silt, trace f. gravel, brown, compact, moist **(FILL)**	370		
S4	2.0'	0.3	7-4-10-12	14	**CLAY and SILT**, little m.c. sand, little f. gravel, brown, stiff, moist **(CL-ML)**			∇
S5	2.0'	0.2	4-12-4-5	16	**f.m. SAND**, trace silt, trace f. gravel, brown, m. compact, wet **(SP)**			
					10			
S6	2.0'	0.0	3-3-3-3	6				
S7	2.0'	0.2	3-3-4-3	7				
S8	2.0'	0.2	4-5-7-8	12	no recovery, black residue inside spoon	360		
S9	2.0'	0.5	3-2-2-3	4	**CLAY and SILT**, gray, soft, wet, with oily residue **(CL-ML)**			
S10	2.0'	1.5	2-2-3-2	5				
					20			
S11	2.0'	2.0	2-3-2-1	5	similar material, trace f. sand, m. stiff			
S12	2.0'	2.0	1-1-1-1	2	**f.m.c. SAND and SILT**, little clay, gray, soft **(SP-ML)**			
S13	2.0'	1.2	2-2-1-2	3		350		
S14	2.0'	2.0	1-3-2-1	5				
S15	2.0'	1.3	5-2-2-2	4				
					30			
S16	2.0'	1.1	5-7-7-10	14	similar material, becomes m. compact			
S17	2.0'	0.0	6-13-7-10	20				

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CLOUGH, HARBOUR & ASSOCIATES LLP

Salina Landfill RI/FS
SUBSURFACE LOG
HOLE NUMBER B-11

PROJECT NUMBER: 6967.07.24 July 1998

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" Value &/or RQD (%)	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	HNu Readings PPM	WATER LEVELS AND/OR WELL DATA
S18	2.0'	2.0	8-8-9-12	17					340		
S19	2.0'	1.8	4-9-8-10	17				**Cf.m.c. SAND**, little to trace silt, brown-black, compact, wet **(SP)**			
S20	2.0'	1.3	6-5-4-10	9							
						40					
S21	2.0'	1.6	14-14-17-20	31							
S22	2.0'	1.2	6-8-18-24	26				similar material, Some Gravel, becomes black-brown, compact to hard			
S23	2.0'	1.0	20-22-50/2"	72+					330		
S24	2.0'	1.3	25-30-50/3"	80+							
S25	2.0'	2.0	6-14-19-8	33							
						50					
S26	2.0'	1.8	8-12-14-22	26							
S27	2.0'	2.0	14-26-23-17	49						Very Tight Augering from 50-56'bgs	
S28	2.0'	2.0	49-24-18-22	42					320		
S29	2.0'	1.6	13-12-38-42	50							
S30	2.0'	2.0	27-38-43-49	81							
						60					
S31	2.0'	1.2	36-29-28-35	57				**CLAY and SILT**, Some f. Gravel, little f.m. sand, brown-red, hard, moist **(CL-ML) (TILL)**			
S32	2.0'	0.6	50-50/2"	50+							
S33	2.0'	0.9	28-44-50/3"	94+					310		
S34	2.0'	0.4	50/5"	NA							
S35	2.0'	0.2	50/4"	NA							
						70					
S36	2.0'	0.4	50/5"	NA							
								Drilling and Sampling Complete at 72.0 ft BGS			

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PROJECT NUMBER: 6967.07.24 July 1998

Salina Landfill RI/FS
SUBSURFACE LOG
HOLE NUMBER B-12

LOCATION: Town of Salina, New York

CLIENT: **Town of Salina**

CONTRACTOR: American Auger, Inc.

DRILLER: Ryan Baye | INSPECTOR: J. Trasher

START DATE: 7/16/1998 | FINISH DATE: 7/17/98

SURFACE ELEV.: 391.91 | CHECKED BY: C. Burns

DRILL FLUID: None | DRILLING METHOD: Hollow Stem Augers

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH	CASING BOTTOM	HOLE BOTTOM

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" Value &/or RQD (%)	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	HNu Readings PPM	WATER LEVELS AND/OR WELL DATA
S1	2.0	1.0	2-3-7-8	10				**SILTY LOAM**, little f. gravel, organics, brown, stiff, moist **(ML-CL)**			
									390		
S2	2.0'	1.2	11-11-9-11	20				**SILT and CLAY**, Some F. Gravel, little sand, brown, v. stiff, moist, organics **(ML-CL)**			
S3	2.0'	1.1	10-9-10-10	19				**f.m. SAND**, little f. gravel, little silt, little clay, lt. brown, v. stiff, moist **(SP)**			
S4	2.0'	1.8	6-6-8-12	14				**CLAY and SILT**, little f. sand and gravel, dark brown, stiff, moist **(CL-ML)**			
S5	2.0'	0.2	50/5"	NA							
						10					
S6	2.0'	0.4	14-5-6-8	11				**CLAY and SILT**, Some Debris, little f. gravel, brown, stiff, moist **(CL-ML)**			
									380		∇
S7	2.0'	0.4	9-28-40-10	68				**DEBRIS**, glass/paper, black to brown, compact, wet **(FILL)**		0.5	
S8	2.0'	0.2	9-12-18-16	30							
S9	2.0'	0.4	10-12-25-10	37							
S10	2.0'	0.8	5-7-11-18	18						0.0 / LEL-145	
						20		similar material, little clay and silt, black oily residue, wet **(FILL)**			
S11	2.0'	0.4	12-12-49-50/1"	61						0.2 / LEL-197	
									370		
S12	2.0'	0.8	22-29-21-30	50							
								no recovery			
S13	2.0'	0.0	14-50/1"	50+							
								no recovery			
S14	2.0'	0.0	15-11-6-8	17							
S15	2.0'	0.4	17-50/3"	50+							
						30		no recovery		All Other HNu Readings Were BKG	
S16	2.0'	0.4	5-9-8-4	17							
									360		
S17	2.0'	0.0	10-9-11-10	20							

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CLOUGH, HARBOUR & ASSOCIATES LLP

Salina Landfill RI/FS
SUBSURFACE LOG
HOLE NUMBER B-12

PROJECT NUMBER: 6967.07.24 July 1998

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" Value &/or RQD (%)	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	HNu Readings PPM	WATER LEVELS AND/OR WELL DATA
S18	2.0'	1.2	12-8-13-9	21				**CLAY**, little debris on top of f. sand and silt, gray, wet			
S19	2.0'	1.4	8-9-8-10	17				**CLAY**, little silt, little f. sand, gray, v. stiff, wet **(CL)**			
S20	2.0'	2.0	4-7-8-12	15				**f.m.c. SAND**, trace silt, black, m. compact, wet **(SP)**			
						40					
S21	2.0'	0.8	8-11-18-14	29							
									350		
S22	2.0'	2.0	10-12-14-14	26				**CLAY**, Some to little Silt, gray, v. stiff, wet **(CL)**			
S23	2.0'	2.0	3-1-2-1	3							
S24	2.0'	2.0	2-1-1-2	2							
S25	2.0'	2.0	2-3-4-2	7							
						50					
S26	2.0'	0.4	2-2-2-4	4							
									340		
S27	2.0'	2.0	3-4-6-7	10							
S28	2.0'	0.4	4-4-3-6	7							
S29	2.0'	2.0	12-18-23-14	41				**f.m.c. SAND and SILT**, trace clay, gray, compact, wet **(SP-ML)**			
S30	2.0'	2.0	3-4-2-2	6				similar material, lt. brown, loose to m. compact			
						60					
S31	2.0'	1.0	3-4-3-3	7							
									330		
S32	2.0'	2.0	2-3-2-2	5							
S33	2.0'	2.0	6-8-8-7	16							
S34	2.0'	2.0	4-7-5-3	12							
S35	2.0'	2.0	12-13-12-12	25				**f.m.c. SAND**, trace silt, lt. brown, compact to m. compact, wet **(SP)**			
						70					
S36	2.0'	1.0	10-20-12-14	32							
									320		

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Salina Landfill RI/FS
SUBSURFACE LOG
HOLE NUMBER B-12

PROJECT NUMBER: 6967.07.24 July 1998

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" Value &/or RQD (%)	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	HNu Readings PPM	WATER LEVELS AND/OR WELL DATA
S37	2.0'	2.0	26-36-12-17	48							
S38	2.0'	2.0	20-19-27-13	46							
S39	2.0'	1.5	17-27-49-50/5"	76							
S40	2.0'	1.8	24-44-50/4"	94+							
						80					
S41	2.0'	1.2	27-39-46-44	85					310		
S42	2.0'	2.0	32-37-39-28	76							
S43	2.0'	2.0	40-28-33-31	61							
S44	2.0'	2.0	29-22-37-26	59							
						90		Drilling and Sampling Complete at 90.0 ft BGS	300		
						100			290		
						110					

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CLOUGH, HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 6967.07.24 July 1998

LOCATION: Town of Salina, New York

CLIENT: **Town of Salina**

CONTRACTOR: American Auger, Inc.

DRILLER: Ryan Baye | INSPECTOR: J. Trasher

START DATE: 7/9/1998 | FINISH DATE: 7/11/98

SURFACE ELEV.: 378.88 | CHECKED BY: C. Burns

Salina Landfill RI/FS

SUBSURFACE LOG

HOLE NUMBER B-13

DRILL FLUID: None | DRILLING METHOD: Hollow Stem Augers

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH	CASING BOTTOM	HOLE BOTTOM

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" Value &/or RQD (%)	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	HNu Readings PPM	WATER LEVELS AND/OR WELL DATA
S1	2.0'	1.4	2-3-5-5	8				**SILT and CLAY**, little m.f. sand, little f. gravel, reddish- brown, stiff, moist, with organics **(ML-CL)**			
S2	2.0'	0.3	5-7-7-8	14							
S3	2.0'	0.4	2-3-6-4	9							
S4	2.0'	0.6	4-4-8-8	12							∇
S5	2.0'	1.0	4-6-5-4	11				**SILT and f. SAND**, trace f. gravel, lt. brown, m. compact, moist **(ML-SP)**	370		
						10		similar material, becomes wet			
S6	2.0'	0.8	4-7-8-6	15				**f. SAND and SILT**, little f. gravel, lt. brown, wet **(SP-ML)**			
S7	2.0'	0.7	11-13-36-15	49				**m.f. SAND, SILT and CLAY**, Some f. Gravel, reddish-brown, v. compact, wet **(SP-ML-CL) (TILL)**			
S8	2.0'	1.1	13-29-49-50/4"	78							
S9	2.0'	0.5	22-50/2"	50+							
S10	2.0'		30-38-50/4"	88+					360		
						20					
S11	2.0'	1.9	12-17-23-34	40							
S12	2.0'	1.2	22-33-39-43	72							
S13	2.0'	1.4	13-21-25-32	46							
S14	2.0'	1.1	17-23-36-28	59							
S15	2.0'	1.2	10-11-13-20	24					350		
						30					
S16	2.0'	0.4	10-29-35-48	64							
S17	2.0'	0.5	28-46-50/2"	96+							

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CLOUGH, HARBOUR & ASSOCIATES LLP

Salina Landfill RI/FS
SUBSURFACE LOG
HOLE NUMBER B-13

PROJECT NUMBER: 6967.07.24 July 1998

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" Value &/or RQD (%)	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	HNu Readings PPM	WATER LEVELS AND/OR WELL DATA
S18	2.0'	0.8	5-10-36-23	46							
S19	2.0'	0.6	16-26-26-50	52							
S20	2.0'	0.1	50/5"	NA					340		
						40					
S21	2.0'	0.2	16-32-18-24	50							
S22	2.0'		50/1"	NA							
S23	2.0'	0.5	13-29-27-42	56							
S24	2.0'	0.8	15-17-23-41	40							
S25	2.0'	0.7	5-5-15-11	20					330		
						50					
S26	2.0'	0.9	6-6-6-13	12							
S27	2.0'	0.6	2-1-2-3	3							
S28	2.0'	0.8	36-50/5"	50+							
S29	2.0'	0.5	47-50/5"	50+							
S30	2.0'	0.6	27-50/2"	50+					320		
						60					
S31	2.0'	0.4	5-9-20-24	29							
S32	2.0'	0.6	20-50/2"	50+							
S33	2.0'	0.4	20-28-50/4"	78+							
S34	2.0'	0.4	20-28-39-50/1"	67							
S35	2.0'	0.8	38-50/4"	50+					310		
						70					
S36	2.0'	0.4	50/2"	NA							

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CLOUGH, HARBOUR & ASSOCIATES LLP

Salina Landfill RI/FS
SUBSURFACE LOG
HOLE NUMBER B-13

PROJECT NUMBER: 6967.07.24 July 1998

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" Value &/or RQD (%)	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	HNu Readings PPM	WATER LEVELS AND/OR WELL DATA
S37	2.0'	0.4	29-50/4"	50+							
S38	2.0'	0.9	27-32-32-39	64							
								Drilling and Sampling Complete at 78.0 ft BGS	300		
						80					
									290		
						90					
									280		
						100					
									270		
						110					

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CLOUGH, HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 6967.07.41 August 1999

Salina Landfill RI/FS
SUBSURFACE LOG
HOLE NUMBER B-21

LOCATION: Town of Salina, New York

CLIENT: **Town of Salina**

CONTRACTOR: Parrot Wolf

DRILLER: Jim | INSPECTOR: C. Kavanaugh

START DATE: 8/19/99 | FINISH DATE: 8/19/99

SURFACE ELEV.: | CHECKED BY: J. Trasher

DRILL FLUID: None | DRILLING METHOD: Hollow Stem Augers

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH	CASING BOTTOM	HOLE BOTTOM

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" Value &/or RQD (%)	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	HNu Readings PPM	WATER LEVELS AND/OR WELL DATA
								Trace plastic			
S1	2.0	1.0	6-14-18-21	22				**CLAY**, trace silt, trace f. gravel, hard, moist **(TILL)**		Drove casing hard-till? Tree washed out cuttings	
S2	2.0	1.0	25-23-29-36	52				**CLAY**, little silt, trace f. gravel, hard, moist **(TILL)**		One piece large gravel	
S3	2.0	0.3	14-20-/					**CLAY**, trace little f. gravel, moist			
								End of Boring: 5'			
						10					
						20					
						30					

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PROJECT NUMBER: 6967.07.41 August 1999

LOCATION: Town of Salina, New York

CLIENT: **Town of Salina**

CONTRACTOR: Parrot Wolf

DRILLER: Jim | INSPECTOR: C. Kavanaugh

START DATE: 8/19/99 | FINISH DATE: 8/19/99

SURFACE ELEV.: | CHECKED BY: J. Trasher

Salina Landfill RI/FS
SUBSURFACE LOG
HOLE NUMBER B-22

DRILL FLUID: None | DRILLING METHOD: Hollow Stem Augers

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH	CASING BOTTOM	HOLE BOTTOM

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" Value &/or RQD (%)	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	HNu Readings PPM	WATER LEVELS AND/OR WELL DATA
S1	2.0	1.3	4-12-15-17	27				**f. SAND AND SILT**, black silty sand, m. compact, wet		1.5' depth of water Washing out casing with creek water	
S2	2.0	1.0	30-16-11-7	27				**SILT**, Some f. Sand, trace f. gravel, m. compact, wet		1" black silt horizon at 3.5'	
S3	2.0	1.5	11-12-20-16	32				**SILT AND CLAY**, trace f. gravel, c. gravel, hard, wet		2" clay layer with gravel till at 5.8'	
S4	2.0	1.0	16-14-18-21	32				**CLAY AND SILT**, Some f. Sand, trace f. gravel, hard, moist **(Soft TILL)**		One piece large gravel. 6-7' till 7-8' silty sand	
S5	2.0	1.0	6-7-12-11	19				**CLAY**, Some Silt, trace large gravel, moist **(Soft TILL)**			
S6	2.0	1.0	5-7-7-8	14		10		**CLAY**, Some Silt, trace f. gravel, v. stiff, moist **(Soft TILL)**			
S7	2.0	0.5	7-10-10-16	20				**CLAY AND SILT**, trace f. gravel, v. stiff, moist **(Soft TILL)**			
S8	2.0	1.2	9-18-17-21	35				**CLAY**, Some Silt, trace f. gravel, hard, moist **(Hard TILL)**			
S9	2.0	2.0	14-14-33-41	47				**CLAY AND f. SAND**, trace silt, trace f. gravel, hard, moist **(TILL)**			
S10	2.0	1.5	34-47-60-81	107				**CLAY AND f. SAND**, trace silt, trace f. gravel, hard, moist **(TILL)**		1st 3 ft easy past foot 150/6"	
						20		End of Boring: 20'			
						30					

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CLOUGH, HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 6967.07.41 August 1999

LOCATION: Town of Salina, New York

CLIENT: **Town of Salina**

CONTRACTOR: Parrot Wolf

DRILLER: Jim | INSPECTOR: C. Kavanaugh

START DATE: 8/23/99 | FINISH DATE: 8/23/99

SURFACE ELEV.: | CHECKED BY: J. Trasher

Salina Landfill RI/FS

SUBSURFACE LOG

HOLE NUMBER B-23

DRILL FLUID: None | DRILLING METHOD: Hollow Stem Augers

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH	CASING BOTTOM	HOLE BOTTOM

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" Value &/or RQD (%)	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	HNu Readings PPM	WATER LEVELS AND/OR WELL DATA
S1	2.0							**SILT AND CLAY**, little m.c. sand, red-brown, moist		Sampled (0-2')	
								Similar Soil			
S2	2.0										
								Similar Soil			
S3	2.0										
								Similar Soil			
S4	2.0										
								CLAY AND SILT, trace f. sand, wet			▽
S5	2.0										
						10		**CLAY**, trace silt			
S6	2.0										
								CLAY, trace silt, trace f. sand, trace f. gravel, brownish red, moist **(TILL)**			
S7	2.0										
								Similar Soil			
S8	2.0										
								Similar Soil			
S9	2.0										
								Similar Soil, damp		Sampled (18-20')	
S10	2.0										
						20		**f.m.c. SAND**, Some f. Gravel, trace silt and clay, redish brown, wet			
S11	2.0										
								Similar Soil			
S12	2.0										
								Similar Soil		Sampled for TAL metals, nutrients, and grain size	
S13	2.0										
								End of Boring: 26'			
						30					

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CLOUGH, HARBOUR & ASSOCIATES LLP

PROJECT NUMBER: 6967.07.41 August 1999

LOCATION: Town of Salina, New York

CLIENT: **Town of Salina**

CONTRACTOR: Parrot Wolf

DRILLER: Jim | INSPECTOR: C. Kavanaugh

START DATE: 8/24/99 | FINISH DATE: 8/24/99

SURFACE ELEV.: | CHECKED BY: J. Trasher

Salina Landfill RI/FS

SUBSURFACE LOG

HOLE NUMBER B-24

DRILL FLUID: None | DRILLING METHOD: Hollow Stem Augers

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH	CASING BOTTOM	HOLE BOTTOM

SAMP./CORE NUMBER	SAMP. ADV LEN CORE	RECOVERY	Blows Per 6" on Split Spoon Sampler	"N" Value &/or RQD (%)	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	HNu Readings PPM	WATER LEVELS AND/OR WELL DATA
S1	2.0							**SILT AND CLAY**, trace f. sand, red-brown, moist		Sampled (0-2')	
S2	2.0							Similar Soil		Some LF debris	
S3	2.0							Similar Soil		No LF debris	
S4	2.0							**SILT**, trace clay, trace f. gravel, redish brown		Wet Zone (6-8')	
S5	2.0							**CLAY**, trace silt, trace f.c. sand, trace c. gravel **(TILL)**			
S6	2.0					10		Similar Soil			
S7	2.0							Similar Soil			
S8	2.0							Similar Soil			
S9	2.0							Similar Soil (Some f. Sand)			
S10	2.0							Similar Soil (Some f. Sand)			
S11	2.0					20		**f. SAND**, trace silt, wet			▽
S12	2.0							Similar Soil		Sampled for TAL metals, nutrients, and grain size	
								End of Boring: 24'			
						30					

WELL CONSTRUCTION LOG

PROJECT	PROJECT NUMBER	WELL NUMBER
Town of Salina Landfill	6967.07.24	MW-6

SITE	COORDINATES	GROUND SURFACE ELEVATION	CASING STICKUP
Salina Landfill	1125489 / 935019	374.09 MSL ☒Surveyed ☐Estimated	2.85 ft

Soil Boring Cross-Reference *MW-8.*
Town and City *Salina*
County and State *Onondaga, NY*

Installation Date (s) *7/7-7/8/98*

Drilling Method *4.25" Hollow Stem Augers*
Drilling Contractor *American Auger*
Drilling Fluid *None*

Development Technique (s) / Dates
Developed well on 8/18/98 for 2:20 hours using Grundfos Rediflow 2 Submersible Pump. Turb.= 1000+ NTU

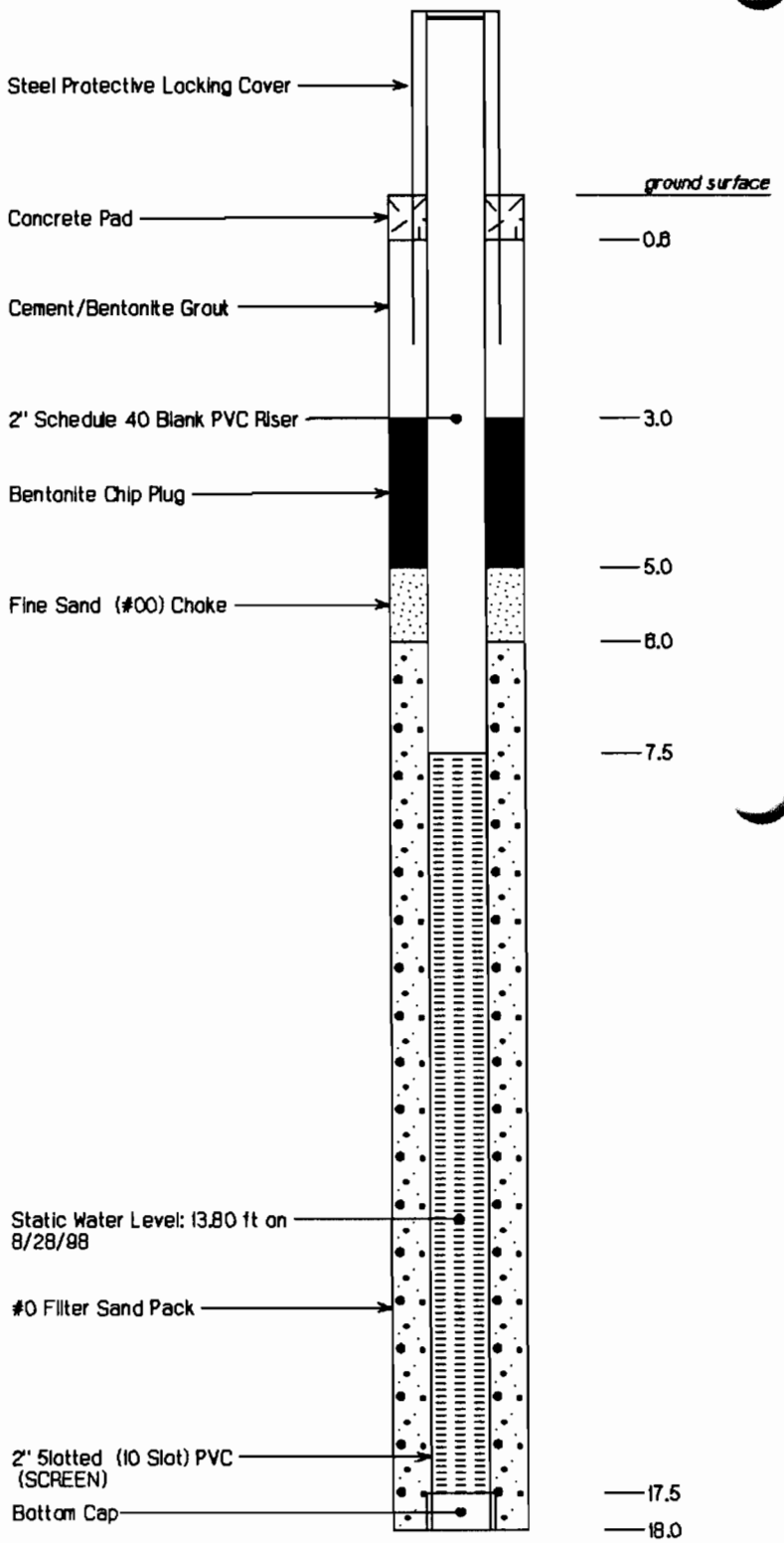
Fluid Loss During Drilling (gals)
Water Removed During Development (gals)
Approx. 20 gal. purged -

Static Depth to Water Date *8/28/98*
Static Depth to Water (feet) *13.80 ft TOR*

Well Purpose *Monitoring Well*

Remarks
10 Slot PVC screen used. Well purged dry 6 times during well development.

Prepared By *J. Trasher*
Date Prepared *10/23/98*



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WELL CONSTRUCTION LOG

PROJECT	PROJECT NUMBER	WELL NUMBER
Town of Salina Landfill	6967.07.24	MW-7

SITE	COORDINATES	GROUND SURFACE ELEVATION	CASING STICKUP
Salina Landfill	1125618 / 935562	384.36 MSL ☒Surveyed ☐Estimated	2.90 ft

Soil Boring Cross-Reference *MW-7.*
Town and City *Salina*
County and State *Onondaga, NY*

Installation Date (s) *7/8/98*

Drilling Method *4.25" Hollow Stem Augers*
Drilling Contractor *American Auger*
Drilling Fluid *None*

Development Technique (s) / Dates
Developed well on 8/11/98 for 3:30 hours using Grundfos Rediflow 2 Submersible Pump. Turb.= 202 NTU

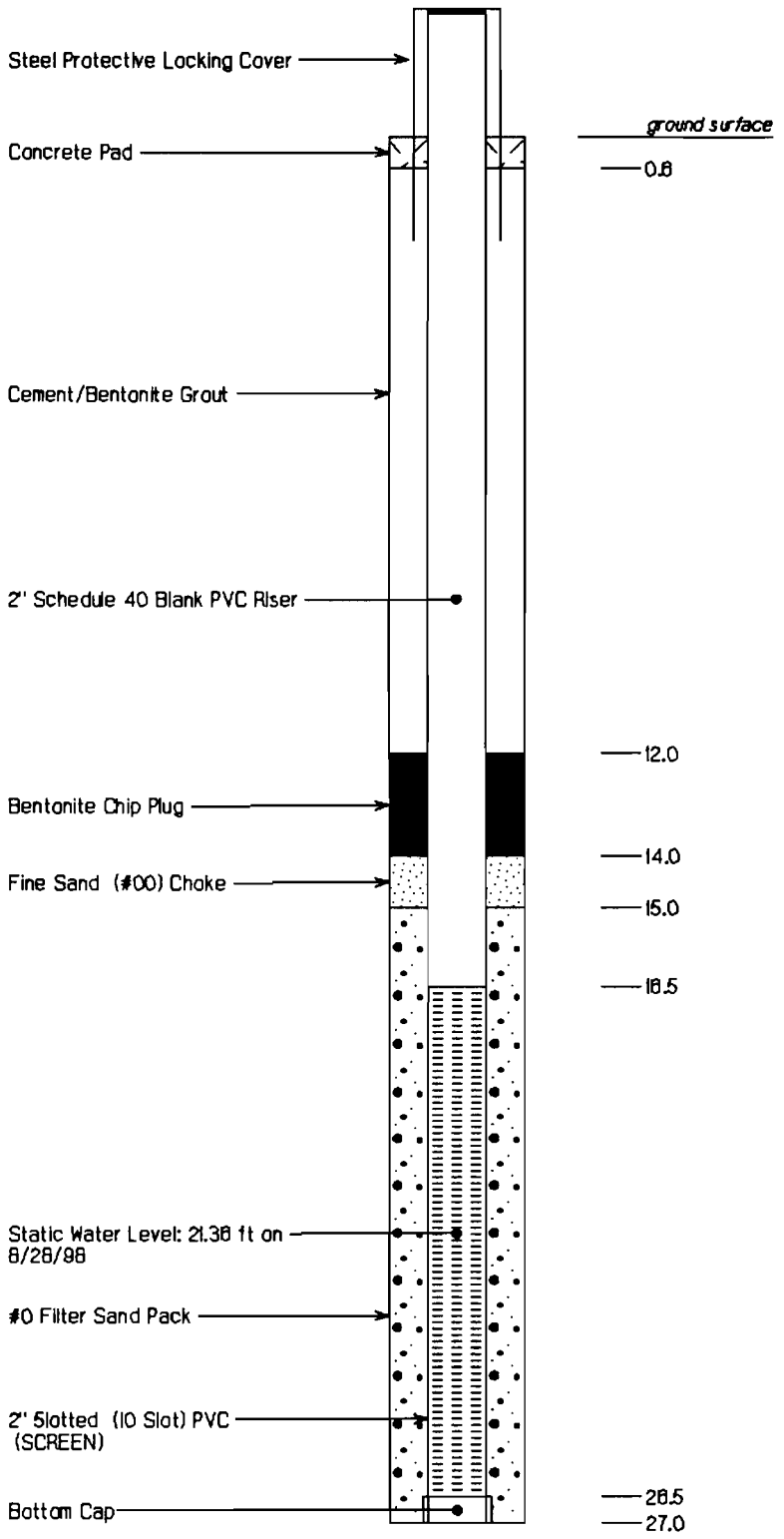
Fluid Loss During Drilling (gals) _____
Water Removed During Development (gals)
Approx. 53.5 gal. purged –

Static Depth to Water Date *8/28/98*
Static Depth to Water (feet) *21.36 ft TOR*

Well Purpose *Monitoring Well*

Remarks
10 Slot PVC screen used. Well purged dry 10 times during well development.

Prepared By *J. Trasher*
Date Prepared *10/23/98*



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WELL CONSTRUCTION LOG

PROJECT	PROJECT NUMBER	WELL NUMBER
Town of Salina Landfill	6967.07.24	MW-8

SITE	COORDINATES	GROUND SURFACE ELEVATION	CASING STICKUP
Salina Landfill	1125914 / 935702	373.49 MSL ☒Surveyed ☐Estimated	2.40 ft

Soil Boring Cross-Reference *MW-8.*
Town and City *Salina*
County and State *Onondaga, NY*

Installation Date (s) *7/9/98*

Drilling Method *4.25" Hollow Stem Augers*
Drilling Contractor *American Auger*
Drilling Fluid *None*

Development Technique (s) / Dates
Developed well on 8/11/98 for 3:26 hours using Grundfos Rediflow 2 Submersible Pump. Turb.= 56 NTU

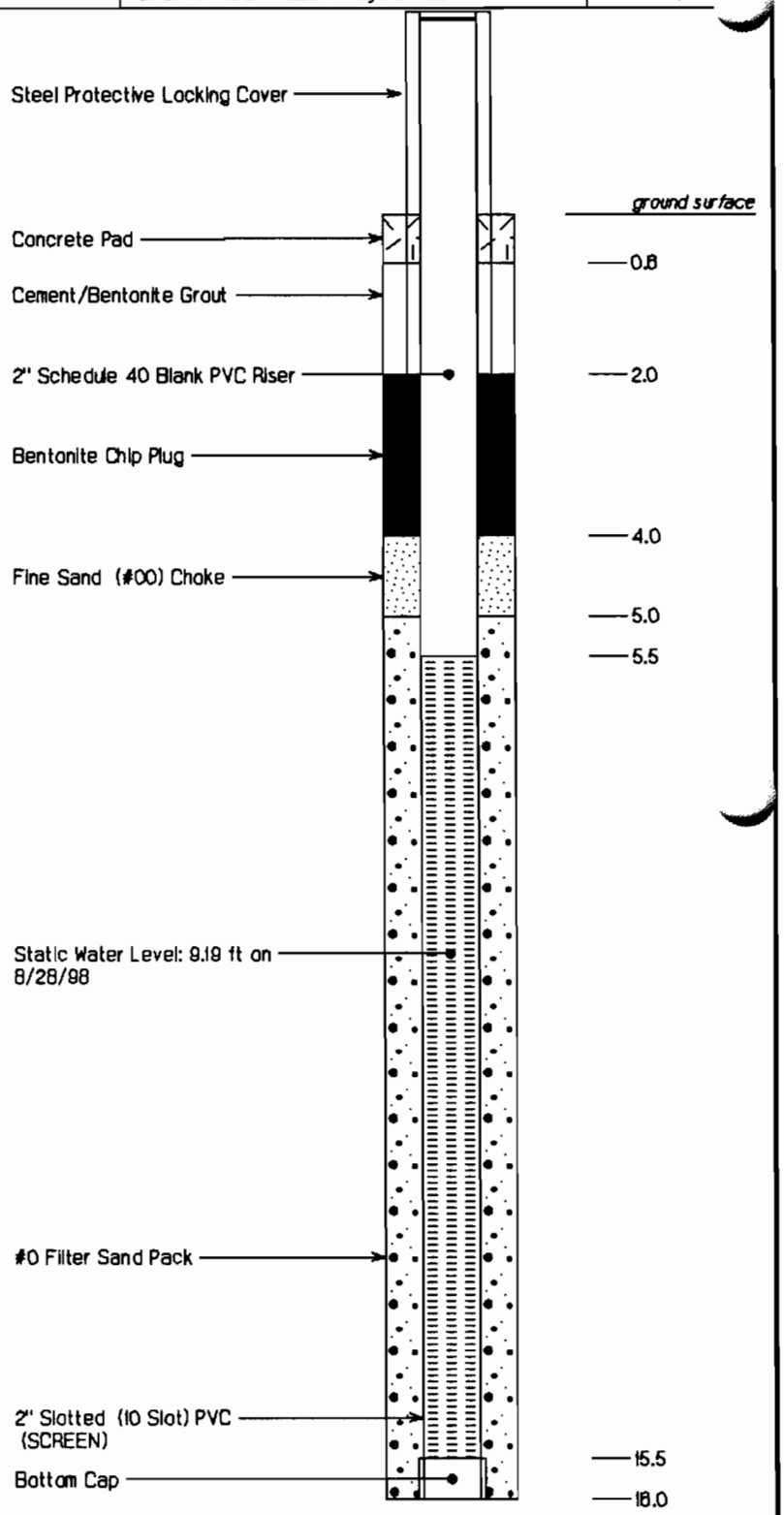
Fluid Loss During Drilling (gals) _____
Water Removed During Development (gals)
Approx. 33.5 gal. purged -

Static Depth to Water Date *8/28/98*
Static Depth to Water (feet) *9.19 ft TOR*

Well Purpose *Monitoring Well*

Remarks
10 Slot PVC screen used. Well purged dry 8 times during well development.

Prepared By *J. Trasher*
Date Prepared *10/19/98*



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WELL CONSTRUCTION LOG

PROJECT	PROJECT NUMBER	WELL NUMBER
Town of Salina Landfill	6967.07.24	MW-9

SITE	COORDINATES	GROUND SURFACE ELEVATION	CASING STICKUP
Salina Landfill	1126141 / 935745	371.25 MSL ☒Surveyed ☐Estimated	2.90 ft

Soil Boring Cross-Reference *MW-9.*
Town and City *Salina*
County and State *Onondaga, NY*

Installation Date (s) *6/29/98*

Drilling Method *4.25" Hollow Stem Augers*
Drilling Contractor *American Auger*
Drilling Fluid *None*

Development Technique (s) / Dates
Developed well on 8/12/98 for 1:53 hours using Grundfos Rediflow 2 Submersible Pump. Turb.= 57 NTU

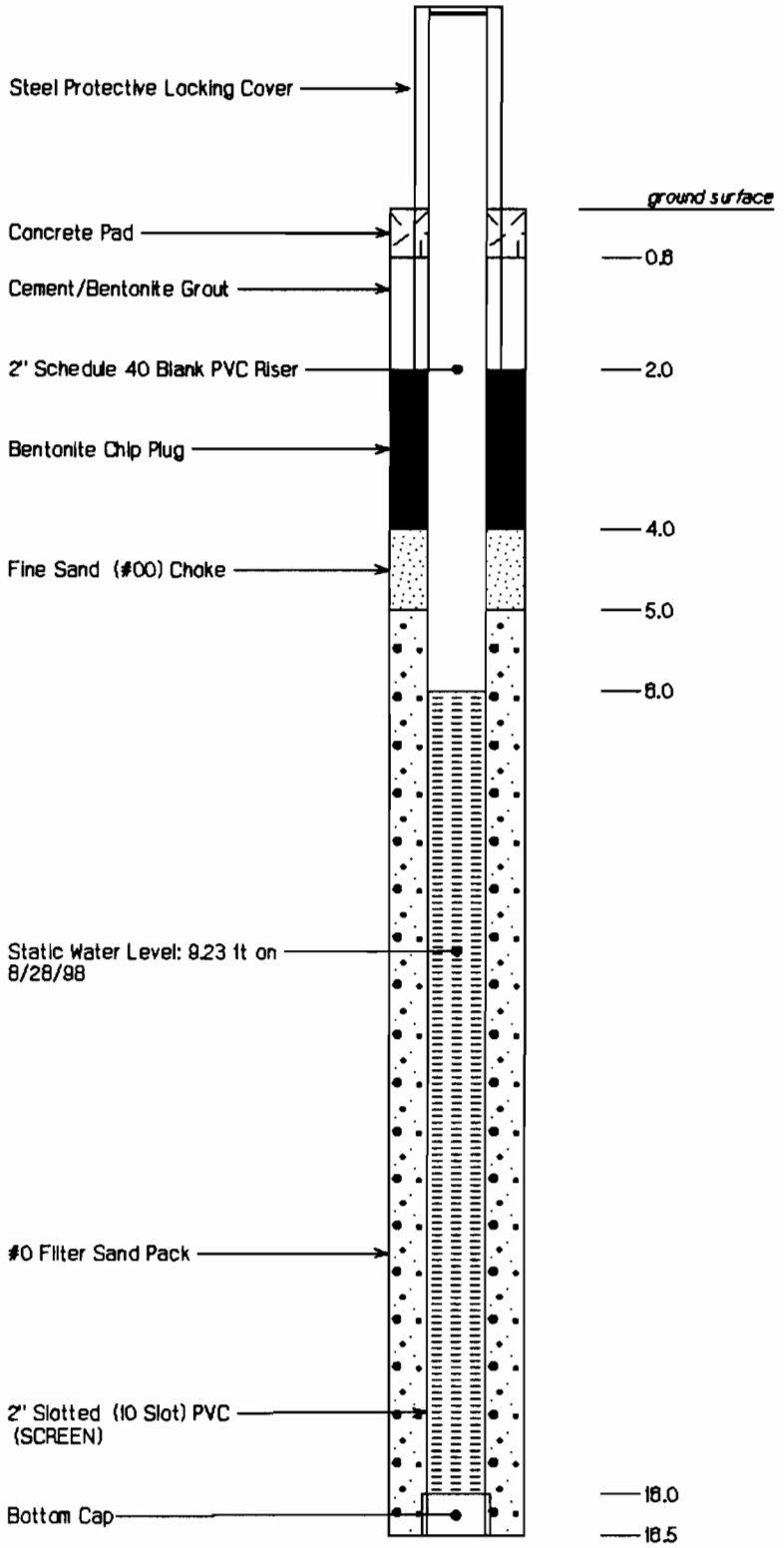
Fluid Loss During Drilling (gals)
Water Removed During Development (gals)
Approx. 10.5 gal. purged –

Static Depth to Water Date *8/28/98*
Static Depth to Water (feet) *9.23 ft TOR*

Well Purpose *Monitoring Well*

Remarks
10 Slot PVC screen used.
Well cleaned up very quickly.

Prepared By *J. Trasher*
Date Prepared *10/26/98*



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WELL CONSTRUCTION LOG

PROJECT	PROJECT NUMBER	WELL NUMBER
Town of Salina Landfill	6967.07.24	MW-10

SITE	COORDINATES	GROUND SURFACE ELEVATION	CASING STICKUP
Salina Landfill	1125904 / 935269	379.35 MSL ☒Surveyed ☐Estimated	2.40 ft

Soil Boring Cross-Reference *MW-10*
Town and City *Salina*
County and State *Onondaga, NY*

Installation Date (s) *7/6/98*

Drilling Method *4.25" Hollow Stem Augers*
Drilling Contractor *American Auger*
Drilling Fluid *None*

Development Technique (s) / Dates
Developed well on 8/11/98 for 3:30 hours using Grundfos Rediflow 2 Submersible Pump. Turb.= 1000+ NTU

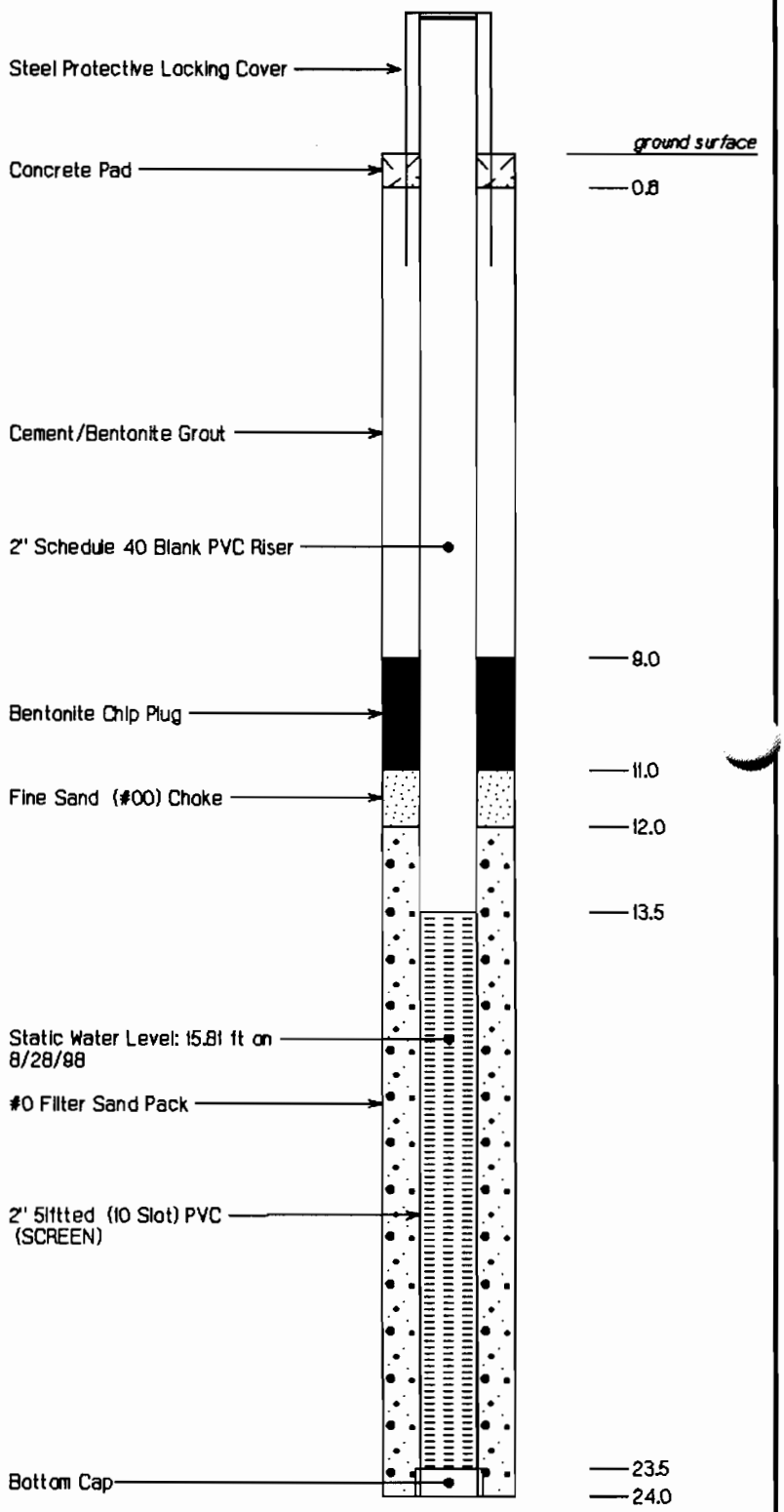
Fluid Loss During Drilling (gals) _____
Water Removed During Development (gals)
Approx. 15.0 gal. purged –

Static Depth to Water Date *8/28/98*
Static Depth to Water (feet) *15.81 ft TOR*

Well Purpose *Monitoring Well*

Remarks
10 Slot PVC screen used.
Well purged dry numerous times during well development.
Well recharges very slowly.

Prepared By *J. Trasher*
Date Prepared *10/26/98*



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WELL CONSTRUCTION LOG

PROJECT	PROJECT NUMBER	WELL NUMBER
Town of Salina Landfill	6967.07.24	MW-12

SITE	COORDINATES	GROUND SURFACE ELEVATION	CASING STICKUP
Salina Landfill	1125759 / 933962	368.22 MSL ☒Surveyed ☐Estimated	2.90 ft

Soil Boring Cross-Reference *MW-12*
Town and City *Salina*
County and State *Onondaga, NY*

Installation Date (s) *7/21/98*

Drilling Method *4.25" Hollow Stem Augers*
Drilling Contractor *American Auger*
Drilling Fluid *None*

Development Technique (s) / Dates
Developed well on 8/12/98 for 3 hours using Grundfos Rediflow 2 Submersible Pump. Turb.= 59.7 NTU

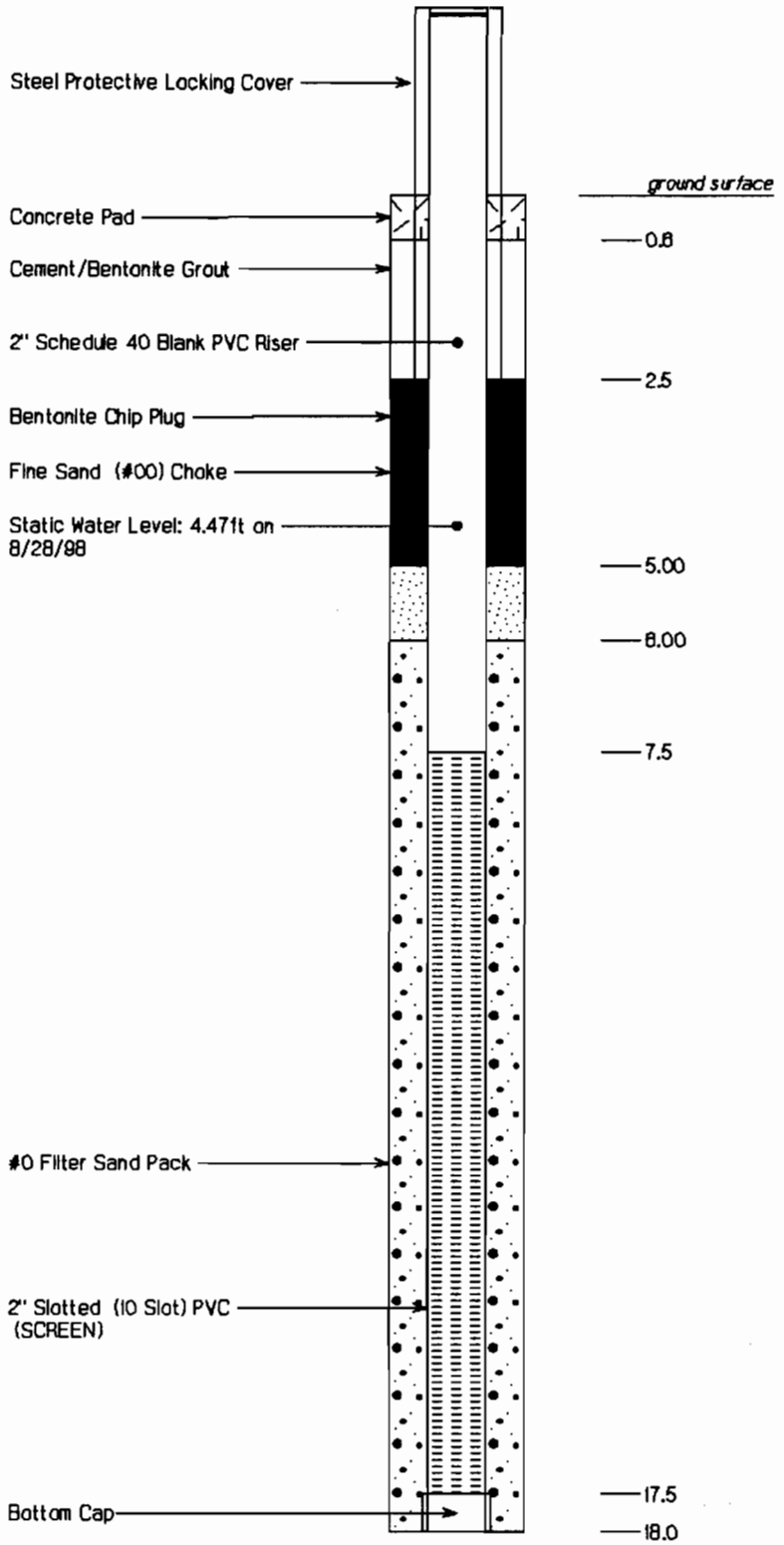
Fluid Loss During Drilling (gals) _____
Water Removed During Development (gals)
Approx. 84.0 gal. purged –

Static Depth to Water Date *8/28/98*
Static Depth to Water (feet) *4.47ft TOR*

Well Purpose *Monitoring Well*

Remarks
10 Slot PVC screen used.
Well purged dry 9 times during well development

Prepared By *J. Trasher*
Date Prepared *10/20/98*



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WELL CONSTRUCTION LOG

PROJECT	PROJECT NUMBER	WELL NUMBER
Town of Salina Landfill	6967.07.24	MW-14

SITE	COORDINATES	GROUND SURFACE ELEVATION	CASING STICKUP
Salina Landfill	1126491 / 934915	388.30 MSL ☒Surveyed ☐Estimated	1.35 ft

Soil Boring Cross-Reference *MW-14*
Town and City *Salina*
County and State *Onondaga, NY*

Installation Date (s) *6/30-7/1/98*

Drilling Method *4.25" Hollow Stem Augers*
Drilling Contractor *American Auger*
Drilling Fluid *None*

Development Technique (s) / Dates
Developed well on 8/12/98 for 3 hours using Grundfos Rediflow 2 Submersible Pump. Turb.= 1000+ NTU

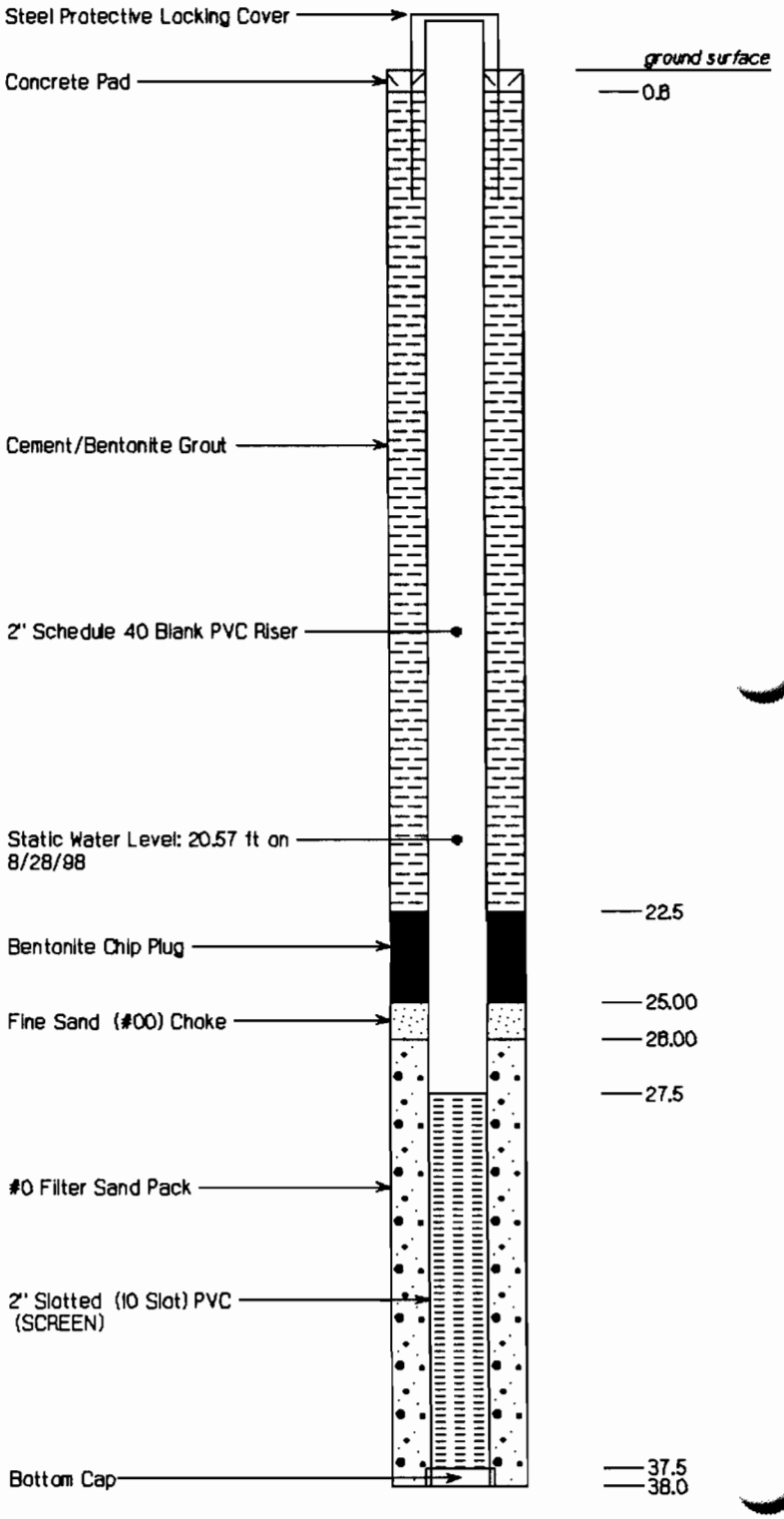
Fluid Loss During Drilling (gals) _____
Water Removed During Development (gals)
Approx. 14.5 gal. purged -

Static Depth to Water Date *8/28/98*
Static Depth to Water (feet) *20.57 ft TOR*

Well Purpose *Monitoring Well*

Remarks
10 Slot PVC screen used.
Well purged dry 4 times during well development
Takes along time for well to recharge

Prepared By *J. Trasher*
Date Prepared *10/20/98*



CLOUGH HARBOUR and ASSOCIATES LLP

WELL CONSTRUCTION LOG

PROJECT	PROJECT NUMBER	WELL NUMBER
Town of Salina Landfill	6967.07.24	MW-15

SITE	COORDINATES	GROUND SURFACE ELEVATION	CASING STICKUP
Salina Landfill	1125915 / 934878	389.17 MSL ☒Surveyed ☐Estimated	1.70 ft

Soil Boring Cross-Reference *MW-15*
Town and City *Salina*
County and State *Onondaga, NY*

Installation Date (s) *6/29-7/1/98*

Drilling Method *4.25" Hollow Stem Augers*
Drilling Contractor *American Auger*
Drilling Fluid *None*

Development Technique (s) / Dates
Developed well on 8/12/98 for 3 hours using Grundfos Rediflow 2 Submersible Pump. Turb.= 49 NTU

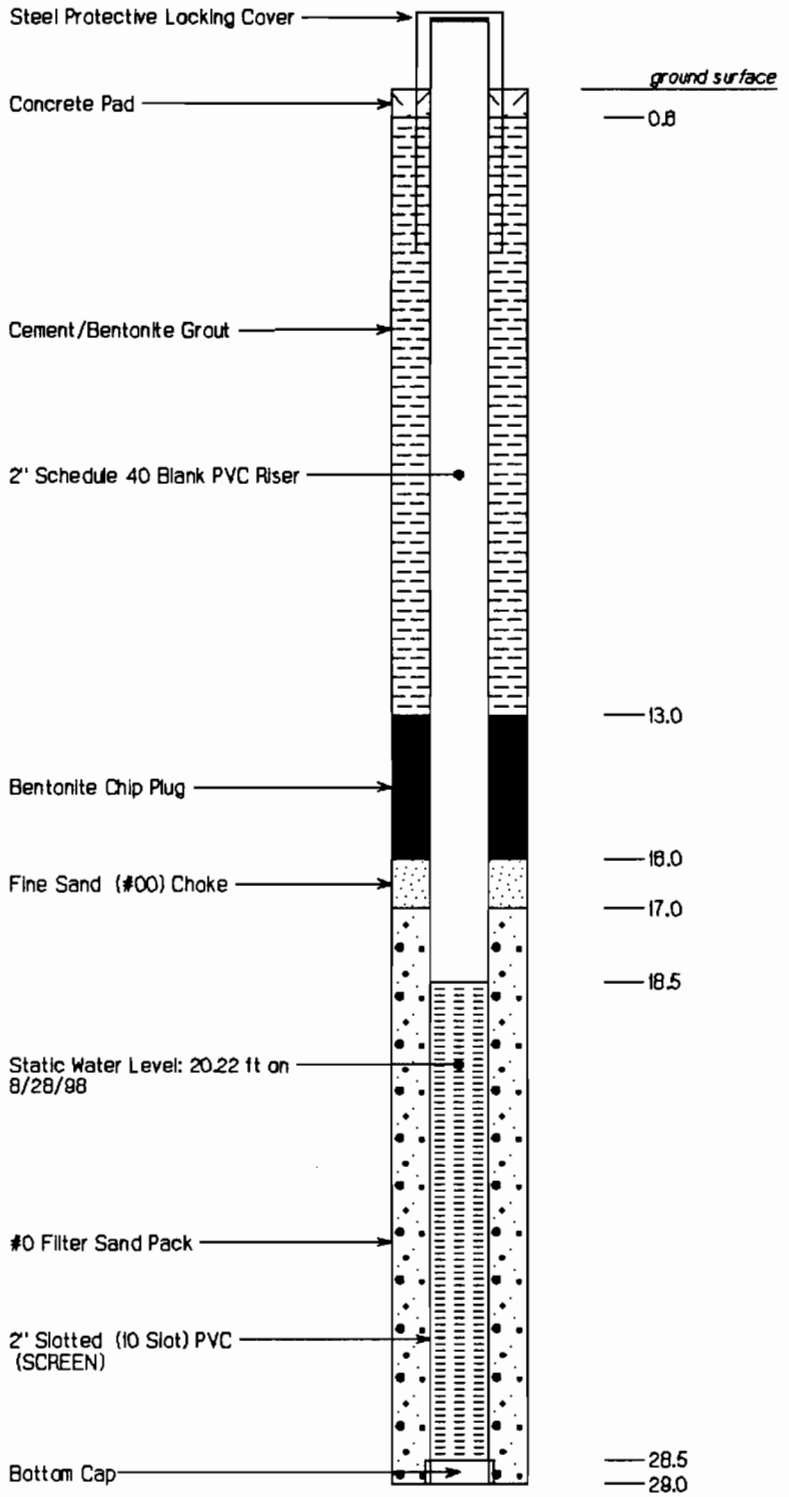
Fluid Loss During Drilling (gals)
Water Removed During Development (gals)
Approx. 95 gal. purged -

Static Depth to Water Date *8/28/98*
Static Depth to Water (feet) *0.22ft TOR*

Well Purpose *Monitoring Well*

Remarks
10 Slot PVC screen used.
Well purged dry 2 times during well development

Prepared By *J. Trasher*
Date Prepared *10/26/98*



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WELL CONSTRUCTION LOG

PROJECT	PROJECT NUMBER	WELL NUMBER
Town of Salina Landfill	6967.07.24	MW-OD

SITE	COORDINATES	GROUND SURFACE ELEVATION	CASING STICKUP
Salina Landfill	1126688 / 935659	374.76 MSL ☒Surveyed ☐Estimated	1.50 ft

Soil Boring Cross-Reference *MW-OD*
Town and City *Salina*
County and State *Onondaga, NY*

Installation Date (s) *7/29/98*

Drilling Method *4.25" Hollow Stem Augers*
Drilling Contractor *American Auger*
Drilling Fluid *None*

Development Technique (s) / Dates
Developed well on 8/10/98 for 3:20 hours using Grundfos Rediflow 2 Submersible Pump. Turb.= 37.3 NTU

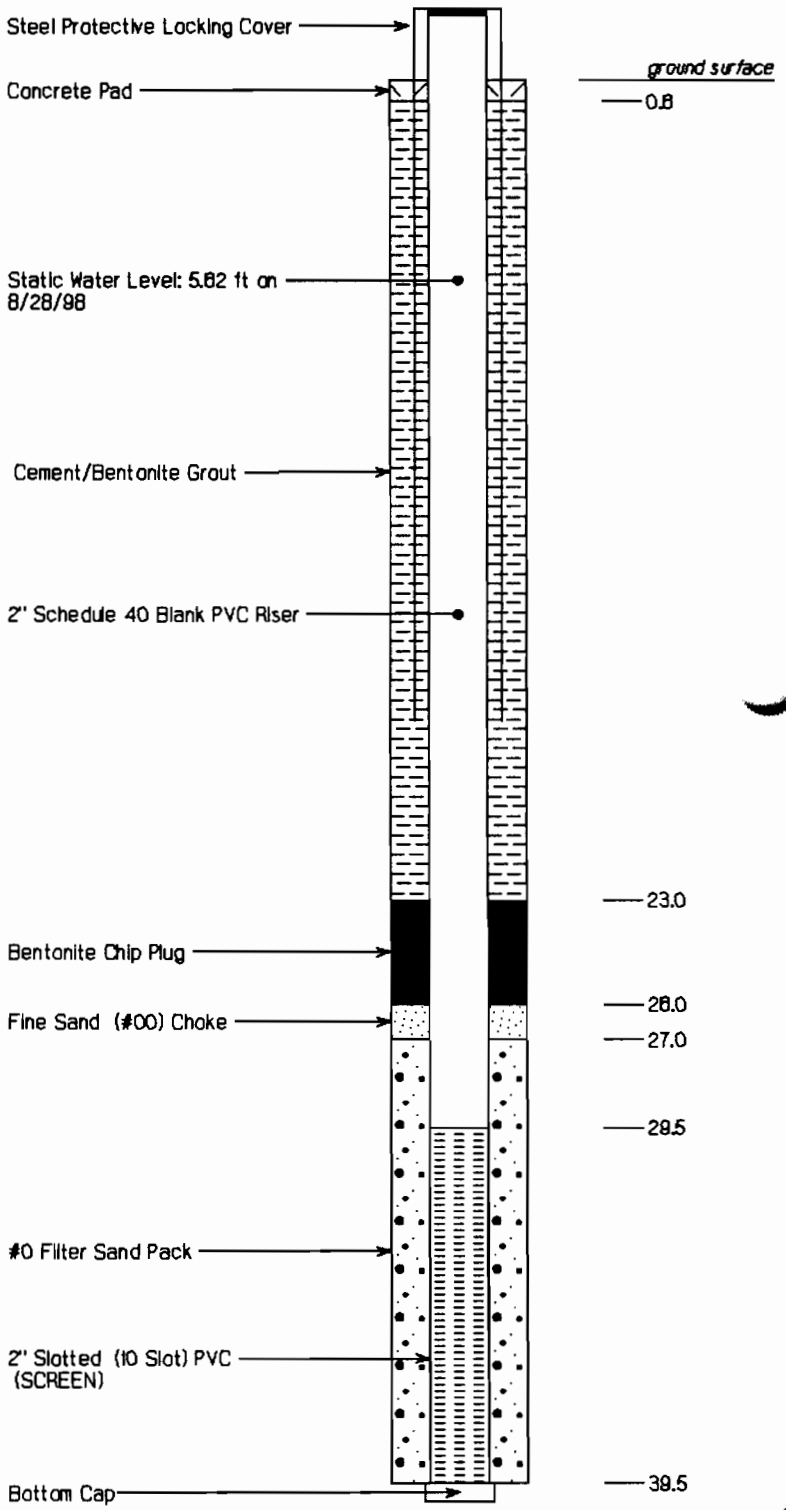
Fluid Loss During Drilling (gals) _____
Water Removed During Development (gals)
Approx. 190 gal. purged –

Static Depth to Water Date *8/28/98*
Static Depth to Water (feet) *5.62 ft TOR*

Well Purpose *Monitoring Well*

Remarks
10 Slot PVC screen used.
Well produces alot of water.

Prepared By *J. Trasher*
Date Prepared *10/26/98*



CLOUGH HARBOUR and ASSOCIATES LLP

WELL CONSTRUCTION LOG

PROJECT	PROJECT NUMBER	WELL NUMBER
Town of Salina Landfill	6967.07.24	MW-5D

SITE	COORDINATES	GROUND SURFACE ELEVATION	CASING STICKUP
Salina Landfill	1125511 / 934744	373.07 MSL ☒Surveyed ☐Estimated	1.80 ft

Soil Boring Cross-Reference *MW-5D*
Town and City *Salina*
County and State *Onondaga, NY*

Installation Date (s) *7/28/98*

Drilling Method *4.25" Hollow Stem Augers*
Drilling Contractor *American Auger*
Drilling Fluid *None*

Development Technique (s) / Dates
Developed well on 8/10/98 for 2 hours using Grundfos Rediflow 2 Submersible Pump. Turb.= 47 NTU

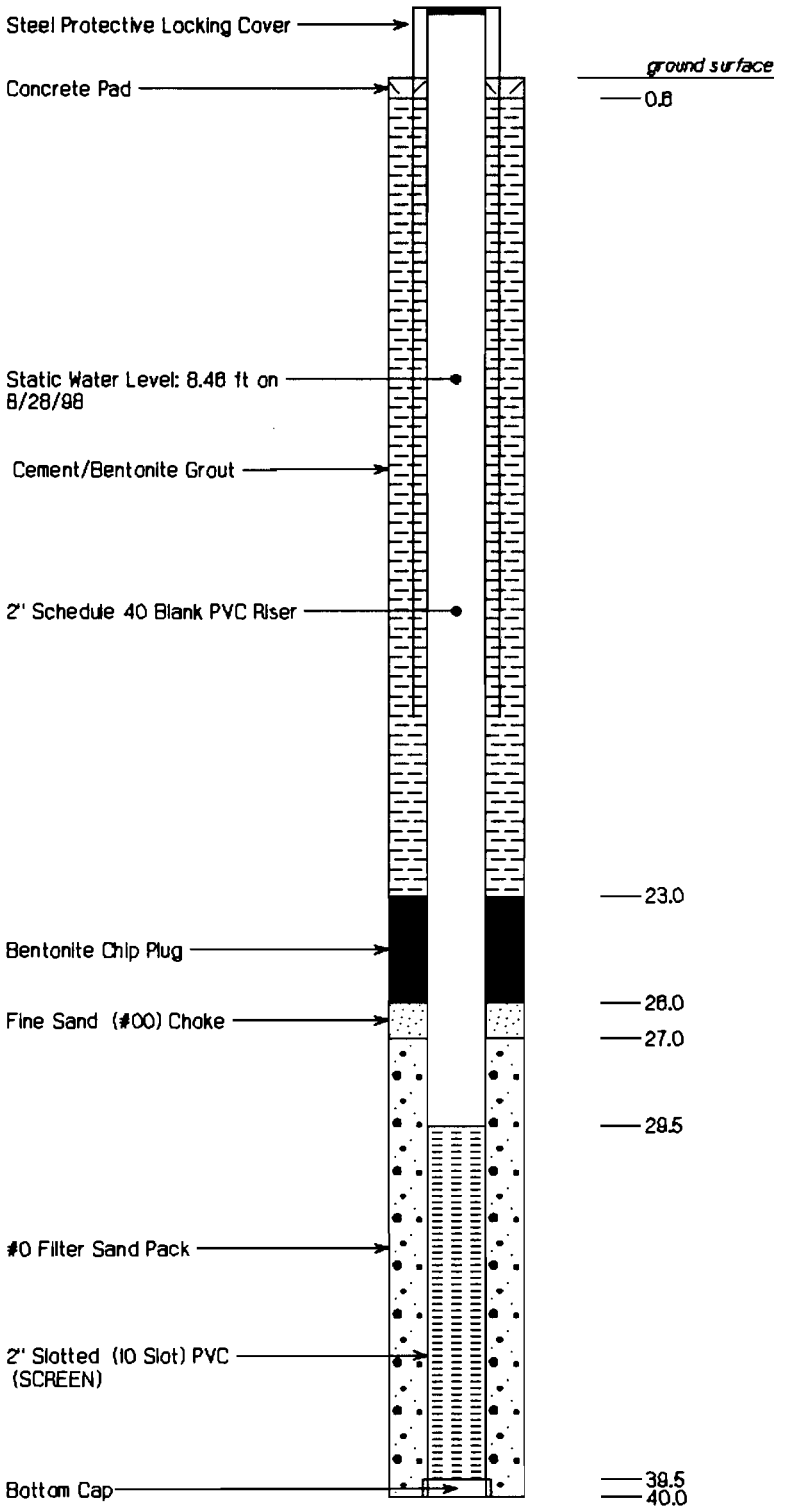
Fluid Loss During Drilling (gals)
Water Removed During Development (gals)
Approx. 45 gal. purged –

Static Depth to Water Date *8/28/98*
Static Depth to Water (feet) *8.46 ft TOR*

Well Purpose *Monitoring Well*

Remarks
10 Slot PVC screen used.
Well cleaned up very quickly.

Prepared By *J. Trasher*
Date Prepared *10/26/98*



CLOUGH HARBOUR and ASSOCIATES LLP

WELL CONSTRUCTION LOG

PROJECT	PROJECT NUMBER	WELL NUMBER
Town of Salina Landfill	6967.07.24	MW-12D

SITE	COORDINATES	GROUND SURFACE ELEVATION	CASING STICKUP
Salina Landfill	1125770 / 933964	368.19 MSL ☒Surveyed ☐Estimated	1.80 ft

Soil Boring Cross-Reference *MW-12D*
Town and City *Salina*
County and State *Onondaga, NY*

Installation Date (s) *7/28/98*

Drilling Method *4.25" Hollow Stem Augers*
Drilling Contractor *American Auger*
Drilling Fluid *None*

Development Technique (s) / Dates
Developed well on 8/12/98 for 0:47 hours using Grundfos Rediflow 2 Submersible Pump. Turb.= 26.4 NTU

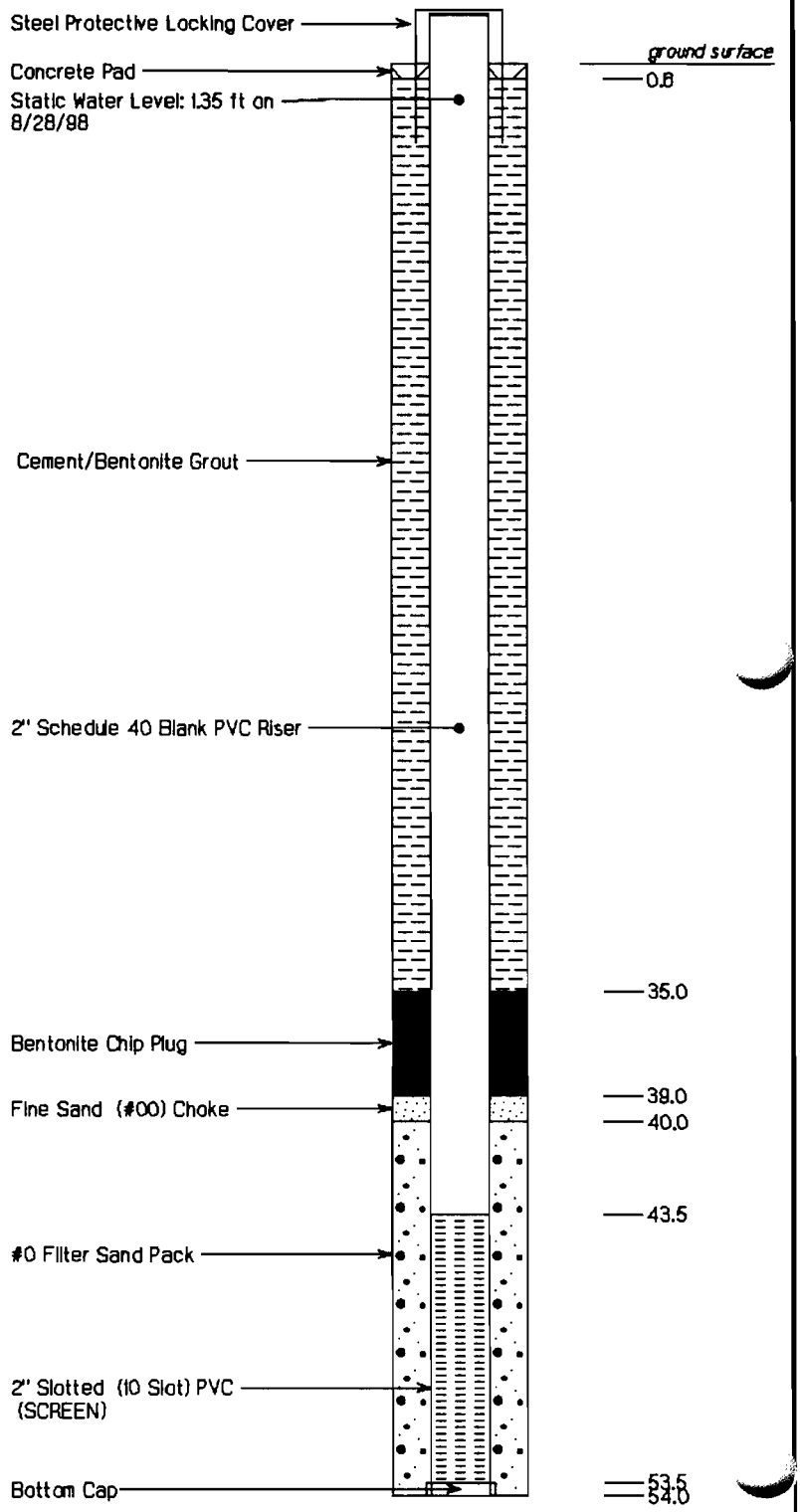
Fluid Loss During Drilling (gals) _____
Water Removed During Development (gals)
Approx. 25 gal. purged -

Static Depth to Water Date *8/28/98*
Static Depth to Water (feet) *1.35 ft TOR*

Well Purpose *Monitoring Well*

Remarks
10 Slot PVC screen used.
Well cleaned up very quickly.
Artesian well sealed with pump and bladder mechanism.

Prepared By *J. Trasher*
Date Prepared *10/26/98*



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APPENDIX B-5

Soil Gas Survey Data

CLOUGH, HARBOUR & ASSOCIATES
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS

GAS SURVEY LOG

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967
Date: 8/11/98

Instrument Model (Comb. Gas): Scott D-15

Calibration: 8/10/98

Instrument Model (PID):

Calibration:

Barometric Pressure: (in of Hg) 29.85 R

Wind Velocity: 4 Gust 12 mph

Temperature: (F) 79

Weather Station Location: On Site

Point	Initial Reading GAS (%)	Offset GAS (%)	Offset GAS (%)	Point	Initial Reading GAS (%)	Offset GAS (%)	Offset GAS (%)
1	0			27	0	NA	
2	0			28	0	NA	
3	0			29	0	NA	
4	0			30	0	NA	
5	13	NA		31	20	NA	5'= 20%
6	0			32	0	NA	
7	0			33	0	NA	
8	0			34	0	NA	
9	0			35	0	NA	
10	0			36	0	NA	
11	0			37	0	NA	
12	16	1.5	NP	38	0	NA	
13	0			39	0	NA	
14	0			40	0	NA	
15	0			41	0	NA	
16	0			42	0	NA	
17	0			43	0	NA	
18	0			44	0	NA	
19	0			45	6	NA	NP
20	0			46	0		
21	0			47	0		
22	0			48	0		
23	0			49	0		
24	0			50	0		
25	0			51	0		
26	0			52	0.5		

Logged By: Steve Pidgeon

CLOUGH, HARBOUR & ASSOCIATES
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS

GAS SURVEY LOG

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967
Date: 8/11/98

Instrument Model (Comb. Gas): Scott D-15

Calibration: 8/10/98

Instrument Model (PID):

Calibration:

Barometric Pressure: (in of Hg) 29.85 R

Wind Velocity: 4 Gust 12 mph

Temperature: (F) 79

Weather Station Location: On Site

Point	Initial Reading GAS (%)	Offset GAS (%)	Offset GAS (%)	Point	Initial Reading GAS (%)	Offset GAS (%)	Offset GAS (%)
53	0			79	0		
54	0			80	0		
55	0			81	0		
56	0			82	0		
57	0			83	0		
58	0			84	0		
59	0			85	0		
60	0			86	0		
61	0			87	0		
62	0			88	0		
63	0			89	0		
64	0.3			90	0		
65	0.5			91	0		
66	0			92	0		
67	0			93	0		
68	0			94	0		
69	0.4			95	0		
70	0.2			96	0		
71	0.7			97	0		
72	0			98	0		
73	0			99	0		
74	0			100	0		
75	0			101	0		
76	0			102	0		
77	0			103	0		
78	0.5			104	0		

Logged By: Steve Pidgeon

APPENDIX B-6

Well Development Logs

CLOUGH, HARBOUR & ASSOCIATES
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS

WELL DEVELOPMENT LOG

WELL DESIGNATION: **MW 6**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/11/98
Screen Length: 10'

Development Information:

(1) Depth to Bottom of Well: 20.4ft. (from TOC)

(2) Depth to Water: 13.4 ft. (from TOC)

(3) Column of Water: 7.0 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.141 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	13:35	14:10	14:59	08:36	08:57	09:27		
Vol Purged (gal)	5.0	9.0	11.5	16.0	18.0	19.5		
Turb. (NTU)	>1000	>1000	>1000	>1000	>1000	>1000		

Total Volume Removed: 19.5 gal

Total Development Time: 2:41

Development Information:
No chance of MW 6 cleaning up.
Water is a thick slurry of silt and fine sand.
Development of well began on 8/11/98 and finished on 8/12/98.
Well was purged dry 6 times during well development.

Logged By: James F. Trasher

CLOUGH, HARBOUR & ASSOCIATES
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS

WELL DEVELOPMENT LOG

WELL DESIGNATION: **MW 7**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/11/98
Screen Length: 10'

Development Information:

(1) Depth to Bottom of Well: 29.3 ft. (from TOC)

(2) Depth to Water: 22.0 ft. (from TOC)

(3) Column of Water: 7.3 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.19 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	15:20	15:30	15:50	16:10	16:41	16:58	17:17	17:33
Vol Purged (gal)	5.0	9.0	14.0	19.0	24.0	28.0	31.5	34.5
Turb. (NTU)	>1000	>1000	>1000	>1000	>1000	>1000	678	659

Total Volume Removed: 53.5 gal

Total Development Time: 3:53

Development Information:
Well development began at 15:05.
Development of well began on 8/11/98 and finished on 8/12/98.
Well was purged dry 9 times during well development.

Logged By: James F. Trasher

CLOUGH, HARBOUR & ASSOCIATES
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS

WELL DEVELOPMENT LOG

WELL DESIGNATION: **MW 7 continued**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/11/98
Screen Length: 10'

Development Information:

(1) Depth to Bottom of Well: 29.3 ft. (from TOC)

(2) Depth to Water: 22.0 ft. (from TOC)

(3) Column of Water: 7.3 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.19 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	08:17	09:00	09:27					
Vol Purged (gal)	43.5	50.0	53.5					
Turb. (NTU)	426	229	202					

Total Volume Removed: 53.5 gal

Total Development Time: 3:53

Development Information:
Well development began at 15:05.
Development of well began on 8/11/98 and finished on 8/12/98.
Well was purged dry 9 times during well development.

Logged By: James F. Trasher

CLOUGH, HARBOUR & ASSOCIATES
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS

WELL DEVELOPMENT LOG

WELL DESIGNATION: **MW 8**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/11/98
Screen Length: 10'

Development Information:

(1) Depth to Bottom of Well: 19.55 ft. (from TOC)

(2) Depth to Water: 8.95 ft. (from TOC)

(3) Column of Water: 10.6 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.73 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	14:39	14:47	15:12	15:37	16:31	16:51	17:07	17:56
Vol Purged (gal)	5.0	8.0	11.5	14.5	19.0	23.0	26.0	33.5
Turb. (NTU)	>1000	>1000	>1000	792	595	626	134	56

Total Volume Removed: 33.5 gal

Total Development Time: 3:47

Development Information:
Well development began at 14:30.
Well was purged dry 8 times during well development.

Logged By: James F. Trasher

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WELL DEVELOPMENT LOG

WELL DESIGNATION: **MW 9**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/12/98
Screen Length: 10'

Development Information:

(1) Depth to Bottom of Well: 19.80 ft. (from TOC)

(2) Depth to Water: 9.75 ft. (from TOC)

(3) Column of Water: 10.05 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.64 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	13:09	13:39	13:54	14:19	14:43	15:02		
Vol Purged (gal)	2.0	4.0	6.0	8.0	9.0	10.0		
Turb. (NTU)	>1000	>1000	>1000	279	83	57		

Total Volume Removed: 10.0 gal

Total Development Time: 2:15

Development Information:
Well development began at 13:00.

Logged By: James F. Trasher

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WELL DEVELOPMENT LOG

WELL DESIGNATION: **MW 10**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/12/98
Screen Length: 10'

Development Information:

(1) Depth to Bottom of Well: 26.60 ft. (from TOC)

(2) Depth to Water: 16.15 ft. (from TOC)

(3) Column of Water: 10.45 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.70 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	13:15	13:59	14:54	15:52				
Vol Purged (gal)	2.0	4.5	5.0	6.0				
Turb. (NTU)	>1000	>1000	>1000	>1000				

Total Volume Removed: 6.0 gal

Total Development Time: 3:00

Development Information:
Well development began at 13:00.
Well ran dry after 9 minutes, initial condition: very silty.
Well takes 40 to 50 minutes to recharge.

Logged By: James F. Trasher

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WELL DEVELOPMENT LOG

WELL DESIGNATION: **MW 12**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/12/98
Screen Length: 10'

Development Information:

(1) Depth to Bottom of Well: 18.65 ft. (from TOC)

(2) Depth to Water: 4.63 ft. (from TOC)

(3) Column of Water: 14.02 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 2.29 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	09:47	09:59	10:08	10:17	10:27	10:34	10:43	10:49
Vol Purged (gal)	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
Turb. (NTU)	>1000	>1000	>1000	>1000	>1000	723	582	>1000

Total Volume Removed: 100 gal.

Total Development Time: 3:30

Development Information:
Well development began at 09:39.
Well purged dry 3 times during development.
Well produces large quantity of water with fast recharge time.

Logged By: James F. Trasher

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WELL DEVELOPMENT LOG

WELL DESIGNATION: **MW 12 continued**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/12/98
Screen Length: 10'

Development Information:

(1) Depth to Bottom of Well: 18.65 ft. (from TOC)

(2) Depth to Water: 4.63 ft. (from TOC)

(3) Column of Water: 14.02 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 2.29 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	10:58	11:04	11:12	11:18	11:22	11:29	11:34	11:37
Vol Purged (gal)	45.0	47.0	50.0	53.0	56.0	58.0	60.0	65.0
Turb. (NTU)	964	>1000	321	414	914	347	582	>1000

Total Volume Removed: 100.0 gal

Total Development Time: 3:30

Development Information:
Well development began at 09:39.
Well purged dry 3 times during development.
Well produces large quantity of water with fast recharge time.

Logged By: James F. Trasher

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WELL DEVELOPMENT LOG

WELL DESIGNATION: **MW 12 continued**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/12/98
Screen Length: 10'

Development Information:

(1) Depth to Bottom of Well: 18.65 ft. (from TOC)

(2) Depth to Water: 4.63 ft. (from TOC)

(3) Column of Water: 14.02 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 2.29 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	11:43	11:47	11:57	12:00	12:05	12:37	12:41	12:46
Vol Purged (gal)	68.0	73.0	76.0	81.0	86.0	89.0	94.0	97.0
Turb. (NTU)	274	698	198	185	397	96	53.2	59.7

Total Volume Removed: 100 gal. Total Development Time: 3:30

Development Information:
Well development began at 09:39.
Well purged dry 3 times during development.
Well produces large quantity of water with fast recharge time.

Logged By: James F. Trasher

CLOUGH, HARBOUR & ASSOCIATES
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS

WELL DEVELOPMENT LOG

WELL DESIGNATION: **MW 14**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/12/98
Screen Length: 10'

Development Information:

(1) Depth to Bottom of Well: 41.14 ft. (from TOC)

(2) Depth to Water: 27.40 ft. (from TOC)

(3) Column of Water: 13.74 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 2.24 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	11:45	11:49	11:53	12:42	13:37	14:23		
Vol Purged (gal)	3.0	5.0	6.5	10.0	13.0	14.5		
Turb. (NTU)	397	>1000	>1000	>1000	>1000	>1000		

Total Volume Removed: 15.0 gal. Total Development Time: 5:00

Development Information:
Well development began at 09:39.
Well purged dry 3 time during development

Logged By: James F. Trasher

CLOUGH, HARBOUR & ASSOCIATES
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS

WELL DEVELOPMENT LOG

WELL DESIGNATION: **MW 15**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/7/98
Screen Length: 10'

Development Information:

(1) Depth to Bottom of Well: 30.27 FT (from TOC)

(2) Depth to Water: 20.31 ft. (from TOC)

(3) Column of Water: 9.96 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.62 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	10:00	10:10	10:20	10:30	10:40	10:50	11:00	11:10
Vol Purged (gal)	15.0	20.0	25.0	30.0	35.0	40.0	50.0	55.0
Turb. (NTU)	595	373	287	245	314	102	74	128

Total Volume Removed: 95.0 gal

Total Development Time: 3:00

Development Information:
Well development began at 09:45.

Logged By: James F. Trasher

CLOUGH, HARBOUR & ASSOCIATES
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS

WELL DEVELOPMENT LOG

WELL DESIGNATION: **MW 15 continued**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/7/98
Screen Length: 10'

Development Information:

(1) Depth to Bottom of Well: 30.27 FT (from TOC)

(2) Depth to Water: 20.31 ft. (from TOC)

(3) Column of Water: 9.96 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.62 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	11:20	11:30	11:40	11:50	12:00	12:10	12:20	12:30
Vol Purged (gal)	60.0	65.0	70.0	75.0	80.0	85.0	90.0	95.0
Turb. (NTU)	91	73	70	97	79	61	64	49

Total Volume Removed: 95.0 gal

Total Development Time: 3:00

Development Information:
Well development began at 09:45.

Logged By: James F. Trasher

CLOUGH, HARBOUR & ASSOCIATES
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS

WELL DEVELOPMENT LOG

WELL DESIGNATION: **MW 0D**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/10/98
Screen Length: 10'

Development Information:

(1) Depth to Bottom of Well: 39.63 ft. (from TOC)

(2) Depth to Water: 5.76 ft. (from TOC)

(3) Column of Water: 33.87 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 5.52 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	10:20	10:30	10:40	10:50	11:00	11:10	11:20	11:30
Vol Purged (gal)	130.0	135.0	140.0	145.0	150.0	155.0	160.0	165.0
Turb. (NTU)	>1000	588	211	158	131	105	93.6	90.2

Total Volume Removed: 195.0 gal

Total Development Time: 4:00

Development Information:
Well development began at 08:30.

Logged By: James F. Trasher

CLOUGH, HARBOUR & ASSOCIATES
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS

WELL DEVELOPMENT LOG

WELL DESIGNATION: **MW 0D continued**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/10/98
Screen Length: 10'

Development Information:

(1) Depth to Bottom of Well: 39.63 ft. (from TOC)

(2) Depth to Water: 5.76 ft. (from TOC)

(3) Column of Water: 33.87 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 5.52 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	11:40	11:50	12:00	12:10	12:20			
Vol Purged (gal)	170.0	175.0	180.0	185.0	190.0			
Turb. (NTU)	103	95.3	85.2	61.2	37.3			

Total Volume Removed: 195.0 gal

Total Development Time: 3:00

Development Information:
Well development began at 08:30.

Logged By: James F. Trasher

CLOUGH, HARBOUR & ASSOCIATES
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS

WELL DEVELOPMENT LOG

WELL DESIGNATION: **MW 5D**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/10/98
Screen Length: 10'

Development Information:

(1) Depth to Bottom of Well: 43.10 ft. (from TOC)

(2) Depth to Water: 8.60 ft. (from TOC)

(3) Column of Water: 33.87 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 5.62 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	13:50	14:00	14:10	14:20				
Vol Purged (gal)	15.0	20.0	25.0	30.0				
Turb. (NTU)	>1000	256	74.0	45.2				

Total Volume Removed: 30 gal

Total Development Time: 1:30

Development Information:
Well development began at 13:15.

Logged By: James F. Trasher

CLOUGH, HARBOUR & ASSOCIATES
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS

WELL DEVELOPMENT LOG

WELL DESIGNATION: **MW 12D**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/12/98
Screen Length: 10'

Development Information:

(1) Depth to Bottom of Well: 54.00 FT (from TOC)

(2) Depth to Water: 0.00 ft. (from TOC)

(3) Column of Water: 54.00 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 8.80 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	09:50	10:12	10:17	10:23	10:31	10:37		
Vol Purged (gal)	5.0	10.0	15.0	20.0	25.0	30.0		
Turb. (NTU)	22.5	18.3	213	103	56.4	26.1		

Total Volume Removed: 35.0gal.

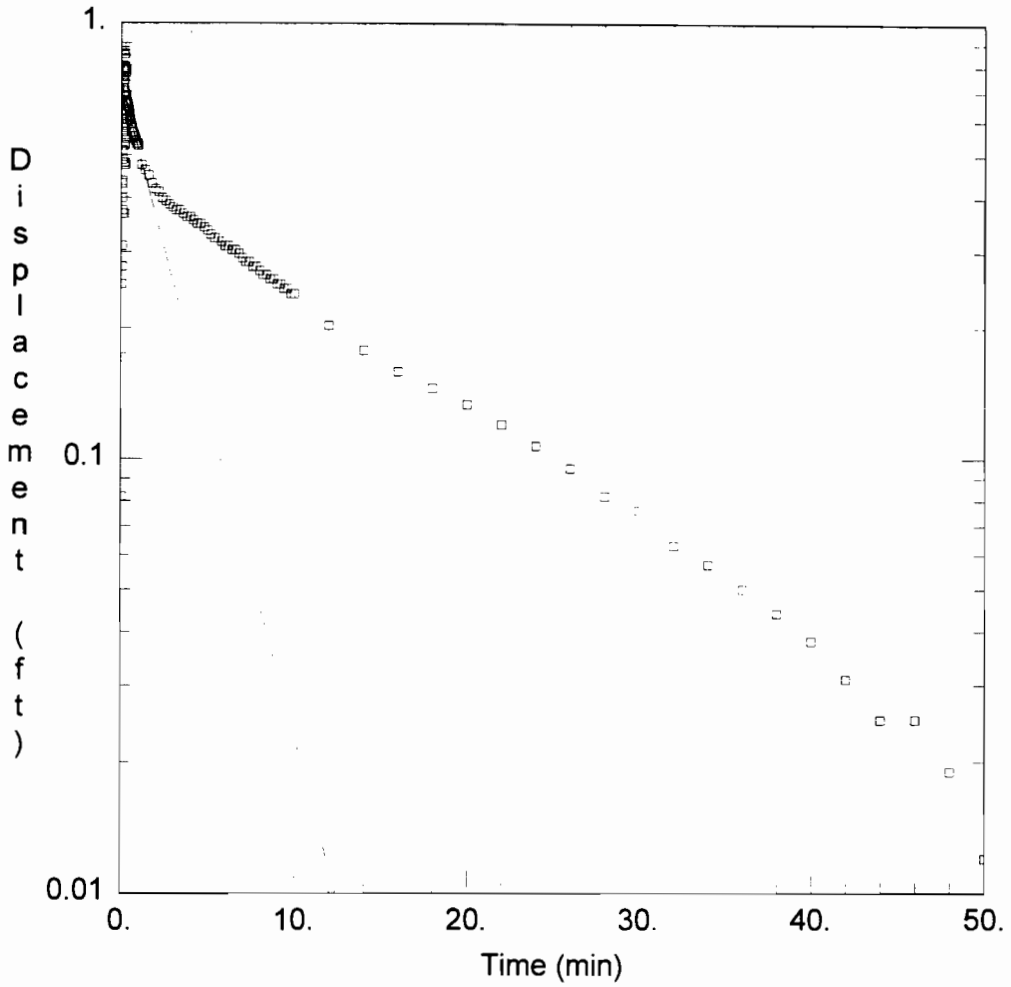
Total Development Time: 100

Development Information:
Well development began at 09:45.
Well purged dry 3 time during development
Well continuously over flows, inserted inflatable bladder to seal well off.

Logged By: James F. Trasher

APPENDIX B-7

Slug Test Data



WELL TEST ANALYSIS

Data Set: H:\GEO\6967\MW6UNFHT.AQT
Date: 11/10/98 Time: 14:45:06

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Test Location: Town of Salina Landfill
Test Well: MW-6 FHT
Test Date: 8/17/98

AQUIFER DATA

Saturated Thickness: 10. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 0.881 ft
Water Column Height: 7. ft
Casing Radius: 0.08 ft
Wellbore Radius: 0.67 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.35

SOLUTION

Aquifer Model: Unconfined
K = 0.002231 cm/sec

Data Set: H:\GEO\6967\MW6UNFHT.AQT
Date: 11/10/98
Time: 14:42:46

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Location: Town of Salina Landfill
Test Date: 8/17/98
Test Well: MW-6 FHT

AQUIFER DATA

Saturated Thickness: 10. ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Nurnber of observation wells: 1

Observation Well No. 1: MW-6 FHT

X Location: 0. ft
Y Location: 0. ft

No. of observations: 185

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.07	0.082	0.2766	0.646	2.	0.418
0.0733	0.253	0.28	0.545	2.2	0.412
0.0766	0.171	0.2833	0.786	2.4	0.399
0.08	0.278	0.2866	0.646	2.6	0.393
0.0833	0.399	0.29	0.621	2.8	0.386
0.0866	0.31	0.2933	0.684	3.	0.38
0.09	0.431	0.2966	0.653	3.2	0.374
0.0933	0.374	0.3	0.653	3.4	0.374
0.0966	0.418	0.3033	0.773	3.6	0.367
0.1	0.437	0.3066	0.583	3.8	0.361
0.1033	0.488	0.31	0.653	4.	0.361
0.1066	0.513	0.3133	0.684	4.2	0.355
0.11	0.602	0.3166	0.646	4.4	0.348
0.1133	0.367	0.32	0.659	4.6	0.348
0.1166	0.621	0.3233	0.665	4.8	0.342
0.12	0.589	0.3266	0.659	5.	0.336
0.1233	0.564	0.33	0.659	5.2	0.329
0.1266	0.621	0.3333	0.659	5.4	0.323

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.13	0.646	0.35	0.659	5.6	0.323
0.1333	0.634	0.3666	0.659	5.8	0.317
0.1366	0.71	0.3833	0.653	6.	0.31
0.14	0.697	0.4	0.653	6.2	0.31
0.1433	0.799	0.4166	0.646	6.4	0.304
0.1466	0.583	0.4333	0.64	6.6	0.304
0.15	0.71	0.45	0.634	6.8	0.298
0.1533	0.78	0.4666	0.627	7.	0.291
0.1566	0.627	0.4833	0.621	7.2	0.285
0.16	0.722	0.5	0.615	7.4	0.285
0.1633	0.741	0.5166	0.608	7.6	0.278
0.1666	0.773	0.5333	0.602	7.8	0.278
0.17	0.741	0.55	0.596	8.	0.272
0.1733	0.722	0.5666	0.589	8.2	0.266
0.1766	0.735	0.5833	0.589	8.4	0.266
0.18	0.78	0.6	0.583	8.6	0.26
0.1833	0.729	0.6166	0.577	8.8	0.26
0.1866	0.481	0.6333	0.577	9.	0.253
0.19	0.849	0.65	0.57	9.2	0.253
0.1933	0.621	0.6666	0.57	9.4	0.247
0.1966	0.564	0.6833	0.564	9.6	0.247
0.2	0.697	0.7	0.564	9.8	0.24
0.2033	0.634	0.7166	0.558	10.	0.24
0.2066	0.367	0.7333	0.558	12.	0.202
0.21	0.577	0.75	0.558	14.	0.177
0.2133	0.881	0.7666	0.551	16.	0.158
0.2166	0.862	0.7833	0.551	18.	0.145
0.22	0.526	0.8	0.551	20.	0.133
0.2233	0.481	0.8166	0.545	22.	0.12
0.2266	0.792	0.8333	0.545	24.	0.107
0.23	0.786	0.85	0.539	26.	0.095
0.2333	0.532	0.8666	0.539	28.	0.082
0.2366	0.678	0.8833	0.539	30.	0.076
0.24	0.691	0.9	0.532	32.	0.063
0.2433	0.627	0.9166	0.532	34.	0.057
0.2466	0.659	0.9333	0.532	36.	0.05
0.25	0.665	0.95	0.532	38.	0.044
0.2533	0.653	0.9666	0.532	40.	0.038
0.2566	0.659	0.9833	0.526	42.	0.031
0.26	0.659	1.	0.526	44.	0.025
0.2633	0.665	1.2	0.475	46.	0.025
0.2666	0.754	1.4	0.462	48.	0.019
0.27	0.475	1.6	0.45	50.	0.012
0.2733	0.83	1.8	0.431		

SOLUTION

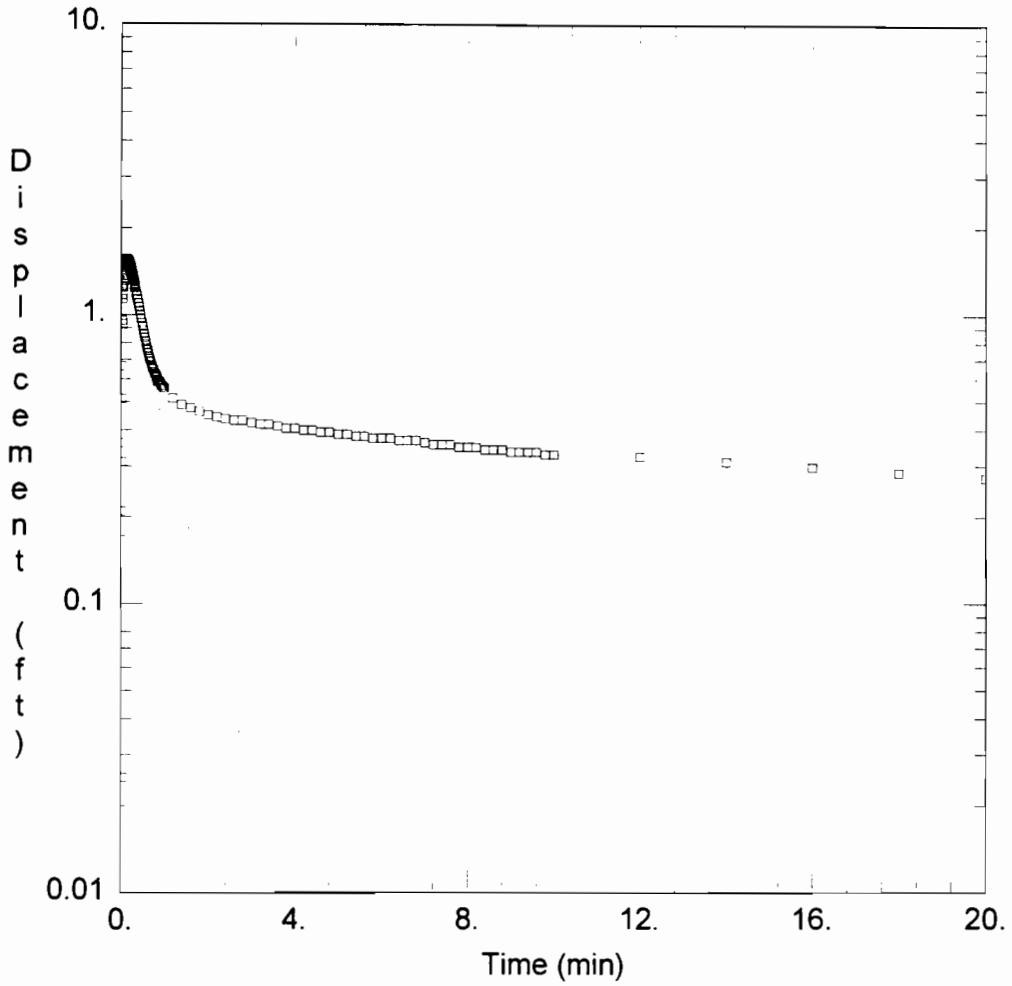
Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.002231	cm/sec
y0	0.7263	ft



WELL TEST ANALYSIS

Data Set: A:\6967\MW6UNRHT.AQT
Date: 11/09/98 Time: 17:42:53

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Test Location: Town of Salina Landfill
Test Well: MW-6 RHT
Test Date: 8/17/98

AQUIFER DATA

Saturated Thickness: 10. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 1.559 ft
Water Column Height: 7. ft
Casing Radius: 0.08 ft
Wellbore Radius: 0.67 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.35

SOLUTION

Aquifer Model: Unconfined
K = 0.009056 cm/sec

Data Set: H:\GEO\6967\MW6UNRHT.AQT
Date: 11/10/98
Time: 14:30:32

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Location: Town of Salina Landfill
Test Date: 8/17/98
Test Well: MW-6 RHT

AQUIFER DATA

Saturated Thickness: 10. ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: MW-6 RHT

X Location: 0. ft
Y Location: 0. ft

No. of observations: 204

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0033	0.177	0.2333	1.451	0.9666	0.564
0.0066	0.361	0.2366	1.445	0.9833	0.557
0.01	0.209	0.24	1.439	1.	0.557
0.0133	0.31	0.2433	1.432	1.2	0.513
0.0166	0.513	0.2466	1.426	1.4	0.488
0.0233	1.255	0.25	1.42	1.6	0.475
0.0266	0.665	0.2533	1.413	1.8	0.462
0.03	0.025	0.2566	1.401	2.	0.45
0.0333	1.134	0.26	1.394	2.2	0.443
0.0366	0.957	0.2633	1.388	2.4	0.437
0.04	0.932	0.2666	1.382	2.6	0.431
0.0433	1.172	0.27	1.375	2.8	0.431
0.0466	1.261	0.2733	1.369	3.	0.424
0.05	1.248	0.2766	1.363	3.2	0.418
0.0533	1.28	0.28	1.356	3.4	0.418
0.0566	1.318	0.2833	1.344	3.6	0.412
0.06	1.375	0.2866	1.337	3.8	0.405
0.0633	1.394	0.29	1.331	4.	0.405

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0666	1.407	0.2933	1.325	4.2	0.399
0.07	1.42	0.2966	1.318	4.4	0.399
0.0733	1.439	0.3	1.312	4.6	0.393
0.0766	1.458	0.3033	1.306	4.8	0.393
0.08	1.47	0.3066	1.299	5.	0.386
0.0833	1.483	0.31	1.287	5.2	0.386
0.0866	1.496	0.3133	1.28	5.4	0.38
0.09	1.502	0.3166	1.274	5.6	0.38
0.0933	1.508	0.32	1.268	5.8	0.374
0.0966	1.521	0.3233	1.261	6.	0.374
0.1	1.527	0.3266	1.255	6.2	0.374
0.1033	1.534	0.33	1.248	6.4	0.367
0.1066	1.54	0.3333	1.242	6.6	0.367
0.11	1.54	0.35	1.204	6.8	0.367
0.1133	1.553	0.3666	1.172	7.	0.361
0.1166	1.553	0.3833	1.134	7.2	0.355
0.12	1.553	0.4	1.096	7.4	0.355
0.1233	1.559	0.4166	1.065	7.6	0.355
0.1266	1.559	0.4333	1.033	7.8	0.348
0.13	1.559	0.45	1.001	8.	0.348
0.1333	1.559	0.4666	0.97	8.2	0.348
0.1366	1.559	0.4833	0.938	8.4	0.342
0.14	1.565	0.5	0.913	8.6	0.342
0.1433	1.559	0.5166	0.887	8.8	0.342
0.1466	1.559	0.5333	0.862	9.	0.336
0.15	1.559	0.55	0.836	9.2	0.336
0.1533	1.559	0.5666	0.811	9.4	0.336
0.1566	1.553	0.5833	0.792	9.6	0.336
0.16	1.553	0.6	0.767	9.8	0.329
0.1633	1.553	0.6166	0.754	10.	0.329
0.1666	1.546	0.6333	0.735	12.	0.323
0.17	1.546	0.65	0.716	14.	0.31
0.1733	1.54	0.6666	0.703	16.	0.298
0.1766	1.54	0.6833	0.691	18.	0.285
0.18	1.54	0.7	0.678	20.	0.272
0.1833	1.534	0.7166	0.665	22.	0.266
0.1866	1.527	0.7333	0.653	24.	0.253
0.19	1.521	0.75	0.646	26.	0.24
0.1933	1.521	0.7666	0.634	28.	0.234
0.1966	1.515	0.7833	0.627	30.	0.228
0.2	1.508	0.8	0.621	32.	0.221
0.2033	1.502	0.8166	0.615	34.	0.215
0.2066	1.496	0.8333	0.608	36.	0.209
0.21	1.489	0.85	0.596	38.	0.202
0.2133	1.489	0.8666	0.589	40.	0.196
0.2166	1.483	0.8833	0.589	42.	0.19
0.22	1.477	0.9	0.583	44.	0.183
0.2233	1.47	0.9166	0.576	46.	0.177

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.2266	1.464	0.9333	0.57	48.	0.171
0.23	1.458	0.95	0.564	50.	0.152

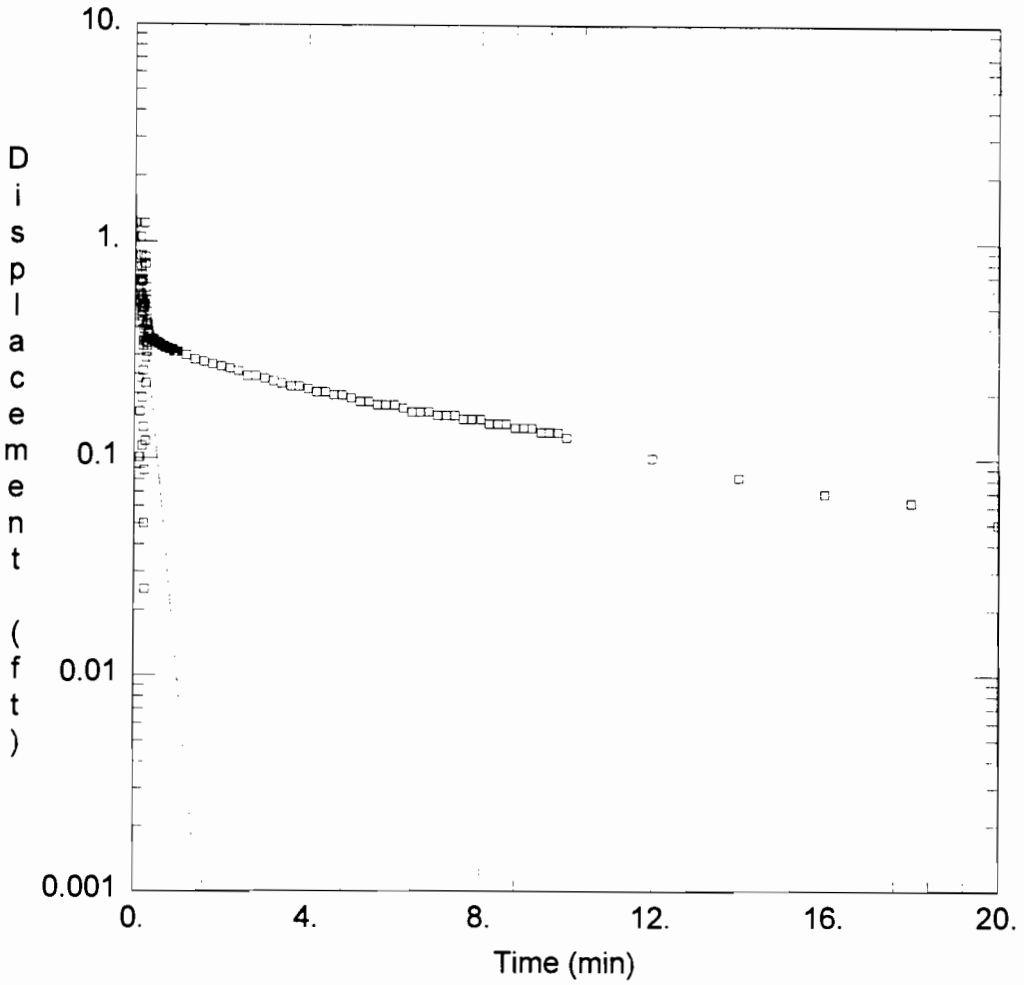
SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.009056	cm/sec
y0	1.618	ft



WELL TEST ANALYSIS

Data Set: A:\6967\MW7UNFHT.AQT
Date: 11/09/98 Time: 17:33:25

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Test Location: Town of Salina Landfill
Test Well: MW-7 FHT
Test Date: 8/17/98

AQUIFER DATA

Saturated Thickness: 9.71 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 1.211 ft
Water Column Height: 9.71 ft
Casing Radius: 0.08 ft
Wellbore Radius: 0.67 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.35

SOLUTION

Aquifer Model: Unconfined
K = 0.03964 cm/sec

Data Set: A:\6967\MW7UNFHT.AQT
Date: 11/09/98
Time: 17:33:32

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Location: Town of Salina Landfill
Test Date: 8/17/98
Test Well: MW-7 FHT

AQUIFER DATA

Saturated Thickness: 9.71 ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: MW-7 FHT

X Location: 0. ft
Y Location: 0. ft

No. of observations: 165

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.1066	0.101	0.2966	0.405	1.8	0.272
0.11	0.234	0.3	0.412	2.	0.266
0.1133	0.615	0.3033	0.374	2.2	0.26
0.1166	0.665	0.3066	0.342	2.4	0.253
0.1233	0.532	0.31	0.348	2.6	0.241
0.1266	1.046	0.3133	0.374	2.8	0.241
0.13	0.862	0.3166	0.386	3.	0.234
0.1333	0.101	0.32	0.38	3.2	0.228
0.1366	0.164	0.3233	0.361	3.4	0.222
0.14	0.564	0.3266	0.355	3.6	0.215
0.1433	0.767	0.33	0.361	3.8	0.215
0.1466	0.659	0.3333	0.374	4.	0.209
0.15	0.45	0.35	0.361	4.2	0.202
0.1533	0.494	0.3666	0.355	4.4	0.202
0.1566	0.653	0.3833	0.355	4.6	0.196
0.16	0.704	0.4	0.355	4.8	0.196
0.1633	0.494	0.4166	0.348	5.	0.19
0.1666	0.475	0.4333	0.348	5.2	0.183

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.17	0.545	0.45	0.355	5.4	0.183
0.1733	0.558	0.4666	0.348	5.6	0.177
0.1766	0.424	0.4833	0.342	5.8	0.177
0.18	0.114	0.5	0.342	6.	0.177
0.1833	0.19	0.5166	0.342	6.2	0.171
0.1866	0.501	0.5333	0.336	6.4	0.164
0.19	0.665	0.55	0.342	6.6	0.164
0.1933	0.539	0.5666	0.336	6.8	0.164
0.1966	0.329	0.5833	0.336	7.	0.158
0.2	0.253	0.6	0.336	7.2	0.158
0.2033	0.348	0.6166	0.329	7.4	0.158
0.2066	0.469	0.6333	0.329	7.6	0.152
0.21	0.393	0.65	0.329	7.8	0.152
0.2133	0.139	0.6666	0.329	8.	0.152
0.2166	0.513	0.6833	0.323	8.2	0.145
0.22	1.211	0.7	0.329	8.4	0.145
0.2233	0.494	0.7166	0.323	8.6	0.145
0.2266	0.05	0.7333	0.323	8.8	0.139
0.2333	0.088	0.75	0.323	9.	0.139
0.2366	0.513	0.7666	0.323	9.2	0.139
0.24	0.849	0.7833	0.323	9.4	0.133
0.2433	0.792	0.8	0.317	9.6	0.133
0.2466	0.348	0.8166	0.317	9.8	0.133
0.25	0.025	0.8333	0.317	10.	0.126
0.2533	0.12	0.85	0.317	12.	0.101
0.2566	0.405	0.8666	0.317	14.	0.082
0.26	0.615	0.8833	0.317	16.	0.069
0.2633	0.539	0.9	0.31	18.	0.063
0.2666	0.342	0.9166	0.31	20.	0.05
0.27	0.222	0.9333	0.31	22.	0.038
0.2733	0.291	0.95	0.31	24.	0.038
0.2766	0.424	0.9666	0.31	26.	0.025
0.28	0.475	0.9833	0.31	28.	0.025
0.2833	0.418	1.	0.31	30.	0.019
0.2866	0.329	1.2	0.298	32.	0.012
0.29	0.31	1.4	0.285	34.	0.006
0.2933	0.361	1.6	0.279	36.	0.006

SOLUTION

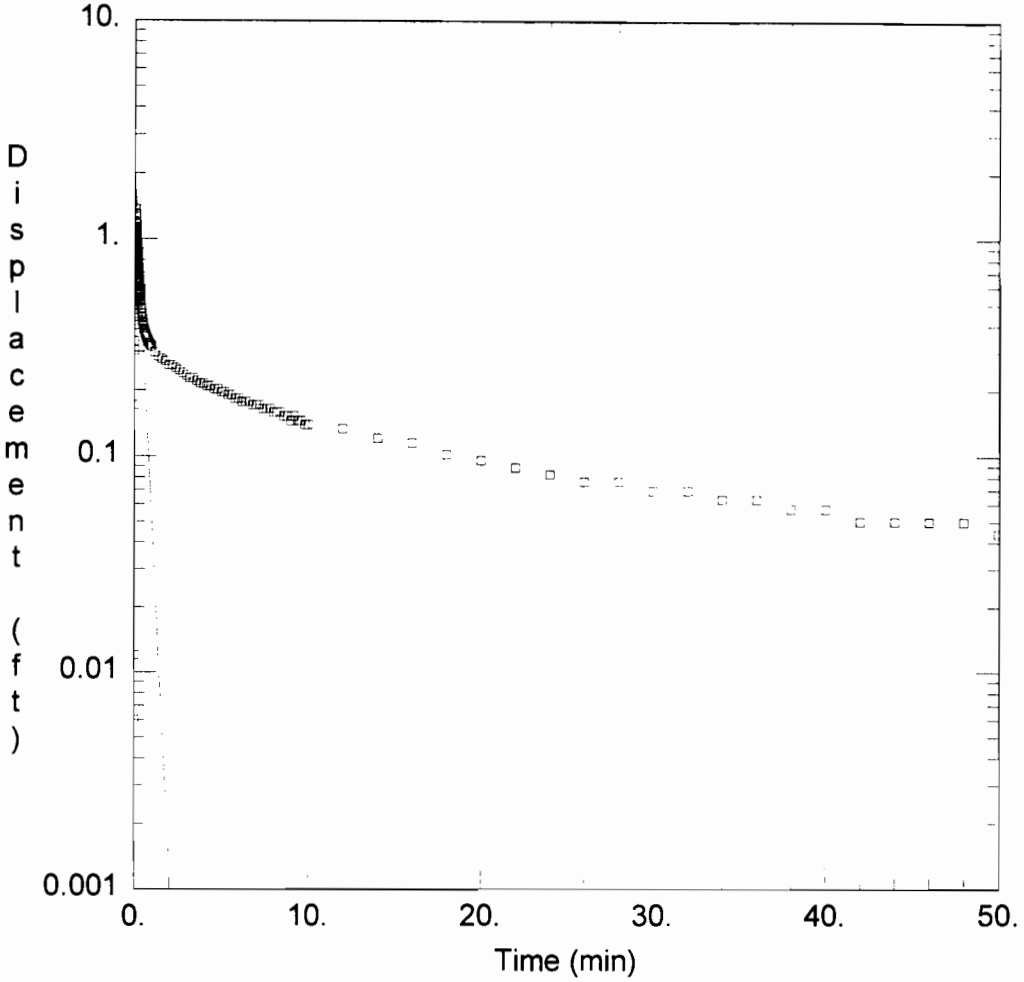
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate

K	0.03964	cm/sec
y0	1.41	ft



WELL TEST ANALYSIS

Data Set: A:\6967\MW7UNRHT.AQT
Date: 11/09/98 Time: 17:36:29

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Test Location: Town of Salina Landfill
Test Well: MW-7 RHT
Test Date: 8/17/98

AQUIFER DATA

Saturated Thickness: 9.71 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 1.369 ft
Water Column Height: 9.71 ft
Casing Radius: 0.08 ft
Wellbore Radius: 0.67 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.35

SOLUTION

Aquifer Model: Unconfined
K = 0.0291 cm/sec

Data Set: H:\GEO\6967\MW7UNRHT.AQT
Date: 11/10/98
Time: 14:28:59

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Location: Town of Salina Landfill
Test Date: 8/17/98
Test Well: MW-7 RHT

AQUIFER DATA

Saturated Thickness: 9.71 ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: MW-7 RHT

X Location: 0. ft
Y Location: 0. ft

No. of observations: 204

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0033	0.006	0.2333	0.703	0.9666	0.323
0.0066	0.336	0.2366	0.697	0.9833	0.317
0.01	0.45	0.24	0.684	1.	0.317
0.0133	0.171	0.2433	0.678	1.2	0.298
0.02	0.012	0.2466	0.672	1.4	0.285
0.0233	1.008	0.25	0.665	1.6	0.279
0.0266	0.399	0.2533	0.659	1.8	0.272
0.03	0.513	0.2566	0.653	2.	0.26
0.0333	0.469	0.26	0.646	2.2	0.26
0.0366	0.304	0.2633	0.634	2.4	0.253
0.04	1.369	0.2666	0.627	2.6	0.247
0.0433	1.173	0.27	0.621	2.8	0.241
0.0466	0.684	0.2733	0.621	3.	0.234
0.05	1.299	0.2766	0.615	3.2	0.228
0.0533	1.299	0.28	0.608	3.4	0.228
0.0566	0.9	0.2833	0.602	3.6	0.221
0.06	1.103	0.2866	0.596	3.8	0.215
0.0633	1.293	0.29	0.589	4.	0.215

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0666	1.078	0.2933	0.583	4.2	0.209
0.07	1.04	0.2966	0.577	4.4	0.209
0.0733	1.198	0.3	0.57	4.6	0.202
0.0766	1.166	0.3033	0.57	4.8	0.202
0.08	1.065	0.3066	0.564	5.	0.196
0.0833	1.122	0.31	0.558	5.2	0.196
0.0866	1.166	0.3133	0.551	5.4	0.19
0.09	1.103	0.3166	0.551	5.6	0.19
0.0933	1.09	0.32	0.545	5.8	0.183
0.0966	1.128	0.3233	0.539	6.	0.183
0.1	1.109	0.3266	0.539	6.2	0.177
0.1033	1.078	0.33	0.532	6.4	0.177
0.1066	1.084	0.3333	0.526	6.6	0.177
0.11	1.097	0.35	0.513	6.8	0.171
0.1133	1.071	0.3666	0.494	7.	0.171
0.1166	1.052	0.3833	0.475	7.2	0.171
0.12	1.059	0.4	0.462	7.4	0.164
0.1233	1.052	0.4166	0.45	7.6	0.164
0.1266	1.033	0.4333	0.437	7.8	0.164
0.13	1.02	0.45	0.431	8.	0.158
0.1333	1.02	0.4666	0.418	8.2	0.158
0.1366	1.008	0.4833	0.412	8.4	0.158
0.14	0.989	0.5	0.405	8.6	0.152
0.1433	0.982	0.5166	0.399	8.8	0.152
0.1466	0.982	0.5333	0.393	9.	0.145
0.15	0.963	0.55	0.386	9.2	0.152
0.1533	0.951	0.5666	0.38	9.4	0.145
0.1566	0.944	0.5833	0.38	9.6	0.145
0.16	0.932	0.6	0.374	9.8	0.139
0.1633	0.919	0.6166	0.367	10.	0.139
0.1666	0.9	0.6333	0.367	12.	0.133
0.17	0.894	0.65	0.361	14.	0.12
0.1733	0.887	0.6666	0.361	16.	0.114
0.1766	0.875	0.6833	0.355	18.	0.101
0.18	0.862	0.7	0.355	20.	0.095
0.1833	0.849	0.7166	0.348	22.	0.088
0.1866	0.843	0.7333	0.348	24.	0.082
0.19	0.83	0.75	0.342	26.	0.076
0.1933	0.818	0.7666	0.342	28.	0.076
0.1966	0.805	0.7833	0.342	30.	0.069
0.2	0.799	0.8	0.336	32.	0.069
0.2033	0.786	0.8166	0.336	34.	0.063
0.2066	0.773	0.8333	0.336	36.	0.063
0.21	0.767	0.85	0.329	38.	0.057
0.2133	0.754	0.8666	0.329	40.	0.057
0.2166	0.748	0.8833	0.329	42.	0.05
0.22	0.735	0.9	0.329	44.	0.05
0.2233	0.729	0.9166	0.323	46.	0.05

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.2266	0.722	0.9333	0.323	48.	0.05
0.23	0.71	0.95	0.323	50.	0.044

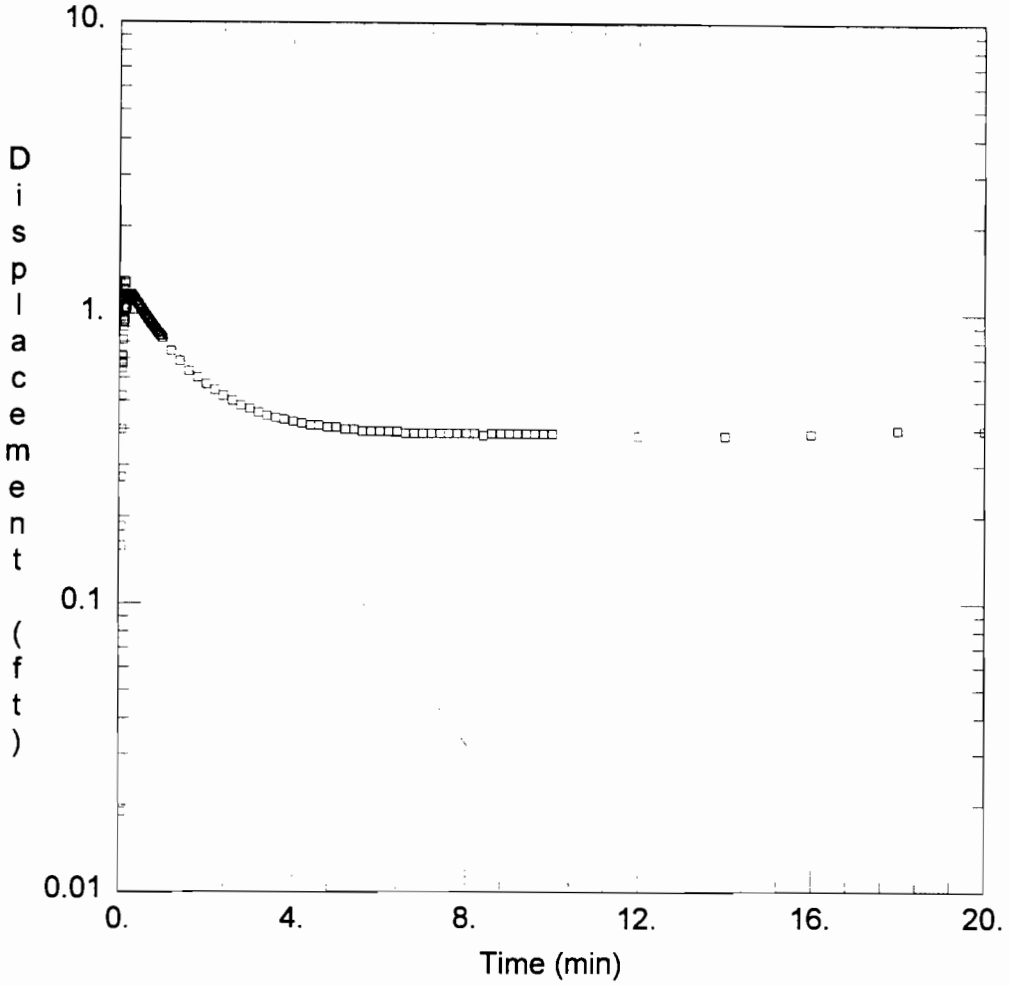
SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.0291	cm/sec
y0	2.003	ft



WELL TEST ANALYSIS

Data Set:
Date: 11/10/98 Time: 10:16:38

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Test Location: Town of Salina Landfill
Test Well: MW-8 FHT
Test Date: 8/17/98

AQUIFER DATA

Saturated Thickness: 9.19 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 1.294 ft
Water Column Height: 9.19 ft
Casing Radius: 0.08 ft
Wellbore Radius: 0.67 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.35

SOLUTION

Aquifer Model: Unconfined
K = 0.003681 cm/sec

Data Set: H:\GEO\6967\MW8UNFHT.AQT
Date: 11/10/98
Time: 14:28:18

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Location: Town of Salina Landfill
Test Date: 8/17/98
Test Well: MW-8 FHT

AQUIFER DATA

Saturated Thickness: 9.19 ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: MW-8 FHT

X Location: 0. ft
Y Location: 0. ft

No. of observations: 207

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.05	0.019	0.28	1.155	3.6	0.437
0.0533	0.158	0.2833	1.155	3.8	0.431
0.0566	0.184	0.2866	1.155	4.	0.425
0.06	0.272	0.29	1.155	4.2	0.418
0.0633	0.399	0.2933	1.155	4.4	0.412
0.0666	0.52	0.2966	1.155	4.6	0.412
0.07	0.647	0.3	1.148	4.8	0.406
0.0733	0.71	0.3033	1.148	5.	0.406
0.0766	0.717	0.3066	1.148	5.2	0.399
0.08	0.672	0.31	1.142	5.4	0.399
0.0833	0.679	0.3133	1.148	5.6	0.393
0.0866	0.812	0.3166	1.148	5.8	0.393
0.09	0.977	0.32	1.142	6.	0.393
0.0933	1.142	0.3233	1.142	6.2	0.393
0.0966	1.212	0.3266	1.142	6.4	0.393
0.1	1.174	0.33	1.142	6.6	0.387
0.1033	1.015	0.3333	1.136	6.8	0.387
0.1066	0.901	0.35	1.129	7.	0.387

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.11	0.939	0.3666	1.117	7.2	0.387
0.1133	1.072	0.3833	1.104	7.4	0.387
0.1166	1.167	0.4	1.097	7.6	0.387
0.12	1.066	0.4166	1.085	7.8	0.387
0.1233	1.072	0.4333	1.078	8.	0.387
0.1266	1.028	0.45	1.072	8.2	0.387
0.13	0.951	0.4666	1.066	8.4	0.38
0.1333	1.034	0.4833	1.047	8.6	0.387
0.1366	1.205	0.5	1.047	8.8	0.387
0.14	1.294	0.5166	1.034	9.	0.387
0.1433	1.275	0.5333	1.028	9.2	0.387
0.1466	1.148	0.55	1.015	9.4	0.387
0.15	1.097	0.5666	1.009	9.6	0.387
0.1533	1.04	0.5833	0.996	9.8	0.387
0.1566	1.047	0.6	0.99	10.	0.387
0.16	1.072	0.6166	0.983	12.	0.38
0.1633	1.161	0.6333	0.977	14.	0.38
0.1666	1.053	0.65	0.964	16.	0.387
0.17	1.136	0.6666	0.958	18.	0.399
0.1733	1.097	0.6833	0.951	20.	0.399
0.1766	1.136	0.7	0.945	22.	0.393
0.18	1.129	0.7166	0.932	24.	0.399
0.1833	1.148	0.7333	0.926	26.	0.399
0.1866	1.142	0.75	0.92	28.	0.406
0.19	1.155	0.7666	0.913	30.	0.406
0.1933	1.155	0.7833	0.907	32.	0.406
0.1966	1.155	0.8	0.894	34.	0.406
0.2	1.155	0.8166	0.894	36.	0.412
0.2033	1.155	0.8333	0.882	38.	0.412
0.2066	1.155	0.85	0.882	40.	0.412
0.21	1.161	0.8666	0.869	42.	0.412
0.2133	1.161	0.8833	0.863	44.	0.412
0.2166	1.161	0.9	0.856	46.	0.412
0.22	1.161	0.9166	0.856	48.	0.412
0.2233	1.161	0.9333	0.844	50.	0.412
0.2266	1.161	0.95	0.844	52.	0.412
0.23	1.161	0.9666	0.837	54.	0.412
0.2333	1.161	0.9833	0.825	56.	0.406
0.2366	1.161	1.	0.825	58.	0.412
0.24	1.167	1.2	0.742	60.	0.406
0.2433	1.167	1.4	0.685	62.	0.406
0.2466	1.161	1.6	0.634	64.	0.406
0.25	1.167	1.8	0.602	66.	0.406
0.2533	1.161	2.	0.571	68.	0.412
0.2566	1.161	2.2	0.545	70.	0.412
0.26	1.161	2.4	0.52	72.	0.412
0.2633	1.161	2.6	0.501	74.	0.412
0.2666	1.161	2.8	0.482	76.	0.412

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.27	1.167	3.	0.469	78.	0.412
0.2733	1.155	3.2	0.456	80.	0.412
0.2766	1.161	3.4	0.444	82.	0.412

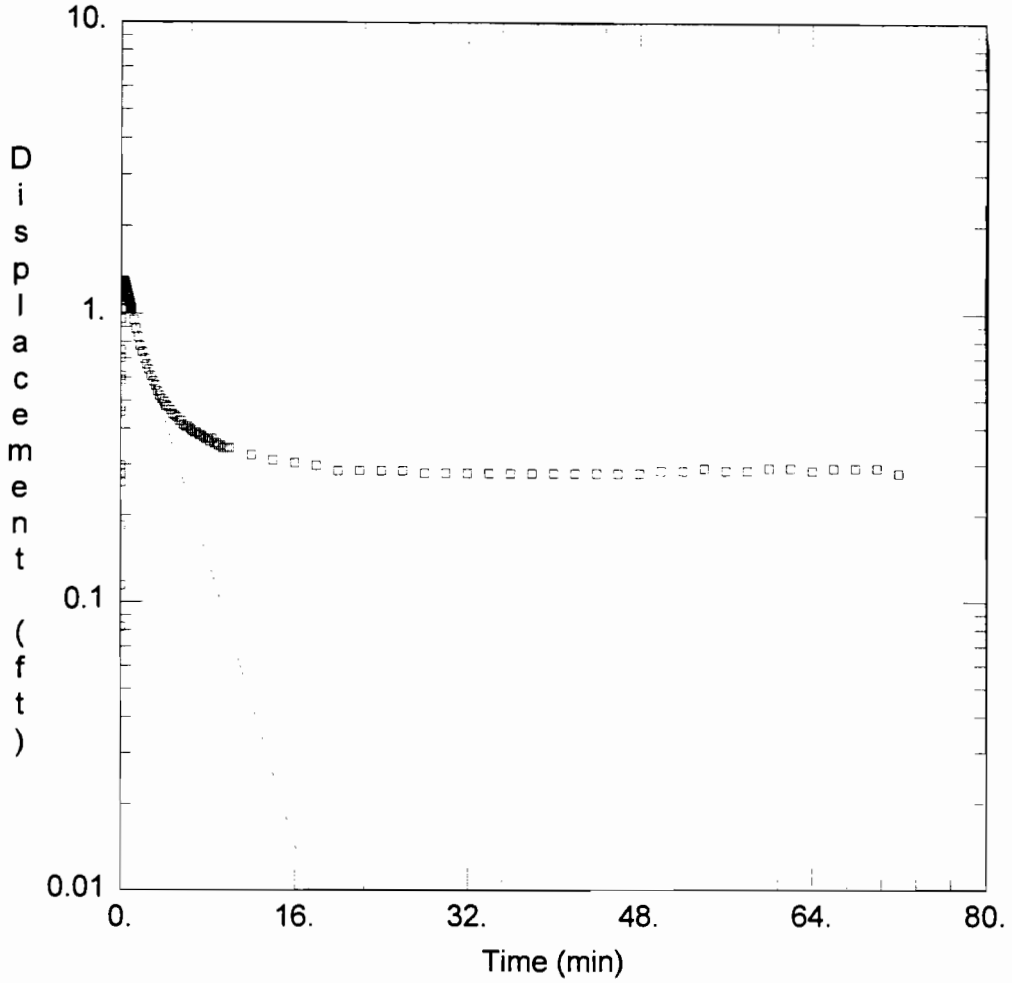
SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.003681	cm/sec
y0	1.378	ft



WELL TEST ANALYSIS

Data Set:
Date: 11/10/98 Time: 10:21:59

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Test Location: Town of Salina Landfill
Test Well: MW-8 RHT
Test Date: 8/17/98

AQUIFER DATA

Saturated Thickness: 9.19 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 1.3 ft
Casing Radius: 0.08 ft
Screen Length: 10. ft
Water Column Height: 9.19 ft
Wellbore Radius: 0.67 ft
Gravel Pack Porosity: 0.35

SOLUTION

Aquifer Model: Unconfined
K = 0.002233 cm/sec

Data Set: H:\GEO\6967\MW8UNRHT.AQT
Date: 11/10/98
Time: 14:25:12

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Location: Town of Salina Landfill
Test Date: 8/17/98
Test Well: MW-8 RHT

AQUIFER DATA

Saturated Thickness: 9.19 ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: MW-8 RHT

X Location: 0. ft
Y Location: 0. ft

No. of observations: 214

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0066	0.082	0.25	1.3	2.4	0.666
0.01	0.279	0.2533	1.3	2.6	0.64
0.0133	0.456	0.2566	1.3	2.8	0.609
0.0166	0.298	0.26	1.3	3.	0.583
0.02	0.114	0.2633	1.3	3.2	0.564
0.0233	0.184	0.2666	1.3	3.4	0.539
0.03	0.26	0.27	1.3	3.6	0.52
0.0333	0.475	0.2733	1.3	3.8	0.507
0.0366	0.609	0.2766	1.294	4.	0.495
0.04	0.59	0.28	1.294	4.2	0.482
0.0433	0.704	0.2833	1.294	4.4	0.475
0.0466	0.748	0.2866	1.294	4.6	0.463
0.05	0.958	0.29	1.294	4.8	0.45
0.0533	1.142	0.2933	1.294	5.	0.444
0.0566	1.11	0.2966	1.294	5.2	0.437
0.06	1.034	0.3	1.288	5.4	0.425
0.0633	1.04	0.3033	1.288	5.6	0.425
0.0666	1.135	0.3066	1.288	5.8	0.412

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.07	1.154	0.31	1.288	6.	0.406
0.0733	1.104	0.3133	1.288	6.2	0.406
0.0766	1.11	0.3166	1.288	6.4	0.399
0.08	1.154	0.32	1.288	6.6	0.393
0.0833	1.173	0.3233	1.288	6.8	0.387
0.0866	1.161	0.3266	1.288	7.	0.387
0.09	1.161	0.33	1.281	7.2	0.38
0.0933	1.186	0.3333	1.281	7.4	0.38
0.0966	1.199	0.35	1.281	7.6	0.374
0.1	1.199	0.3666	1.275	7.8	0.368
0.1033	1.199	0.3833	1.269	8.	0.368
0.1066	1.212	0.4	1.262	8.2	0.361
0.11	1.231	0.4166	1.25	8.4	0.368
0.1133	1.231	0.4333	1.243	8.6	0.355
0.1166	1.231	0.45	1.237	8.8	0.355
0.12	1.243	0.4666	1.231	9.	0.349
0.1233	1.243	0.4833	1.224	9.2	0.349
0.1266	1.256	0.5	1.218	9.4	0.342
0.13	1.256	0.5166	1.212	9.6	0.342
0.1333	1.256	0.5333	1.205	9.8	0.342
0.1366	1.262	0.55	1.199	10.	0.342
0.14	1.262	0.5666	1.192	12.	0.323
0.1433	1.269	0.5833	1.186	14.	0.31
0.1466	1.269	0.6	1.18	16.	0.304
0.15	1.275	0.6166	1.173	18.	0.298
0.1533	1.275	0.6333	1.167	20.	0.285
0.1566	1.275	0.65	1.161	22.	0.285
0.16	1.281	0.6666	1.154	24.	0.285
0.1633	1.281	0.6833	1.148	26.	0.285
0.1666	1.281	0.7	1.142	28.	0.279
0.17	1.288	0.7166	1.135	30.	0.279
0.1733	1.288	0.7333	1.123	32.	0.279
0.1766	1.288	0.75	1.123	34.	0.279
0.18	1.294	0.7666	1.11	36.	0.279
0.1833	1.294	0.7833	1.11	38.	0.279
0.1866	1.294	0.8	1.104	40.	0.279
0.19	1.294	0.8166	1.097	42.	0.279
0.1933	1.294	0.8333	1.091	44.	0.279
0.1966	1.294	0.85	1.085	46.	0.279
0.2	1.294	0.8666	1.078	48.	0.279
0.2033	1.3	0.8833	1.072	50.	0.285
0.2066	1.294	0.9	1.066	52.	0.285
0.21	1.3	0.9166	1.059	54.	0.291
0.2133	1.3	0.9333	1.053	56.	0.285
0.2166	1.3	0.95	1.053	58.	0.285
0.22	1.3	0.9666	1.047	60.	0.291
0.2233	1.3	0.9833	1.04	62.	0.291
0.2266	1.3	1.	1.034	64.	0.285

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.23	1.3	1.2	0.951	66.	0.291
0.2333	1.3	1.4	0.888	68.	0.291
0.2366	1.3	1.6	0.831	70.	0.291
0.24	1.3	1.8	0.774	72.	0.279
0.2433	1.3	2.	0.736		
0.2466	1.3	2.2	0.698		

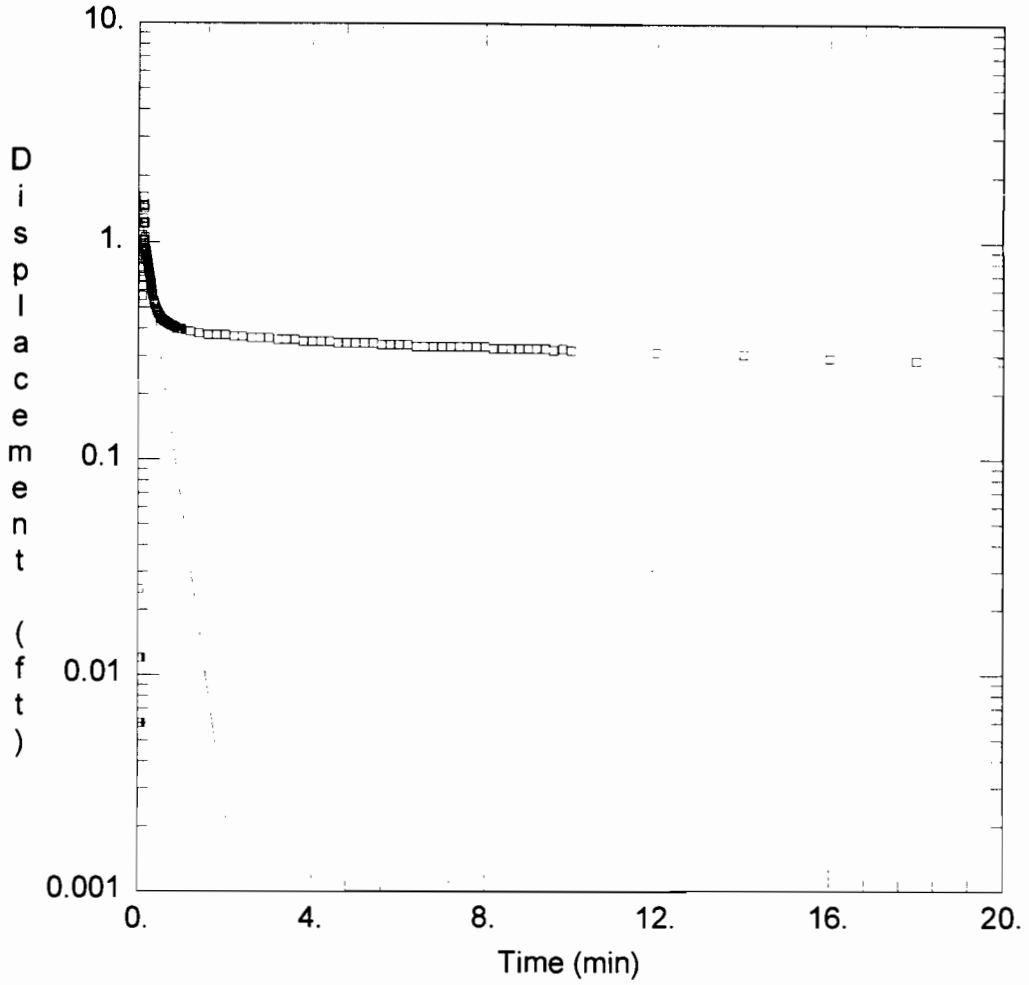
SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.002233	cm/sec
y0	1.352	ft



WELL TEST ANALYSIS

Data Set: A:\6967\MW9FHT.AQT
Date: 11/10/98 Time: 11:04:26

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Test Location: Town of Salina Landfill
Test Well: MW-9 FHT
Test Date: 8/17/98

AQUIFER DATA

Saturated Thickness: 10.02 ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 1.478 ft Water Column Height: 10.02 ft
Casing Radius: 0.08 ft Wellbore Radius: 0.67 ft
Screen Length: 10. ft Gravel Pack Porosity: 0.35

SOLUTION

Aquifer Model: Unconfined K = 0.03922 cm/sec

Data Set: A:\6967\MW9FHT.AQT
Date: 11/10/98
Time: 10:59:05

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Location: Town of Salina Landfill
Test Date: 8/17/98
Test Well: MW-9 FHT

AQUIFER DATA

Saturated Thickness: 10.02 ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: MW-9 FHT

X Location: 0. ft
Y Location: 0. ft

No. of observations: 209

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0033	0.006	0.2433	0.736	1.6	0.374
0.0066	0.012	0.2466	0.729	1.8	0.374
0.01	0.006	0.25	0.717	2.	0.374
0.02	0.012	0.2533	0.717	2.2	0.367
0.0233	0.025	0.2566	0.704	2.4	0.367
0.0266	0.012	0.26	0.698	2.6	0.361
0.03	0.012	0.2633	0.691	2.8	0.361
0.0333	0.012	0.2666	0.685	3.	0.361
0.0366	0.012	0.27	0.678	3.2	0.355
0.04	0.006	0.2733	0.672	3.4	0.355
0.0433	0.012	0.2766	0.666	3.6	0.355
0.0466	0.012	0.28	0.659	3.8	0.348
0.05	0.006	0.2833	0.653	4.	0.348
0.0533	0.012	0.2866	0.647	4.2	0.348
0.0566	0.012	0.29	0.634	4.4	0.348
0.06	0.006	0.2933	0.628	4.6	0.342
0.0633	0.012	0.2966	0.621	4.8	0.342
0.0666	0.012	0.3	0.615	5.	0.342

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.07	0.006	0.3033	0.609	5.2	0.342
0.0733	0.012	0.3066	0.602	5.4	0.342
0.0766	0.564	0.31	0.596	5.6	0.336
0.08	1.072	0.3133	0.59	5.8	0.336
0.0833	0.691	0.3166	0.59	6.	0.336
0.0866	0.628	0.32	0.583	6.2	0.336
0.09	0.767	0.3233	0.577	6.4	0.329
0.0933	0.92	0.3266	0.571	6.6	0.329
0.0966	0.869	0.33	0.564	6.8	0.329
0.1	0.901	0.3333	0.564	7.	0.329
0.1033	1.173	0.35	0.539	7.2	0.329
0.1066	1.465	0.3666	0.526	7.4	0.329
0.11	1.275	0.3833	0.513	7.6	0.329
0.1133	1.015	0.4	0.501	7.8	0.329
0.1166	1.212	0.4166	0.488	8.	0.329
0.12	1.459	0.4333	0.482	8.2	0.323
0.1233	1.611	0.45	0.475	8.4	0.323
0.1266	1.478	0.4666	0.469	8.6	0.323
0.13	1.021	0.4833	0.463	8.8	0.323
0.1333	0.932	0.5	0.456	9.	0.323
0.1366	1.224	0.5166	0.45	9.2	0.323
0.14	1.427	0.5333	0.444	9.4	0.323
0.1433	1.218	0.55	0.444	9.6	0.317
0.1466	0.977	0.5666	0.437	9.8	0.323
0.15	0.831	0.5833	0.437	10.	0.317
0.1533	1.047	0.6	0.431	12.	0.31
0.1566	0.907	0.6166	0.431	14.	0.304
0.16	0.932	0.6333	0.431	16.	0.291
0.1633	0.869	0.65	0.425	18.	0.285
0.1666	0.901	0.6666	0.425	20.	0.285
0.17	0.907	0.6833	0.425	22.	0.285
0.1733	0.907	0.7	0.418	24.	0.279
0.1766	0.913	0.7166	0.418	26.	0.266
0.18	0.894	0.7333	0.418	28.	0.266
0.1833	0.882	0.75	0.412	30.	0.26
0.1866	0.875	0.7666	0.412	32.	0.253
0.19	0.869	0.7833	0.412	34.	0.253
0.1933	0.862	0.8	0.412	36.	0.26
0.1966	0.85	0.8166	0.406	38.	0.247
0.2	0.843	0.8333	0.406	40.	0.247
0.2033	0.831	0.85	0.406	42.	0.241
0.2066	0.824	0.8666	0.406	44.	0.241
0.21	0.812	0.8833	0.399	46.	0.247
0.2133	0.818	0.9	0.399	48.	0.234
0.2166	0.793	0.9166	0.399	50.	0.234
0.22	0.786	0.9333	0.399	52.	0.228
0.2233	0.78	0.95	0.399	54.	0.228
0.2266	0.774	0.9666	0.399	56.	0.228

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.23	0.767	0.9833	0.399	58.	0.222
0.2333	0.755	1.	0.393	60.	0.222
0.2366	0.748	1.2	0.387	62.	0.222
0.24	0.742	1.4	0.38		

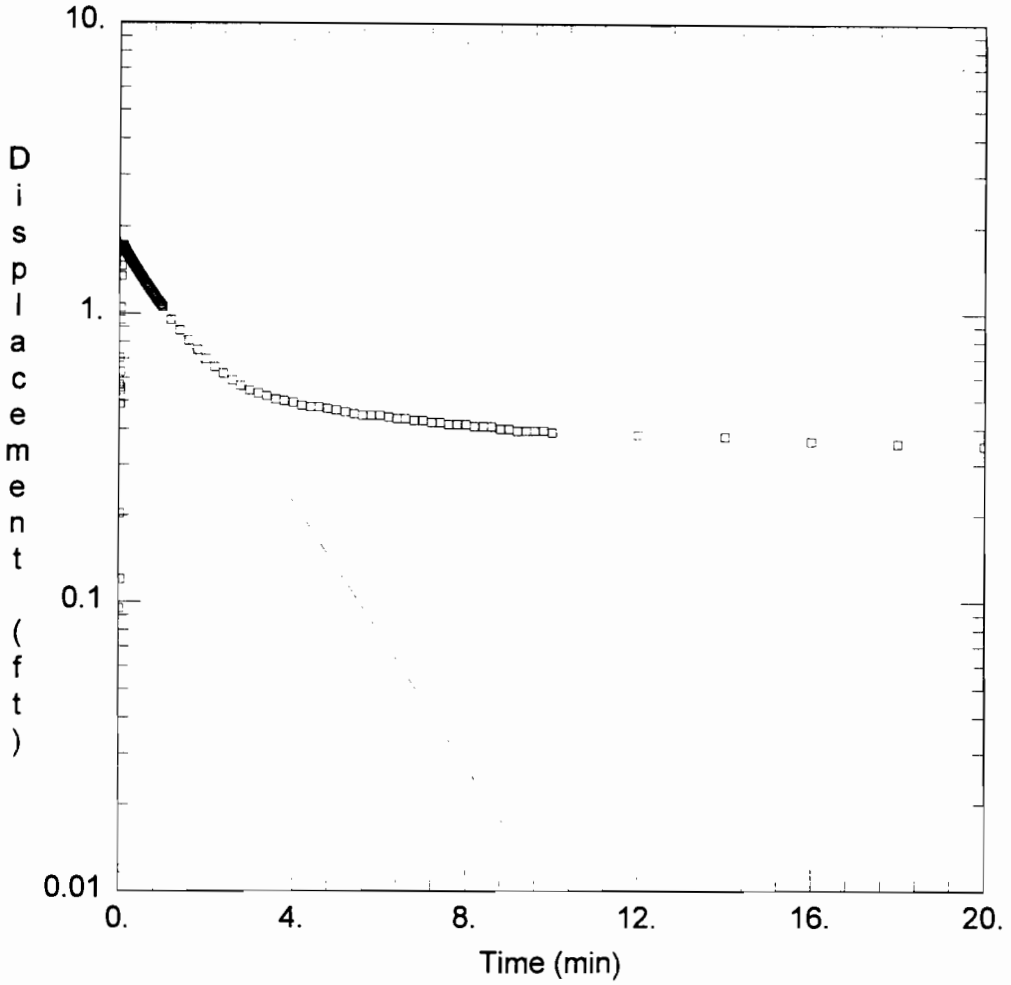
SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.03922	cm/sec
y0	1.606	ft



WELL TEST ANALYSIS

Data Set: A:\6967\MW9RHT.AQT
Date: 11/10/98 Time: 10:52:22

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Test Location: Town of Salina Landfill
Test Well: MW-9 RHT
Test Date: 8/17/98

AQUIFER DATA

Saturated Thickness: 10.02 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 1.719 ft
Water Column Height: 10.02 ft
Casing Radius: 0.08 ft
Wellbore Radius: 0.67 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.35

SOLUTION

Aquifer Model: Unconfined
K = 0.006349 cm/sec

Data Set: A:\6967\MW9RHT.AQT
Date: 11/10/98
Time: 10:52:29

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Location: Town of Salina Landfill
Test Date: 8/17/98
Test Well: MW-9 RHT

AQUIFER DATA

Saturated Thickness: 10.02 ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: MW-9 RHT

X Location: 0. ft
Y Location: 0. ft

No. of observations: 204

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0033	0.095	0.23	1.56	0.95	1.078
0.0066	0.571	0.2333	1.56	0.9666	1.072
0.01	0.488	0.2366	1.56	0.9833	1.065
0.0133	0.012	0.24	1.554	1.	1.053
0.0166	0.203	0.2433	1.554	1.2	0.951
0.02	0.704	0.2466	1.547	1.4	0.875
0.0233	0.545	0.25	1.547	1.6	0.805
0.0266	0.488	0.2533	1.541	1.8	0.748
0.03	0.12	0.2566	1.541	2.	0.697
0.0333	0.558	0.26	1.541	2.2	0.653
0.0366	0.628	0.2633	1.535	2.4	0.621
0.04	1.046	0.2666	1.535	2.6	0.59
0.0433	0.951	0.27	1.528	2.8	0.564
0.0466	1.344	0.2733	1.528	3.	0.545
0.05	1.459	0.2766	1.522	3.2	0.532
0.0533	1.674	0.28	1.522	3.4	0.52
0.0566	1.63	0.2833	1.516	3.6	0.507
0.06	1.681	0.2866	1.516	3.8	0.501

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0633	1.693	0.29	1.509	4.	0.494
0.0666	1.706	0.2933	1.509	4.2	0.482
0.07	1.712	0.2966	1.503	4.4	0.475
0.0733	1.712	0.3	1.503	4.6	0.475
0.0766	1.719	0.3033	1.503	4.8	0.469
0.08	1.719	0.3066	1.497	5.	0.463
0.0833	1.719	0.31	1.497	5.2	0.456
0.0866	1.712	0.3133	1.497	5.4	0.45
0.09	1.712	0.3166	1.49	5.6	0.444
0.0933	1.712	0.32	1.49	5.8	0.444
0.0966	1.706	0.3233	1.484	6.	0.444
0.1	1.693	0.3266	1.484	6.2	0.437
0.1033	1.693	0.33	1.478	6.4	0.431
0.1066	1.687	0.3333	1.478	6.6	0.431
0.11	1.681	0.35	1.465	6.8	0.425
0.1133	1.668	0.3666	1.452	7.	0.425
0.1166	1.668	0.3833	1.44	7.2	0.418
0.12	1.668	0.4	1.427	7.4	0.418
0.1233	1.668	0.4166	1.414	7.6	0.412
0.1266	1.668	0.4333	1.402	7.8	0.412
0.13	1.662	0.45	1.389	8.	0.412
0.1333	1.655	0.4666	1.376	8.2	0.406
0.1366	1.655	0.4833	1.363	8.4	0.406
0.14	1.642	0.5	1.351	8.6	0.406
0.1433	1.649	0.5166	1.344	8.8	0.399
0.1466	1.642	0.5333	1.332	9.	0.399
0.15	1.636	0.55	1.319	9.2	0.393
0.1533	1.63	0.5666	1.306	9.4	0.393
0.1566	1.63	0.5833	1.294	9.6	0.393
0.16	1.63	0.6	1.281	9.8	0.393
0.1633	1.623	0.6166	1.275	10.	0.387
0.1666	1.623	0.6333	1.262	12.	0.38
0.17	1.623	0.65	1.249	14.	0.374
0.1733	1.617	0.6666	1.243	16.	0.361
0.1766	1.611	0.6833	1.23	18.	0.355
0.18	1.611	0.7	1.218	20.	0.349
0.1833	1.604	0.7166	1.211	22.	0.342
0.1866	1.604	0.7333	1.199	24.	0.342
0.19	1.598	0.75	1.192	26.	0.336
0.1933	1.598	0.7666	1.18	28.	0.323
0.1966	1.592	0.7833	1.173	30.	0.323
0.2	1.592	0.8	1.16	32.	0.323
0.2033	1.585	0.8166	1.154	34.	0.323
0.2066	1.585	0.8333	1.141	36.	0.317
0.21	1.579	0.85	1.135	38.	0.317
0.2133	1.579	0.8666	1.122	40.	0.31
0.2166	1.573	0.8833	1.116	42.	0.31
0.22	1.573	0.9	1.103	44.	0.304

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.2233	1.566	0.9166	1.097	46.	0.304
0.2266	1.566	0.9333	1.091	48.	0.291

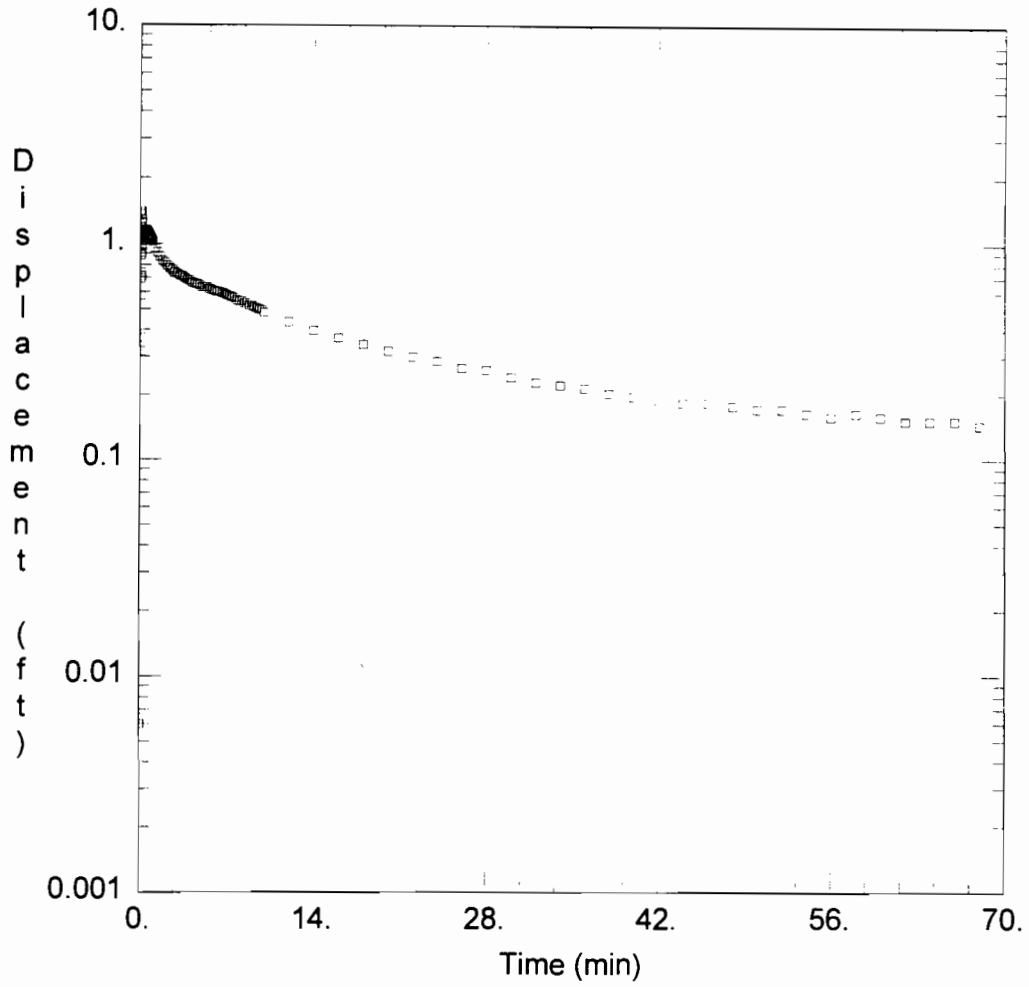
SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.006349	cm/sec
y0	1.821	ft



WELL TEST ANALYSIS

Data Set: A:\6967\MW10UNFH.AQT
Date: 11/10/98 Time: 11:35:36

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Test Location: Town of Salina Landfill
Test Well: MW-10 FHT
Test Date: 8/17/98

AQUIFER DATA

Saturated Thickness: 10.63 ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 1.402 ft Water Column Height: 10.63 ft
Casing Radius: 0.08 ft Wellbore Radius: 0.67 ft
Screen Length: 10. ft Gravel Pack Porosity: 0.35

SOLUTION

Aquifer Model: Unconfined K = 0.003264 cm/sec

Data Set: A:\6967\MW10UNFH.AQT
Date: 11/10/98
Time: 11:39:03

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Location: Town of Salina Landfill
Test Date: 8/17/98
Test Well: MW-10 FHT

AQUIFER DATA

Saturated Thickness: 10.63 ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: MW-10 FHT

X Location: 0. ft
Y Location: 0. ft

No. of observations: 209

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0033	0.006	0.2566	1.129	2.4	0.774
0.0066	0.006	0.26	1.136	2.6	0.761
0.01	0.006	0.2633	1.136	2.8	0.742
0.0133	0.006	0.2666	1.136	3.	0.729
0.0166	0.006	0.27	1.136	3.2	0.717
0.0266	0.006	0.2733	1.136	3.4	0.71
0.0333	0.006	0.2766	1.136	3.6	0.698
0.0366	0.006	0.28	1.136	3.8	0.685
0.0433	0.006	0.2833	1.142	4.	0.678
0.05	0.006	0.2866	1.142	4.2	0.666
0.0533	0.736	0.29	1.136	4.4	0.659
0.0566	0.577	0.2933	1.142	4.6	0.653
0.0633	0.317	0.2966	1.142	4.8	0.647
0.0666	1.028	0.3	1.142	5.	0.634
0.07	1.066	0.3033	1.148	5.2	0.634
0.0733	0.691	0.3066	1.148	5.4	0.634
0.0766	0.882	0.31	1.148	5.6	0.621
0.08	1.186	0.3133	1.148	5.8	0.615

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0833	1.237	0.3166	1.148	6.	0.609
0.0866	1.123	0.32	1.148	6.2	0.602
0.09	1.097	0.3233	1.148	6.4	0.602
0.0933	1.237	0.3266	1.148	6.6	0.596
0.0966	1.364	0.33	1.148	6.8	0.59
0.1	1.11	0.3333	1.148	7.	0.583
0.1033	0.368	0.35	1.155	7.2	0.577
0.1066	0.907	0.3666	1.148	7.4	0.571
0.11	1.402	0.3833	1.155	7.6	0.564
0.1133	1.256	0.4	1.155	7.8	0.552
0.1166	1.11	0.4166	1.161	8.	0.545
0.12	0.71	0.4333	1.155	8.2	0.545
0.1233	0.983	0.45	1.155	8.4	0.533
0.1266	1.034	0.4666	1.155	8.6	0.533
0.13	1.288	0.4833	1.148	8.8	0.52
0.1333	1.136	0.5	1.148	9.	0.52
0.1366	0.996	0.5166	1.148	9.2	0.513
0.14	0.97	0.5333	1.148	9.4	0.507
0.1433	1.078	0.55	1.142	9.6	0.501
0.1466	1.155	0.5666	1.136	9.8	0.494
0.15	1.123	0.5833	1.136	10.	0.482
0.1533	1.053	0.6	1.129	12.	0.437
0.1566	1.034	0.6166	1.123	14.	0.399
0.16	1.085	0.6333	1.123	16.	0.368
0.1633	1.116	0.65	1.116	18.	0.342
0.1666	1.104	0.6666	1.116	20.	0.317
0.17	1.078	0.6833	1.104	22.	0.298
0.1733	1.072	0.7	1.104	24.	0.285
0.1766	1.097	0.7166	1.097	26.	0.266
0.18	1.11	0.7333	1.097	28.	0.26
0.1833	1.104	0.75	1.091	30.	0.241
0.1866	1.091	0.7666	1.091	32.	0.228
0.19	1.091	0.7833	1.085	34.	0.222
0.1933	1.104	0.8	1.078	36.	0.215
0.1966	1.11	0.8166	1.072	38.	0.203
0.2	1.11	0.8333	1.066	40.	0.196
0.2033	1.097	0.85	1.059	42.	0.19
0.2066	1.104	0.8666	1.053	44.	0.184
0.21	1.11	0.8833	1.053	46.	0.184
0.2133	1.116	0.9	1.047	48.	0.177
0.2166	1.116	0.9166	1.047	50.	0.171
0.22	1.11	0.9333	1.034	52.	0.171
0.2233	1.116	0.95	1.028	54.	0.164
0.2266	1.116	0.9666	1.028	56.	0.158
0.23	1.123	0.9833	1.021	58.	0.164
0.2333	1.123	1.	1.021	60.	0.158
0.2366	1.129	1.2	0.951	62.	0.152
0.24	1.123	1.4	0.913	64.	0.152

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.2433	1.129	1.6	0.875	66.	0.152
0.2466	1.129	1.8	0.837	68.	0.145
0.25	1.129	2.	0.818	70.	0.145
0.2533	1.129	2.2	0.793		

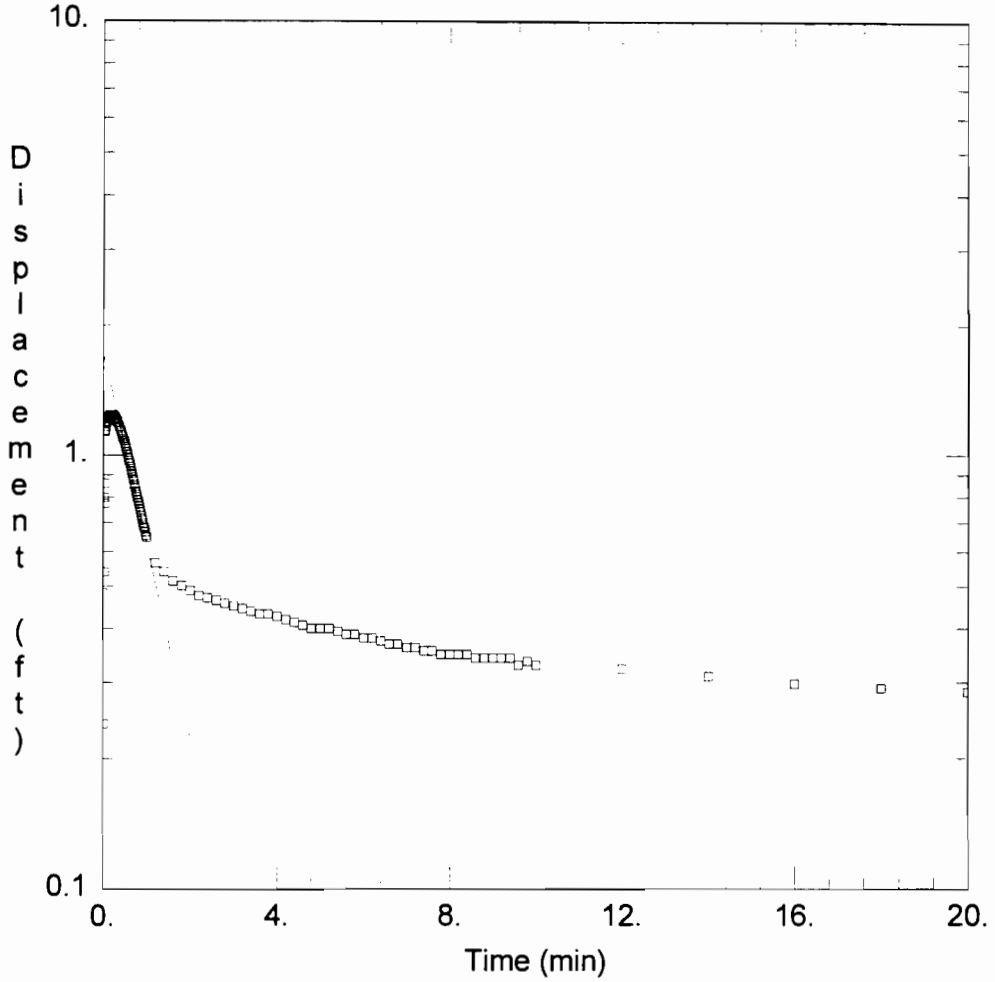
SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.003264	cm/sec
y0	1.358	ft



WELL TEST ANALYSIS

Data Set: A:\6967\MW10UNRH.AQT
Date: 11/10/98 Time: 11:30:18

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Test Location: Town of Salina Landfill
Test Well: MW-10 RHT
Test Date: 8/17/98

AQUIFER DATA

Saturated Thickness: 10.63 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 1.243 ft
Water Column Height: 10.63 ft
Casing Radius: 0.08 ft
Wellbore Radius: 0.67 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.35

SOLUTION

Aquifer Model: Unconfined
K = 0.01248 cm/sec

Data Set: A:\6967\MW10UNRH.AQT
Date: 11/10/98
Time: 11:52:46

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Location: Town of Salina Landfill
Test Date: 8/17/98
Test Well: MW-10 RHT

AQUIFER DATA

Saturated Thickness: 10.63 ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: MW-10 RHT

X Location: 0. ft
Y Location: 0. ft

No. of observations: 223

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0033	0.101	0.2633	1.224	3.8	0.431
0.0066	0.482	0.2666	1.224	4.	0.425
0.0166	0.799	0.27	1.224	4.2	0.418
0.02	0.241	0.2733	1.218	4.4	0.412
0.0266	1.142	0.2766	1.224	4.6	0.406
0.03	0.539	0.28	1.218	4.8	0.399
0.0333	0.862	0.2833	1.218	5.	0.399
0.0366	0.774	0.2866	1.218	5.2	0.399
0.04	1.199	0.29	1.211	5.4	0.393
0.0433	1.199	0.2933	1.218	5.6	0.387
0.0466	1.135	0.2966	1.211	5.8	0.387
0.05	1.205	0.3	1.205	6.	0.38
0.0533	1.167	0.3033	1.205	6.2	0.38
0.0566	1.186	0.3066	1.205	6.4	0.374
0.06	1.192	0.31	1.205	6.6	0.368
0.0633	1.18	0.3133	1.205	6.8	0.368
0.0666	1.199	0.3166	1.199	7.	0.361
0.07	1.192	0.32	1.199	7.2	0.361

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0733	1.199	0.3233	1.199	7.4	0.355
0.0766	1.205	0.3266	1.199	7.6	0.355
0.08	1.205	0.33	1.192	7.8	0.348
0.0833	1.199	0.3333	1.192	8.	0.348
0.0866	1.211	0.35	1.18	8.2	0.348
0.09	1.205	0.3666	1.167	8.4	0.348
0.0933	1.205	0.3833	1.161	8.6	0.342
0.0966	1.211	0.4	1.142	8.8	0.342
0.1	1.211	0.4166	1.129	9.	0.342
0.1033	1.205	0.4333	1.116	9.2	0.342
0.1066	1.211	0.45	1.103	9.4	0.342
0.11	1.23	0.4666	1.091	9.6	0.329
0.1133	1.211	0.4833	1.078	9.8	0.336
0.1166	1.218	0.5	1.065	10.	0.329
0.12	1.224	0.5166	1.046	12.	0.323
0.1233	1.224	0.5333	1.034	14.	0.31
0.1266	1.211	0.55	1.015	16.	0.298
0.13	1.211	0.5666	1.002	18.	0.291
0.1333	1.224	0.5833	0.983	20.	0.285
0.1366	1.224	0.6	0.97	22.	0.279
0.14	1.224	0.6166	0.958	24.	0.272
0.1433	1.23	0.6333	0.939	26.	0.266
0.1466	1.224	0.65	0.919	28.	0.26
0.15	1.23	0.6666	0.907	30.	0.253
0.1533	1.237	0.6833	0.888	32.	0.247
0.1566	1.237	0.7	0.875	34.	0.247
0.16	1.237	0.7166	0.856	36.	0.241
0.1633	1.237	0.7333	0.843	38.	0.241
0.1666	1.237	0.75	0.824	40.	0.234
0.17	1.237	0.7666	0.812	42.	0.228
0.1733	1.243	0.7833	0.799	44.	0.228
0.1766	1.237	0.8	0.786	46.	0.222
0.18	1.243	0.8166	0.774	48.	0.215
0.1833	1.237	0.8333	0.761	50.	0.215
0.1866	1.243	0.85	0.748	52.	0.209
0.19	1.243	0.8666	0.736	54.	0.209
0.1933	1.237	0.8833	0.723	56.	0.203
0.1966	1.243	0.9	0.71	58.	0.203
0.2	1.243	0.9166	0.697	60.	0.196
0.2033	1.243	0.9333	0.685	62.	0.196
0.2066	1.243	0.95	0.678	64.	0.196
0.21	1.243	0.9666	0.666	66.	0.19
0.2133	1.243	0.9833	0.653	68.	0.184
0.2166	1.243	1.	0.647	70.	0.177
0.22	1.243	1.2	0.564	72.	0.177
0.2233	1.243	1.4	0.539	74.	0.171
0.2266	1.237	1.6	0.513	76.	0.171
0.23	1.237	1.8	0.501	78.	0.171

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.2333	1.243	2.	0.488	80.	0.164
0.2366	1.237	2.2	0.475	82.	0.152
0.24	1.237	2.4	0.469	84.	0.158
0.2433	1.237	2.6	0.463	86.	0.152
0.2466	1.237	2.8	0.456	88.	0.145
0.25	1.237	3.	0.45	90.	0.145
0.2533	1.23	3.2	0.444	92.	0.145
0.2566	1.23	3.4	0.437		
0.26	1.23	3.6	0.431		

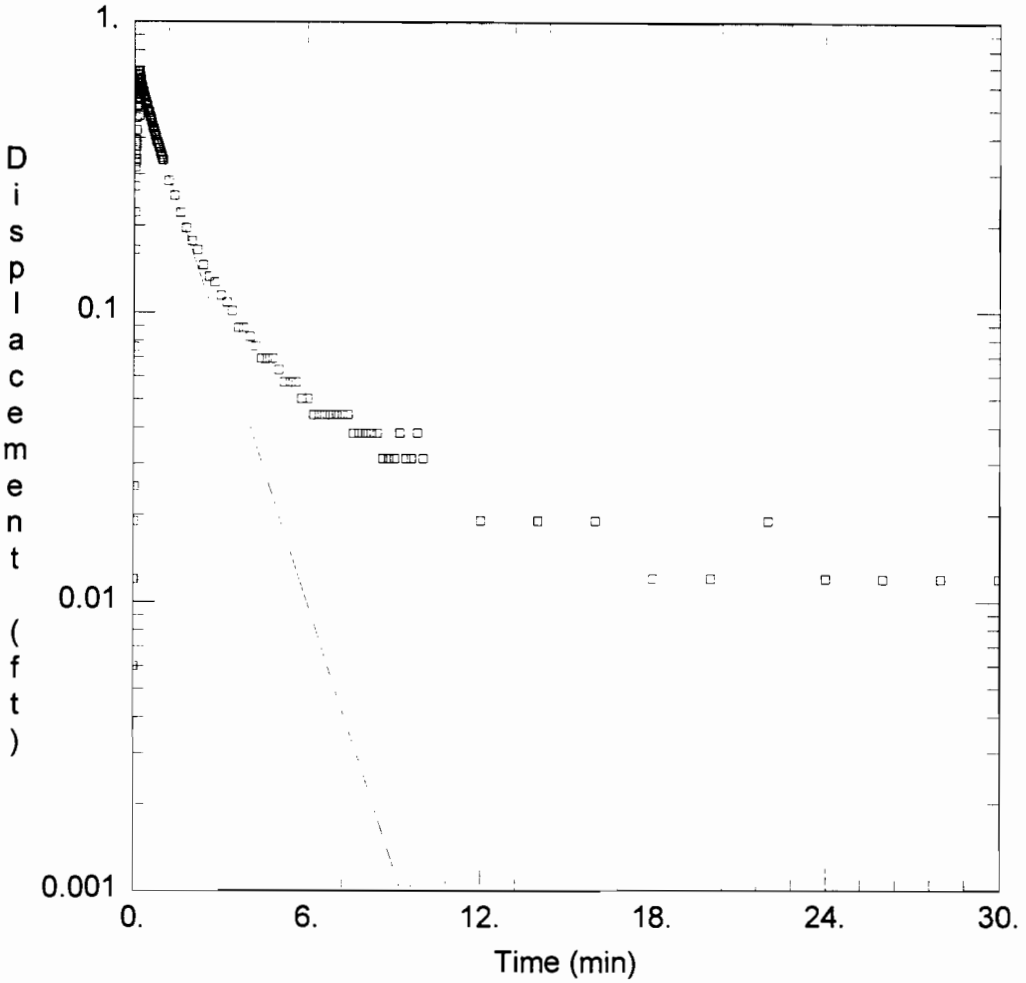
SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.01248	cm/sec
y0	1.726	ft



WELL TEST ANALYSIS

Data Set: A:\6967\MW12FHT.AQT
Date: 11/10/98 Time: 12:02:28

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Test Location: Town of Salina Landfill
Test Well: MW-12 FHT
Test Date: 8/17/98

AQUIFER DATA

Saturated Thickness: 16.56 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 0.679 ft
Water Column Height: 16.56 ft
Casing Radius: 0.08 ft
Wellbore Radius: 0.67 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.35

SOLUTION

Aquifer Model: Unconfined
K = 0.009457 cm/sec

Data Set: A:\6967\MW12FHT.AQT
Date: 11/10/98
Time: 12:02:40

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Location: Town of Salina Landfill
Test Date: 8/17/98
Test Well: MW-12 FHT

AQUIFER DATA

Saturated Thickness: 16.56 ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: MW-12 FHT

X Location: 0. ft
Y Location: 0. ft

No. of observations: 195

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0033	0.012	0.22	0.609	0.85	0.374
0.0066	0.012	0.2233	0.628	0.8666	0.368
0.01	0.006	0.2266	0.628	0.8833	0.368
0.0133	0.019	0.23	0.635	0.9	0.355
0.0166	0.006	0.2333	0.622	0.9166	0.355
0.02	0.019	0.2366	0.609	0.9333	0.349
0.0233	0.012	0.24	0.597	0.95	0.349
0.0266	0.025	0.2433	0.59	0.9666	0.342
0.03	0.012	0.2466	0.577	0.9833	0.336
0.0333	0.076	0.25	0.577	1.	0.336
0.0366	0.165	0.2533	0.577	1.2	0.285
0.04	0.222	0.2566	0.584	1.4	0.254
0.0433	0.273	0.26	0.59	1.6	0.222
0.0466	0.317	0.2633	0.597	1.8	0.196
0.05	0.362	0.2666	0.603	2.	0.177
0.0533	0.393	0.27	0.597	2.2	0.165
0.0566	0.393	0.2733	0.597	2.4	0.146
0.06	0.374	0.2766	0.59	2.6	0.133

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0633	0.349	0.28	0.584	2.8	0.127
0.0666	0.33	0.2833	0.584	3.	0.114
0.07	0.336	0.2866	0.584	3.2	0.108
0.0733	0.374	0.29	0.577	3.4	0.101
0.0766	0.381	0.2933	0.577	3.6	0.088
0.08	0.381	0.2966	0.577	3.8	0.088
0.0833	0.425	0.3	0.577	4.	0.082
0.0866	0.47	0.3033	0.571	4.2	0.076
0.09	0.514	0.3066	0.577	4.4	0.069
0.0933	0.539	0.31	0.571	4.6	0.069
0.0966	0.552	0.3133	0.577	4.8	0.069
0.1	0.565	0.3166	0.571	5.	0.063
0.1033	0.584	0.32	0.565	5.2	0.057
0.1066	0.597	0.3233	0.571	5.4	0.057
0.11	0.616	0.3266	0.565	5.6	0.057
0.1133	0.622	0.33	0.565	5.8	0.05
0.1166	0.641	0.3333	0.571	6.	0.05
0.12	0.654	0.35	0.558	6.2	0.044
0.1233	0.654	0.3666	0.552	6.4	0.044
0.1266	0.66	0.3833	0.539	6.6	0.044
0.13	0.673	0.4	0.533	6.8	0.044
0.1333	0.679	0.4166	0.527	7.	0.044
0.1366	0.679	0.4333	0.52	7.2	0.044
0.14	0.622	0.45	0.514	7.4	0.044
0.1433	0.584	0.4666	0.501	7.6	0.038
0.1466	0.59	0.4833	0.495	7.8	0.038
0.15	0.609	0.5	0.489	8.	0.038
0.1533	0.616	0.5166	0.489	8.2	0.038
0.1566	0.571	0.5333	0.476	8.4	0.038
0.16	0.552	0.55	0.476	8.6	0.031
0.1633	0.584	0.5666	0.47	8.8	0.031
0.1666	0.527	0.5833	0.463	9.	0.031
0.17	0.476	0.6	0.457	9.2	0.038
0.1733	0.508	0.6166	0.45	9.4	0.031
0.1766	0.59	0.6333	0.438	9.6	0.031
0.18	0.654	0.65	0.431	9.8	0.038
0.1833	0.679	0.6666	0.431	10.	0.031
0.1866	0.673	0.6833	0.425	12.	0.019
0.19	0.66	0.7	0.419	14.	0.019
0.1933	0.641	0.7166	0.412	16.	0.019
0.1966	0.616	0.7333	0.406	18.	0.012
0.2	0.571	0.75	0.406	20.	0.012
0.2033	0.546	0.7666	0.393	22.	0.019
0.2066	0.539	0.7833	0.387	24.	0.012
0.21	0.546	0.8	0.387	26.	0.012
0.2133	0.565	0.8166	0.381	28.	0.012
0.2166	0.584	0.8333	0.381	30.	0.012

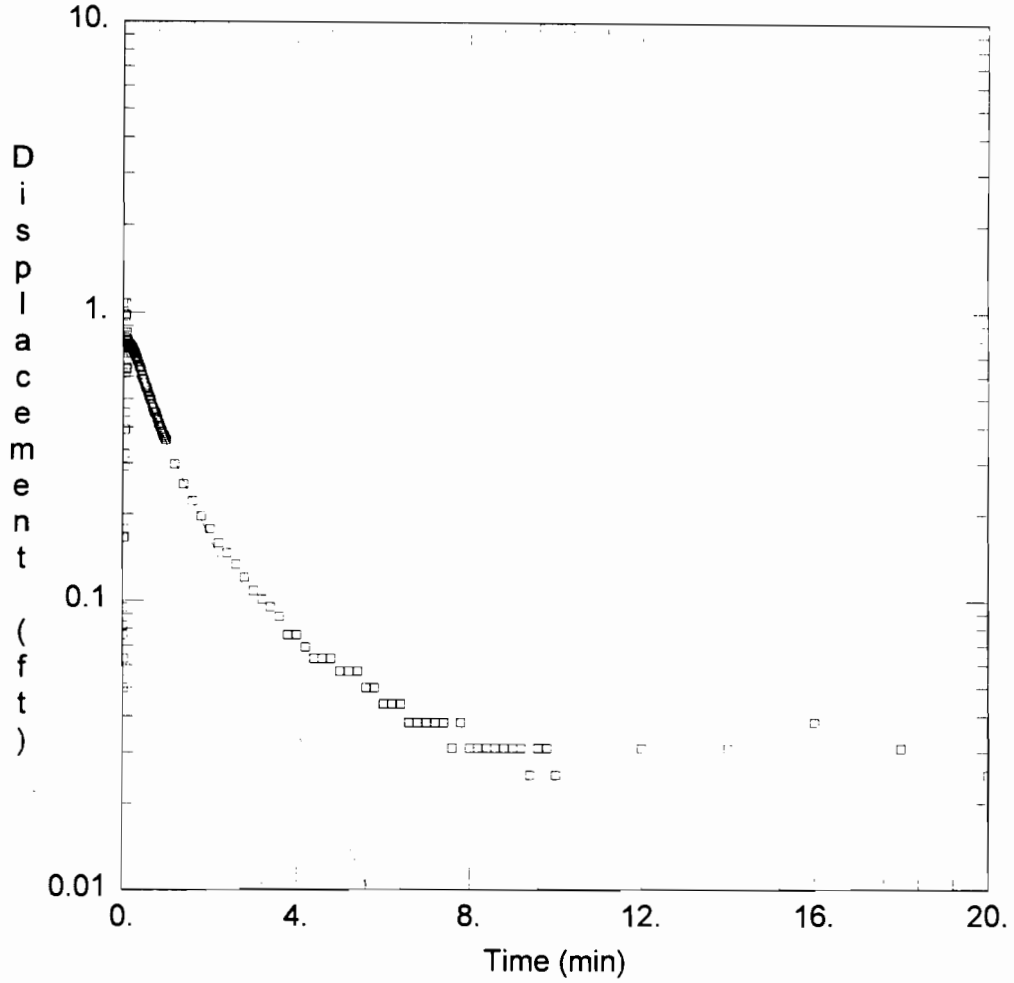
SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.009457	cm/sec
y0	0.6824	ft



WELL TEST ANALYSIS

Data Set: A:\6967\MW12RHT.AQT
Date: 11/10/98 Time: 13:27:31

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Test Location: Town of Salina Landfill
Test Well: MW-12 RHT
Test Date: 8/17/98

AQUIFER DATA

Saturated Thickness: 16.56 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 1.073 ft
Water Column Height: 16.56 ft
Casing Radius: 0.08 ft
Wellbore Radius: 0.67 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.35

SOLUTION

Aquifer Model: Unconfined
K = 0.01024 cm/sec

Data Set: A:\6967\MW12RHT.AQT
Date: 11/10/98
Time: 13:27:52

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Location: Town of Salina Landfill
Test Date: 8/17/98
Test Well: MW-12 RHT

AQUIFER DATA

Saturated Thickness: 16.56 ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: MW-12 RHT

X Location: 0. ft
Y Location: 0. ft

No. of observations: 198

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0066	0.057	0.2333	0.743	0.9333	0.374
0.01	0.076	0.2366	0.743	0.95	0.374
0.0133	0.082	0.24	0.736	0.9666	0.368
0.0166	0.05	0.2433	0.743	0.9833	0.362
0.02	0.095	0.2466	0.736	1.	0.362
0.0233	0.165	0.25	0.723	1.2	0.298
0.0266	0.063	0.2533	0.73	1.4	0.254
0.0333	0.165	0.2566	0.73	1.6	0.222
0.0366	0.177	0.26	0.73	1.8	0.196
0.0433	0.292	0.2633	0.723	2.	0.177
0.0466	0.393	0.2666	0.723	2.2	0.158
0.05	0.323	0.27	0.717	2.4	0.146
0.0533	0.393	0.2733	0.723	2.6	0.133
0.0566	0.45	0.2766	0.723	2.8	0.12
0.06	0.616	0.28	0.717	3.	0.108
0.0633	0.819	0.2833	0.711	3.2	0.101
0.0666	0.971	0.2866	0.711	3.4	0.095
0.07	1.073	0.29	0.704	3.6	0.088

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0733	0.984	0.2933	0.711	3.8	0.076
0.0766	0.774	0.2966	0.704	4.	0.076
0.08	0.635	0.3	0.704	4.2	0.069
0.0833	0.641	0.3033	0.704	4.4	0.063
0.0866	0.736	0.3066	0.698	4.6	0.063
0.09	0.831	0.31	0.698	4.8	0.063
0.0933	0.85	0.3133	0.698	5.	0.057
0.0966	0.806	0.3166	0.692	5.2	0.057
0.1	0.749	0.32	0.692	5.4	0.057
0.1033	0.723	0.3233	0.685	5.6	0.05
0.1066	0.736	0.3266	0.685	5.8	0.05
0.11	0.781	0.33	0.685	6.	0.044
0.1133	0.8	0.3333	0.679	6.2	0.044
0.1166	0.793	0.35	0.673	6.4	0.044
0.12	0.774	0.3666	0.66	6.6	0.038
0.1233	0.755	0.3833	0.647	6.8	0.038
0.1266	0.762	0.4	0.641	7.	0.038
0.13	0.774	0.4166	0.628	7.2	0.038
0.1333	0.781	0.4333	0.609	7.4	0.038
0.1366	0.781	0.45	0.603	7.6	0.031
0.14	0.781	0.4666	0.59	7.8	0.038
0.1433	0.768	0.4833	0.584	8.	0.031
0.1466	0.768	0.5	0.571	8.2	0.031
0.15	0.768	0.5166	0.558	8.4	0.031
0.1533	0.774	0.5333	0.552	8.6	0.031
0.1566	0.774	0.55	0.546	8.8	0.031
0.16	0.774	0.5666	0.533	9.	0.031
0.1633	0.774	0.5833	0.527	9.2	0.031
0.1666	0.768	0.6	0.514	9.4	0.025
0.17	0.762	0.6166	0.508	9.6	0.031
0.1733	0.768	0.6333	0.501	9.8	0.031
0.1766	0.768	0.65	0.495	10.	0.025
0.18	0.762	0.6666	0.482	12.	0.031
0.1833	0.768	0.6833	0.469	14.	0.031
0.1866	0.762	0.7	0.463	16.	0.038
0.19	0.762	0.7166	0.457	18.	0.031
0.1933	0.762	0.7333	0.45	20.	0.025
0.1966	0.762	0.75	0.45	22.	0.025
0.2	0.755	0.7666	0.444	24.	0.025
0.2033	0.762	0.7833	0.431	26.	0.025
0.2066	0.749	0.8	0.425	28.	0.025
0.21	0.755	0.8166	0.412	30.	0.025
0.2133	0.749	0.8333	0.412	32.	0.019
0.2166	0.755	0.85	0.406	34.	0.025
0.22	0.749	0.8666	0.4	36.	0.019
0.2233	0.743	0.8833	0.393	38.	0.025
0.2266	0.749	0.9	0.387	40.	0.019
0.23	0.743	0.9166	0.381	42.	0.019

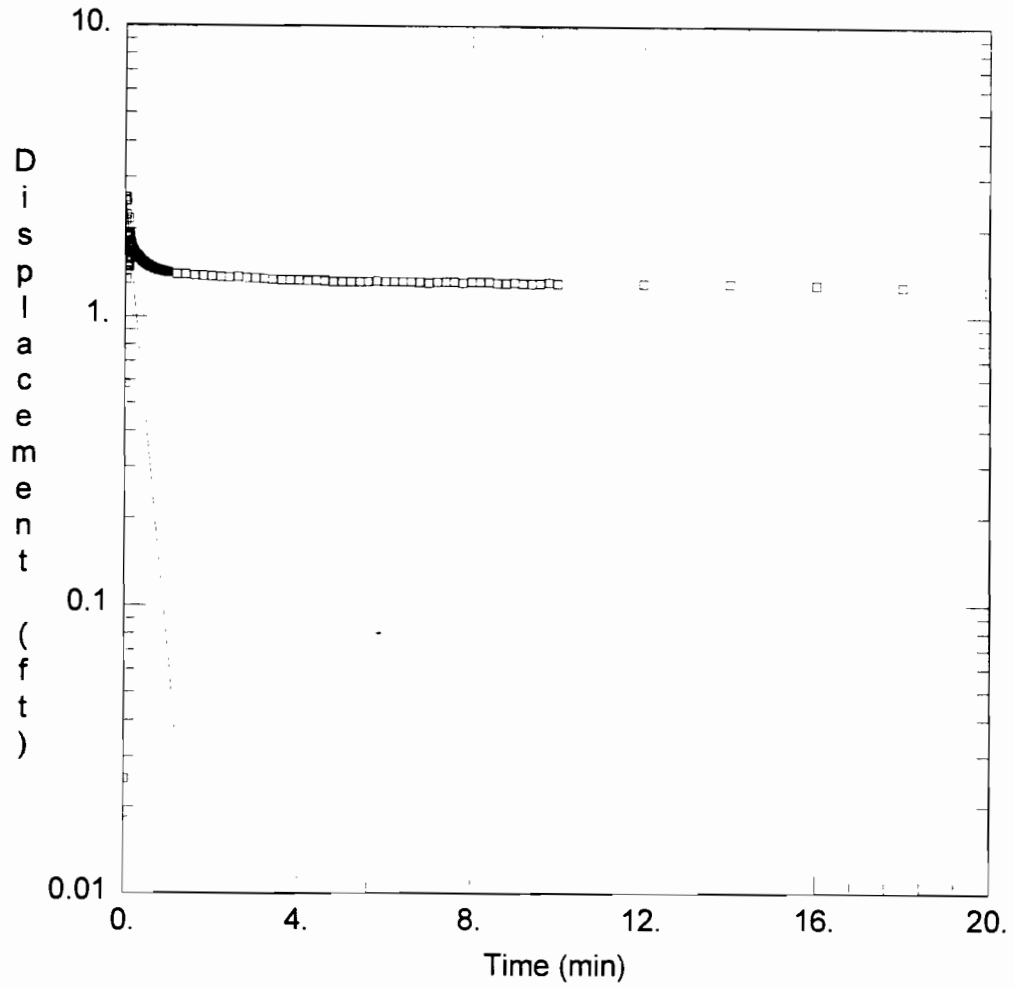
SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.01024	cm/sec
y0	0.7577	ft



WELL TEST ANALYSIS

Data Set: A:\6967\MW14FHT.AQT
Date: 11/10/98 Time: 13:33:53

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Test Location: Town of Salina Landfill
Test Well: MW-14 FHT
Test Date: 8/17/98

AQUIFER DATA

Saturated Thickness: 17.18 ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 2.554 ft Water Column Height: 17.18 ft
Casing Radius: 0.08 ft Wellbore Radius: 0.67 ft
Screen Length: 10. ft Gravel Pack Porosity: 0.35

SOLUTION

Aquifer Model: Unconfined K = 0.04833 cm/sec

Data Set: A:\6967\MW14FHT.AQT
Date: 11/10/98
Time: 13:34:20

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Location: Town of Salina Landfill
Test Date: 8/17/98
Test Well: MW-14 FHT

AQUIFER DATA

Saturated Thickness: 17.18 ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: MW-14 FHT

X Location: 0. ft
Y Location: 0. ft

No. of observations: 205

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (rnin)	Displacement (ft)
0.0033	0.019	0.2333	1.645	0.9833	1.423
0.0066	0.025	0.2366	1.639	1.	1.423
0.01	0.025	0.24	1.639	1.2	1.403
0.0133	0.584	0.2433	1.632	1.4	1.403
0.0166	2.503	0.2466	1.632	1.6	1.391
0.02	2.128	0.25	1.632	1.8	1.384
0.0233	1.912	0.2533	1.632	2.	1.378
0.0266	1.435	0.2566	1.626	2.2	1.372
0.03	1.346	0.26	1.626	2.4	1.365
0.0333	1.689	0.2633	1.626	2.6	1.372
0.0366	2.23	0.2666	1.626	2.8	1.359
0.04	2.554	0.27	1.62	3.	1.353
0.0433	2.484	0.2733	1.613	3.2	1.346
0.0466	1.912	0.2766	1.613	3.4	1.34
0.05	1.6	0.28	1.613	3.6	1.334
0.0533	1.524	0.2833	1.613	3.8	1.334
0.0566	1.607	0.2866	1.613	4.	1.334
0.06	1.708	0.29	1.62	4.2	1.327

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0633	1.778	0.2933	1.607	4.4	1.334
0.0666	1.734	0.2966	1.607	4.6	1.327
0.07	1.791	0.3	1.6	4.8	1.321
0.0733	1.728	0.3033	1.607	5.	1.321
0.0766	1.785	0.3066	1.594	5.2	1.321
0.08	1.874	0.31	1.594	5.4	1.321
0.0833	2.166	0.3133	1.594	5.6	1.321
0.0866	1.925	0.3166	1.607	5.8	1.327
0.09	1.505	0.32	1.588	6.	1.321
0.0933	1.492	0.3233	1.594	6.2	1.321
0.0966	1.486	0.3266	1.588	6.4	1.321
0.1	1.569	0.33	1.588	6.6	1.321
0.1033	1.778	0.3333	1.588	6.8	1.315
0.1066	1.886	0.35	1.581	7.	1.308
0.11	1.944	0.3666	1.569	7.2	1.315
0.1133	1.886	0.3833	1.556	7.4	1.315
0.1166	1.785	0.4	1.55	7.6	1.315
0.12	1.677	0.4166	1.543	7.8	1.308
0.1233	1.607	0.4333	1.537	8.	1.315
0.1266	1.607	0.45	1.524	8.2	1.315
0.13	1.658	0.4666	1.531	8.4	1.315
0.1333	1.74	0.4833	1.512	8.6	1.308
0.1366	1.791	0.5	1.512	8.8	1.308
0.14	1.804	0.5166	1.505	9.	1.315
0.1433	1.778	0.5333	1.499	9.2	1.308
0.1466	1.728	0.55	1.505	9.4	1.302
0.15	1.677	0.5666	1.486	9.6	1.308
0.1533	1.651	0.5833	1.486	9.8	1.315
0.1566	1.651	0.6	1.48	10.	1.302
0.16	1.677	0.6166	1.48	12.	1.302
0.1633	1.715	0.6333	1.48	14.	1.302
0.1666	1.721	0.65	1.467	16.	1.289
0.17	1.728	0.6666	1.467	18.	1.276
0.1733	1.715	0.6833	1.461	20.	1.238
0.1766	1.689	0.7	1.461	22.	1.238
0.18	1.677	0.7166	1.461	24.	1.232
0.1833	1.658	0.7333	1.454	26.	1.219
0.1866	1.658	0.75	1.448	28.	1.232
0.19	1.664	0.7666	1.448	30.	1.226
0.1933	1.677	0.7833	1.448	32.	1.219
0.1966	1.683	0.8	1.442	34.	1.226
0.2	1.683	0.8166	1.448	36.	1.213
0.2033	1.677	0.8333	1.442	38.	1.194
0.2066	1.67	0.85	1.442	40.	1.2
0.21	1.658	0.8666	1.435	42.	1.194
0.2133	1.651	0.8833	1.435	44.	1.2
0.2166	1.651	0.9	1.435	46.	1.207
0.22	1.651	0.9166	1.429	48.	1.2

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.2233	1.651	0.9333	1.429	50.	1.2
0.2266	1.651	0.95	1.429		
0.23	1.651	0.9666	1.429		

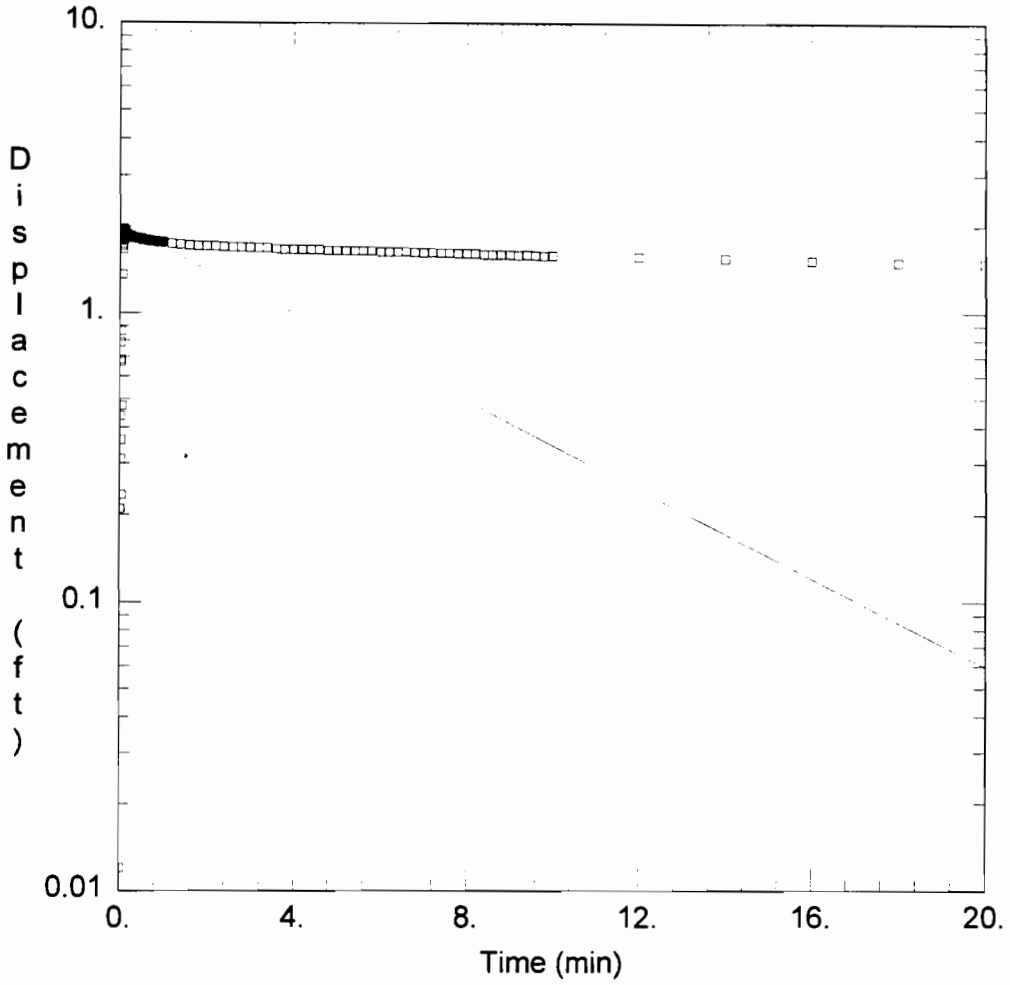
SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.04833	cm/sec
y0	2.525	ft



WELL TEST ANALYSIS

Data Set: A:\6967\MW14RHT.AQT
Date: 11/10/98 Time: 13:40:29

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Test Location: Town of Salina Landfill
Test Well: MW-14 RHT
Test Date: 8/17/98

AQUIFER DATA

Saturated Thickness: 17.18 ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 1.962 ft
Water Column Height: 17.18 ft
Casing Radius: 0.08 ft
Wellbore Radius: 0.67 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.35

SOLUTION

Aquifer Model: Unconfined
K = 0.002367 cm/sec

Data Set: A:\6967\MW14RHT.AQT
Date: 11/10/98
Time: 13:40:41

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Location: Town of Salina Landfill
Test Date: 8/17/98
Test Well: MW-14 RHT

AQUIFER DATA

Saturated Thickness: 17.18 ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: MW-14 RHT

X Location: 0. ft
Y Location: 0. ft

No. of observations: 227

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0066	0.012	0.2666	1.841	4.2	1.663
0.01	0.209	0.27	1.835	4.4	1.663
0.0133	0.438	0.2733	1.841	4.6	1.657
0.0166	0.209	0.2766	1.835	4.8	1.65
0.0266	0.311	0.28	1.835	5.	1.65
0.03	0.362	0.2833	1.835	5.2	1.644
0.0333	0.787	0.2866	1.835	5.4	1.644
0.0366	0.673	0.29	1.835	5.6	1.644
0.04	0.685	0.2933	1.835	5.8	1.644
0.0433	0.234	0.2966	1.835	6.	1.631
0.0466	0.476	0.3	1.828	6.2	1.631
0.05	0.863	0.3033	1.835	6.4	1.631
0.0533	1.365	0.3066	1.828	6.6	1.631
0.0566	1.714	0.31	1.828	6.8	1.625
0.06	1.86	0.3133	1.828	7.	1.619
0.0633	1.809	0.3166	1.828	7.2	1.625
0.0666	1.714	0.32	1.822	7.4	1.619
0.07	1.67	0.3233	1.828	7.6	1.619

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0733	1.746	0.3266	1.828	7.8	1.612
0.0766	1.879	0.33	1.828	8.	1.612
0.08	1.962	0.3333	1.828	8.2	1.612
0.0833	1.943	0.35	1.822	8.4	1.6
0.0866	1.86	0.3666	1.828	8.6	1.6
0.09	1.79	0.3833	1.822	8.8	1.6
0.0933	1.803	0.4	1.822	9.	1.6
0.0966	1.873	0.4166	1.816	9.2	1.593
0.1	1.936	0.4333	1.809	9.4	1.6
0.1033	1.943	0.45	1.809	9.6	1.593
0.1066	1.892	0.4666	1.809	9.8	1.581
0.11	1.835	0.4833	1.816	10.	1.587
0.1133	1.822	0.5	1.809	12.	1.568
0.1166	1.854	0.5166	1.803	14.	1.549
0.12	1.898	0.5333	1.796	16.	1.524
0.1233	1.911	0.55	1.796	18.	1.504
0.1266	1.892	0.5666	1.796	20.	1.492
0.13	1.854	0.5833	1.796	22.	1.485
0.1333	1.828	0.6	1.79	24.	1.447
0.1366	1.841	0.6166	1.796	26.	1.428
0.14	1.873	0.6333	1.796	28.	1.422
0.1433	1.885	0.65	1.79	30.	1.403
0.1466	1.879	0.6666	1.784	32.	1.39
0.15	1.86	0.6833	1.777	34.	1.371
0.1533	1.841	0.7	1.79	36.	1.358
0.1566	1.841	0.7166	1.777	38.	1.339
0.16	1.854	0.7333	1.777	40.	1.32
0.1633	1.866	0.75	1.777	42.	1.301
0.1666	1.873	0.7666	1.771	44.	1.295
0.17	1.86	0.7833	1.777	46.	1.282
0.1733	1.841	0.8	1.777	48.	1.27
0.1766	1.841	0.8166	1.771	50.	1.244
0.18	1.847	0.8333	1.771	52.	1.231
0.1833	1.86	0.85	1.771	54.	1.219
0.1866	1.866	0.8666	1.765	56.	1.2
0.19	1.86	0.8833	1.765	58.	1.193
0.1933	1.847	0.9	1.758	60.	1.181
0.1966	1.841	0.9166	1.758	62.	1.168
0.2	1.847	0.9333	1.758	64.	1.149
0.2033	1.854	0.95	1.758	66.	1.136
0.2066	1.854	0.9666	1.765	68.	1.124
0.21	1.854	0.9833	1.758	70.	1.111
0.2133	1.841	1.	1.758	72.	1.098
0.2166	1.841	1.2	1.739	74.	1.085
0.22	1.835	1.4	1.733	76.	1.073
0.2233	1.847	1.6	1.72	78.	1.066
0.2266	1.847	1.8	1.714	80.	1.054
0.23	1.854	2.	1.708	82.	1.041

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.2333	1.847	2.2	1.708	84.	1.028
0.2366	1.841	2.4	1.701	86.	1.016
0.24	1.841	2.6	1.695	88.	1.003
0.2433	1.835	2.8	1.695	90.	0.99
0.2466	1.841	3.	1.689	92.	0.971
0.25	1.847	3.2	1.682	94.	0.965
0.2533	1.841	3.4	1.682	96.	0.952
0.2566	1.841	3.6	1.67	98.	0.933
0.26	1.835	3.8	1.663	100.	0.933
0.2633	1.835	4.	1.663		

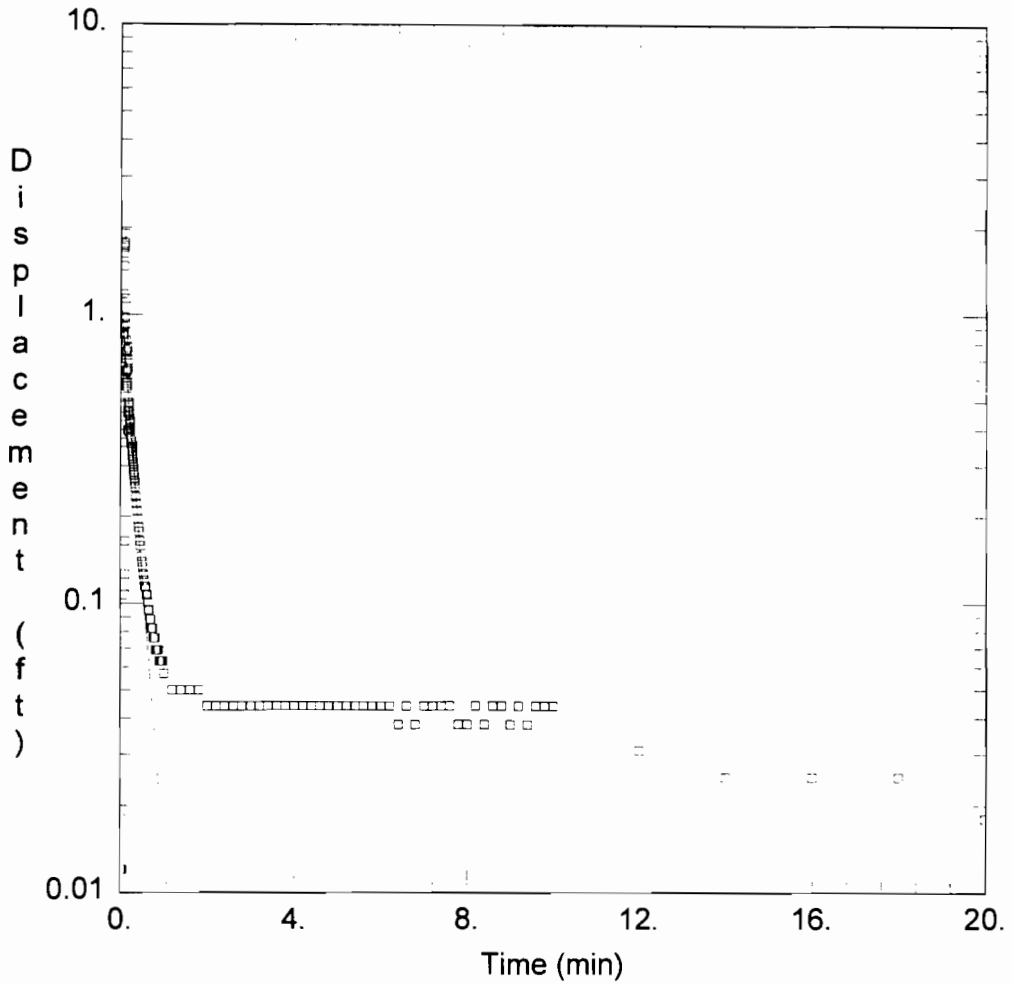
SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.002367	cm/sec
y0	2.006	ft



WELL TEST ANALYSIS

Data Set: A:\6967\MW15FHT.AQT
Date: 11/10/98 Time: 14:03:10

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Test Location: Town of Salina Landfill
Test Well: MW-15 FHT
Test Date: 8/17/98

AQUIFER DATA

Saturated Thickness: 11.53 ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 1.903 ft Water Column Height: 10.53 ft
Casing Radius: 0.08 ft Wellbore Radius: 0.67 ft
Screen Length: 10. ft Gravel Pack Porosity: 0.35

SOLUTION

Aquifer Model: Unconfined K = 0.04998 cm/sec

Data Set: A:\6967\MW15FHT.AQT
Date: 11/10/98
Time: 14:03:22

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Location: Town of Salina Landfill
Test Date: 8/17/98
Test Well: MW-15 FHT

AQUIFER DATA

Saturated Thickness: 11.53 ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: MW-15 FHT

X Location: 0. ft
Y Location: 0. ft

No. of observations: 212

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0033	0.012	0.24	0.38	1.6	0.05
0.0066	0.012	0.2433	0.374	1.8	0.05
0.01	0.012	0.2466	0.367	2.	0.044
0.0133	0.018	0.25	0.361	2.2	0.044
0.0166	0.012	0.2533	0.361	2.4	0.044
0.02	0.012	0.2566	0.355	2.6	0.044
0.0233	0.012	0.26	0.348	2.8	0.044
0.0266	0.012	0.2633	0.342	3.	0.044
0.03	0.012	0.2666	0.336	3.2	0.044
0.0333	0.012	0.27	0.329	3.4	0.044
0.0366	0.012	0.2733	0.323	3.6	0.044
0.04	0.012	0.2766	0.323	3.8	0.044
0.0433	0.012	0.28	0.317	4.	0.044
0.0466	0.012	0.2833	0.31	4.2	0.044
0.05	0.361	0.2866	0.31	4.4	0.044
0.0533	0.837	0.29	0.304	4.6	0.044
0.0566	0.812	0.2933	0.298	4.8	0.044
0.06	0.856	0.2966	0.298	5.	0.044

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0633	0.907	0.3	0.291	5.2	0.044
0.0666	1.18	0.3033	0.285	5.4	0.044
0.07	1.472	0.3066	0.285	5.6	0.044
0.0733	1.63	0.31	0.279	5.8	0.044
0.0766	1.732	0.3133	0.279	6.	0.044
0.08	1.706	0.3166	0.272	6.2	0.044
0.0833	1.764	0.32	0.272	6.4	0.038
0.0866	1.903	0.3233	0.266	6.6	0.044
0.09	0.977	0.3266	0.266	6.8	0.038
0.0933	0.602	0.33	0.26	7.	0.044
0.0966	0.444	0.3333	0.253	7.2	0.044
0.1	0.107	0.35	0.234	7.4	0.044
0.1033	0.164	0.3666	0.222	7.6	0.044
0.1066	0.126	0.3833	0.209	7.8	0.038
0.11	0.926	0.4	0.196	8.	0.038
0.1133	1.135	0.4166	0.183	8.2	0.044
0.1166	0.85	0.4333	0.177	8.4	0.038
0.12	0.742	0.45	0.164	8.6	0.044
0.1233	0.812	0.4666	0.158	8.8	0.044
0.1266	0.704	0.4833	0.145	9.	0.038
0.13	0.564	0.5	0.139	9.2	0.044
0.1333	0.634	0.5166	0.133	9.4	0.038
0.1366	0.64	0.5333	0.126	9.6	0.044
0.14	0.577	0.55	0.12	9.8	0.044
0.1433	0.742	0.5666	0.114	10.	0.044
0.1466	0.754	0.5833	0.114	12.	0.031
0.15	0.64	0.6	0.107	14.	0.025
0.1533	0.59	0.6166	0.107	16.	0.025
0.1566	0.564	0.6333	0.101	18.	0.025
0.16	0.52	0.65	0.095	20.	0.018
0.1633	0.463	0.6666	0.095	22.	0.018
0.1666	0.399	0.6833	0.088	24.	0.018
0.17	0.456	0.7	0.088	26.	0.018
0.1733	0.647	0.7166	0.082	28.	0.018
0.1766	0.767	0.7333	0.082	30.	0.018
0.18	0.697	0.75	0.082	32.	0.018
0.1833	0.494	0.7666	0.076	34.	0.018
0.1866	0.393	0.7833	0.076	36.	0.018
0.19	0.399	0.8	0.076	38.	0.031
0.1933	0.456	0.8166	0.069	40.	0.018
0.1966	0.494	0.8333	0.069	42.	0.025
0.2	0.494	0.85	0.069	44.	0.025
0.2033	0.475	0.8666	0.069	46.	0.025
0.2066	0.45	0.8833	0.069	48.	0.025
0.21	0.437	0.9	0.063	50.	0.031
0.2133	0.431	0.9166	0.063	52.	0.031
0.2166	0.431	0.9333	0.063	54.	0.031
0.22	0.425	0.95	0.063	56.	0.031

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.2233	0.418	0.9666	0.063	58.	0.031
0.2266	0.405	0.9833	0.063	60.	0.038
0.23	0.399	1.	0.057	62.	0.038
0.2333	0.393	1.2	0.05	64.	0.031
0.2366	0.386	1.4	0.05		

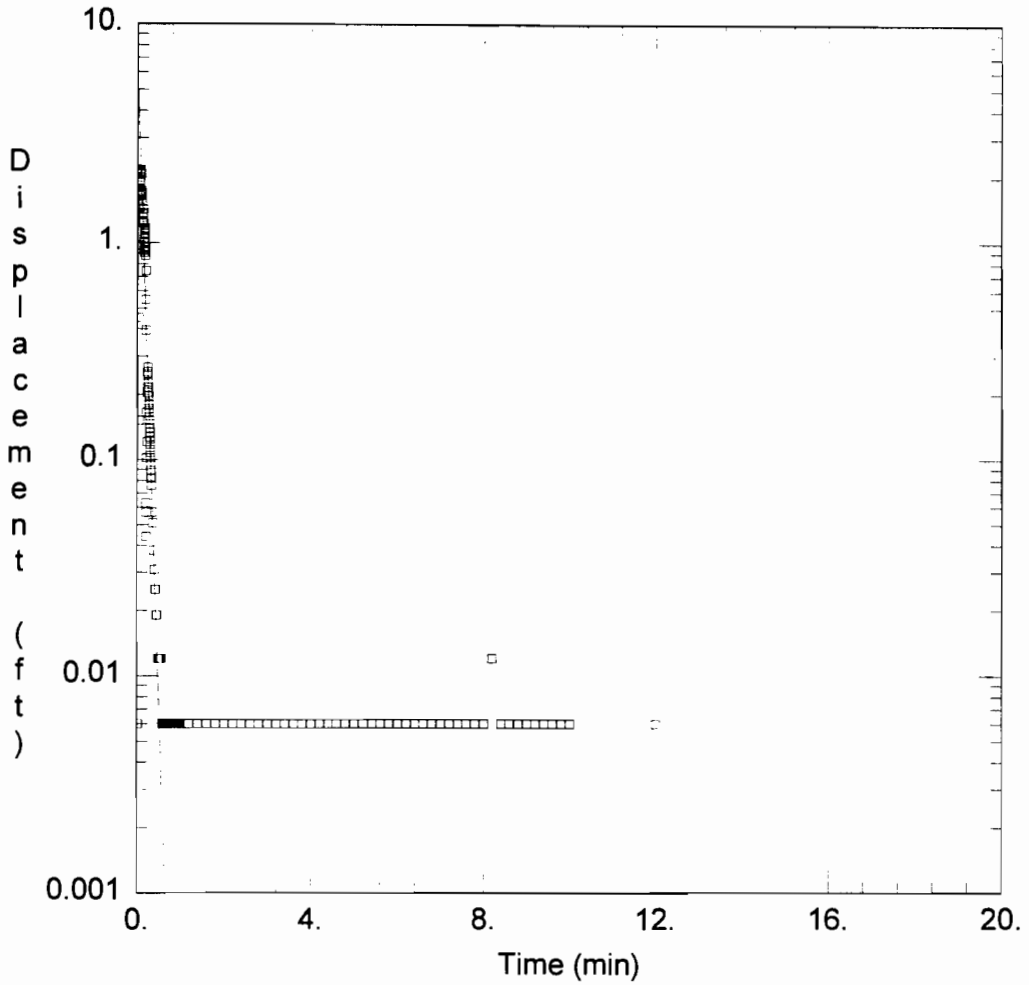
SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.04998	cm/sec
y0	1.133	ft



WELL TEST ANALYSIS

Data Set: H:\GEO\6967\MWODFHT.AQT
Date: 11/10/98 Time: 15:08:21

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Test Location: Town of Salina Landfill
Test Well: MW-OD FHT
Test Date: 8/17/98

AQUIFER DATA

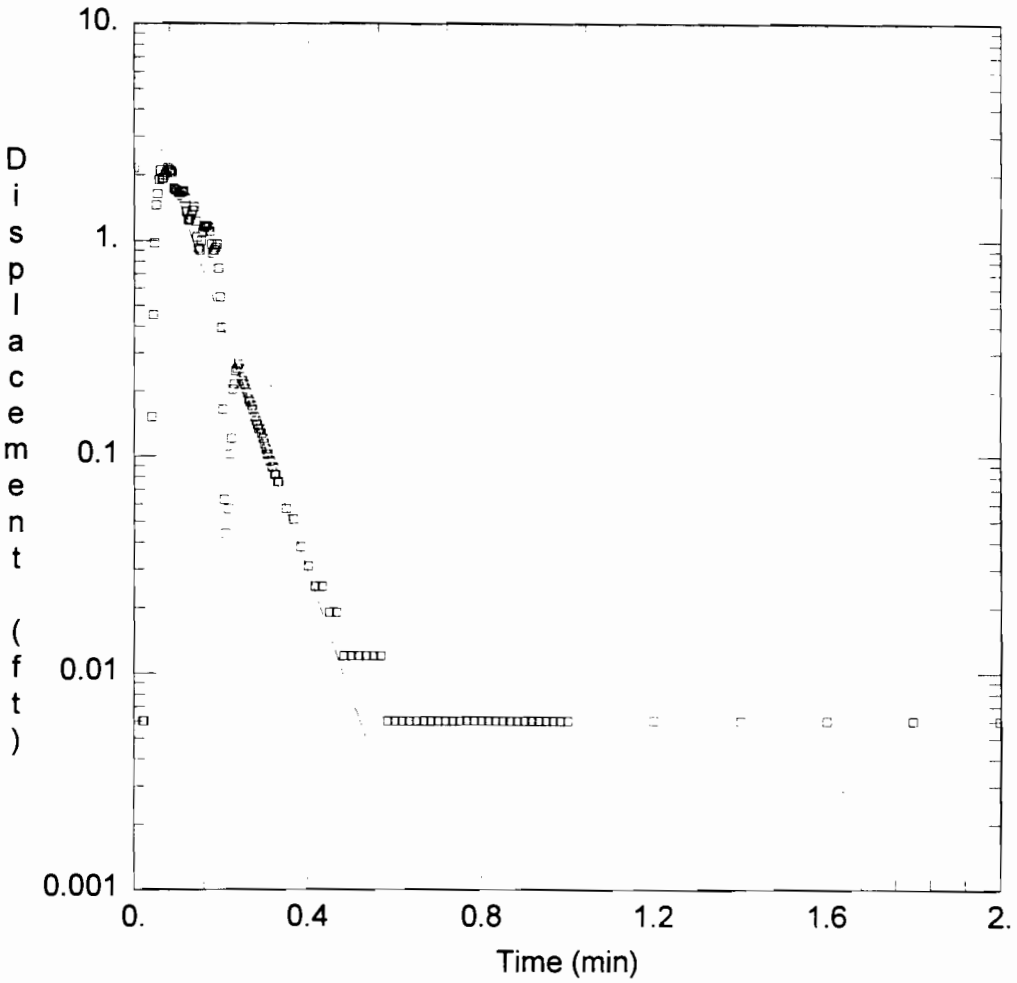
Saturated Thickness: 10. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 2.159 ft
Water Column Height: 10. ft
Casing Radius: 0.08 ft
Wellbore Radius: 0.67 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.35

SOLUTION

Aquifer Model: Confined
K = 0.107 cm/sec



WELL TEST ANALYSIS

Data Set: H:\GEO\6967\MWODFHT.AQT
Date: 11/10/98 Time: 15:03:11

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Test Location: Town of Salina Landfill
Test Well: MW-OD FHT
Test Date: 8/17/98

AQUIFER DATA

Saturated Thickness: 10. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 2.159 ft
Casing Radius: 0.08 ft
Screen Length: 10. ft
Water Column Height: 10. ft
Wellbore Radius: 0.67 ft
Gravel Pack Porosity: 0.35

SOLUTION

Aquifer Model: Confined
K = 0.107 cm/sec

Data Set: H:\GEO\6967\MWODFHT.AQT
Date: 11/10/98
Time: 15:03:20

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Location: Town of Salina Landfill
Test Date: 8/17/98
Test Well: MW-OD FHT

AQUIFER DATA

Saturated Thickness: 10. ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: MW-OD FHT

X Location: 0. ft
Y Location: 0. ft

No. of observations: 176

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.02	0.006	0.2333	0.248	0.8166	0.006
0.0233	0.006	0.2366	0.254	0.8333	0.006
0.04	0.152	0.24	0.267	0.85	0.006
0.0433	0.452	0.2433	0.254	0.8666	0.006
0.0466	0.975	0.2466	0.229	0.8833	0.006
0.05	1.453	0.25	0.223	0.9	0.006
0.0533	1.638	0.2533	0.216	0.9166	0.006
0.0566	1.899	0.2566	0.204	0.9333	0.006
0.06	2.097	0.26	0.197	0.95	0.006
0.0633	1.924	0.2633	0.184	0.9666	0.006
0.0666	1.937	0.2666	0.178	0.9833	0.006
0.07	1.995	0.27	0.172	1.	0.006
0.0733	2.052	0.2733	0.165	1.2	0.006
0.0766	2.154	0.2766	0.152	1.4	0.006
0.08	2.109	0.28	0.146	1.6	0.006
0.0833	2.084	0.2833	0.14	1.8	0.006
0.0866	2.052	0.2866	0.134	2.	0.006
0.09	1.733	0.29	0.134	2.2	0.006

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0933	1.714	0.2933	0.127	2.4	0.006
0.0966	1.702	0.2966	0.121	2.6	0.006
0.1	1.663	0.3	0.114	2.8	0.006
0.1033	1.612	0.3033	0.108	3.	0.006
0.1066	1.657	0.3066	0.102	3.2	0.006
0.11	1.67	0.31	0.102	3.4	0.006
0.1133	1.682	0.3133	0.095	3.6	0.006
0.1166	1.561	0.3166	0.089	3.8	0.006
0.12	1.351	0.32	0.089	4.	0.006
0.1233	1.243	0.3233	0.082	4.2	0.006
0.1266	1.255	0.3266	0.082	4.4	0.006
0.13	1.306	0.33	0.076	4.6	0.006
0.1333	1.37	0.3333	0.076	4.8	0.006
0.1366	1.421	0.35	0.057	5.	0.006
0.14	1.223	0.3666	0.051	5.2	0.006
0.1433	1.038	0.3833	0.038	5.4	0.006
0.1466	0.924	0.4	0.031	5.6	0.006
0.15	0.904	0.4166	0.025	5.8	0.006
0.1533	0.994	0.4333	0.025	6.	0.006
0.1566	1.096	0.45	0.019	6.2	0.006
0.16	1.153	0.4666	0.019	6.4	0.006
0.1633	1.166	0.4833	0.012	6.6	0.006
0.1666	1.166	0.5	0.012	6.8	0.006
0.17	1.147	0.5166	0.012	7.	0.006
0.1733	1.102	0.5333	0.012	7.2	0.006
0.1766	0.962	0.55	0.012	7.4	0.006
0.18	0.873	0.5666	0.012	7.6	0.006
0.1833	0.904	0.5833	0.006	7.8	0.006
0.1866	0.93	0.6	0.006	8.	0.006
0.19	0.962	0.6166	0.006	8.2	0.012
0.1933	0.745	0.6333	0.006	8.4	0.006
0.1966	0.548	0.65	0.006	8.6	0.006
0.2	0.395	0.6666	0.006	8.8	0.006
0.2033	0.165	0.6833	0.006	9.	0.006
0.2066	0.063	0.7	0.006	9.2	0.006
0.21	0.044	0.7166	0.006	9.4	0.006
0.2166	0.057	0.7333	0.006	9.6	0.006
0.22	0.102	0.75	0.006	9.8	0.006
0.2233	0.121	0.7666	0.006	10.	0.006
0.2266	0.204	0.7833	0.006	12.	0.006
0.23	0.216	0.8	0.006		

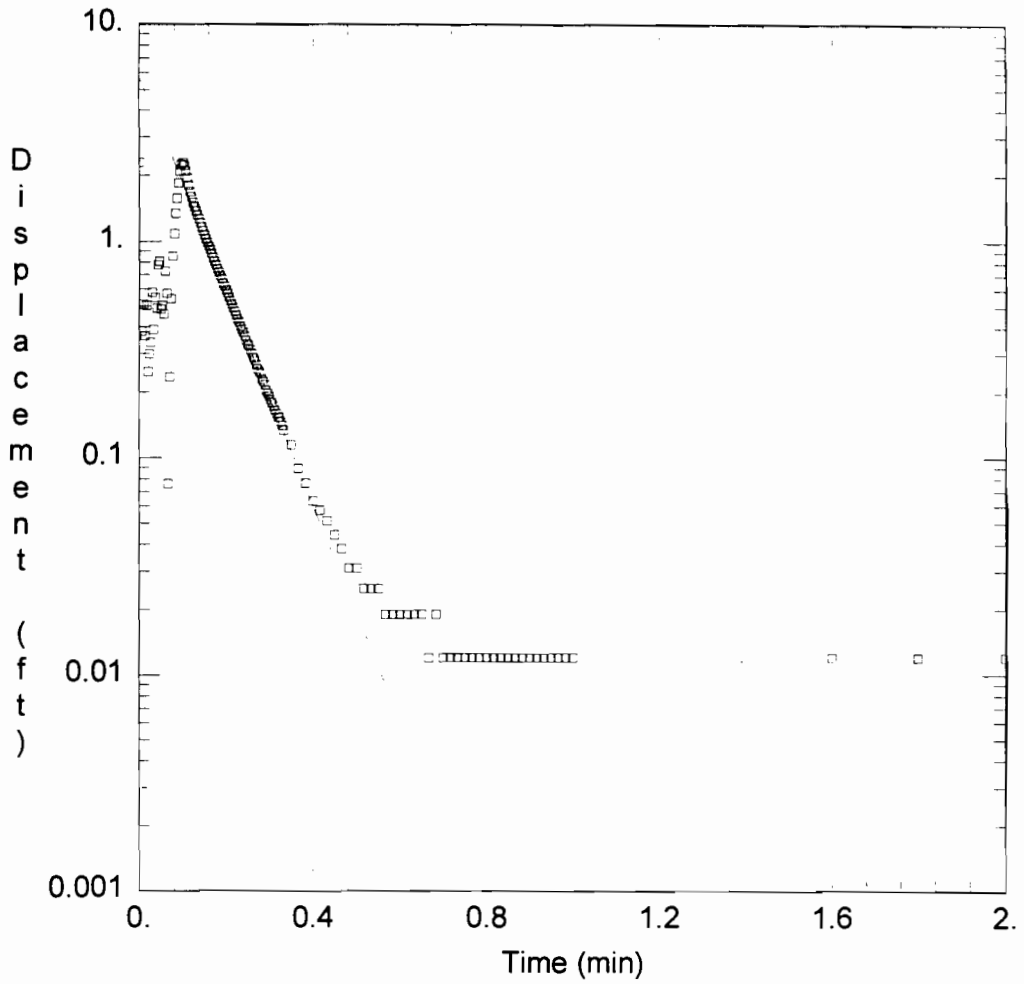
SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.107	cm/sec
y0	5.883	ft



WELL TEST ANALYSIS

Data Set: H:\GEO\6967\MWODRHT.AQT
Date: 11/10/98 Time: 15:02:01

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Test Location: Town of Salina Landfill
Test Well: MW-OD RHT
Test Date: 8/17/98

AQUIFER DATA

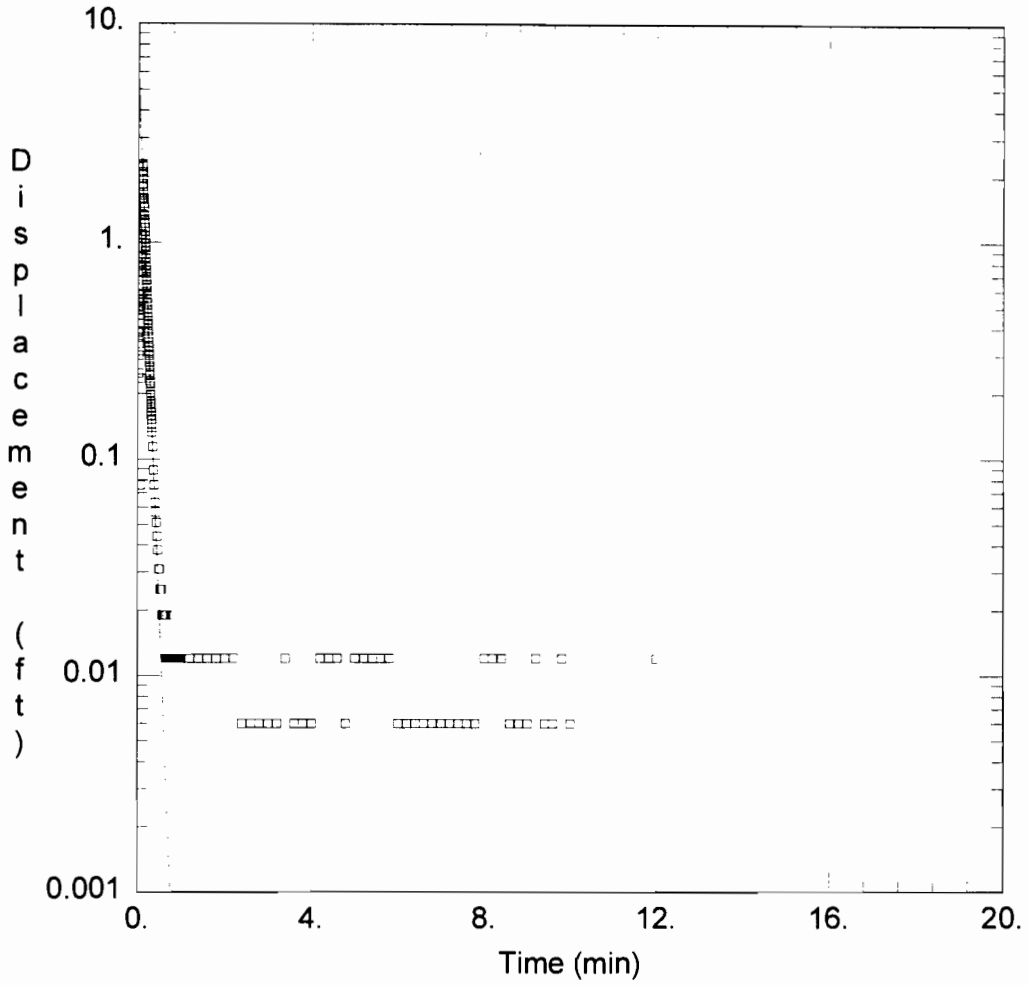
Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 2.287 ft
Casing Radius: 0.08 ft
Screen Length: 10. ft
Water Column Height: 10. ft
Wellbore Radius: 0.67 ft
Gravel Pack Porosity: 0.35

SOLUTION

Aquifer Model: Confined
K = 0.1182 cm/sec



WELL TEST ANALYSIS

Data Set: H:\GEO\6967\MWODRHT.AQT
Date: 11/10/98 Time: 15:03:54

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Test Location: Town of Salina Landfill
Test Well: MW-OD RHT
Test Date: 8/17/98

AQUIFER DATA

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 2.287 ft
Water Column Height: 10. ft
Casing Radius: 0.08 ft
Wellbore Radius: 0.67 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.35

SOLUTION

Aquifer Model: Confined
K = 0.1182 cm/sec

Data Set: H:\GEO\6967\MWODRHT.AQT
Date: 11/10/98
Time: 15:02:13

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Location: Town of Salina Landfill
Test Date: 8/17/98
Test Well: MW-OD RHT

AQUIFER DATA

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: MW-OD RHT

X Location: 0. ft
Y Location: 0. ft

No. of observations: 186

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0033	0.509	0.21	0.528	0.75	0.012
0.0066	0.382	0.2133	0.509	0.7666	0.012
0.01	0.509	0.2166	0.49	0.7833	0.012
0.0133	0.363	0.22	0.471	0.8	0.012
0.0166	0.503	0.2233	0.452	0.8166	0.012
0.02	0.248	0.2266	0.433	0.8333	0.012
0.0233	0.299	0.23	0.42	0.85	0.012
0.0266	0.338	0.2333	0.401	0.8666	0.012
0.03	0.579	0.2366	0.388	0.8833	0.012
0.0333	0.388	0.24	0.376	0.9	0.012
0.0366	0.548	0.2433	0.363	0.9166	0.012
0.04	0.49	0.2466	0.344	0.9333	0.012
0.0433	0.777	0.25	0.331	0.95	0.012
0.0466	0.809	0.2533	0.325	0.9666	0.012
0.05	0.484	0.2566	0.312	0.9833	0.012
0.0533	0.503	0.26	0.299	1.	0.012
0.0566	0.458	0.2633	0.286	1.2	0.012
0.06	0.726	0.2666	0.28	1.4	0.012

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0633	0.573	0.27	0.267	1.6	0.012
0.0666	0.076	0.2733	0.254	1.8	0.012
0.07	0.235	0.2766	0.248	2.	0.012
0.0733	0.541	0.28	0.242	2.2	0.012
0.0766	0.853	0.2833	0.229	2.4	0.006
0.08	1.083	0.2866	0.223	2.6	0.006
0.0833	1.344	0.29	0.216	2.8	0.006
0.0866	1.573	0.2933	0.203	3.	0.006
0.09	1.847	0.2966	0.197	3.2	0.006
0.0933	2.096	0.3	0.191	3.4	0.012
0.0966	2.249	0.3033	0.184	3.6	0.006
0.1	2.287	0.3066	0.178	3.8	0.006
0.1033	2.217	0.31	0.172	4.	0.006
0.1066	2.096	0.3133	0.165	4.2	0.012
0.11	1.949	0.3166	0.159	4.4	0.012
0.1133	1.803	0.32	0.153	4.6	0.012
0.1166	1.682	0.3233	0.153	4.8	0.006
0.12	1.593	0.3266	0.146	5.	0.012
0.1233	1.503	0.33	0.14	5.2	0.012
0.1266	1.44	0.3333	0.133	5.4	0.012
0.13	1.376	0.35	0.114	5.6	0.012
0.1333	1.319	0.3666	0.089	5.8	0.012
0.1366	1.268	0.3833	0.076	6.	0.006
0.14	1.217	0.4	0.063	6.2	0.006
0.1433	1.159	0.4166	0.057	6.4	0.006
0.1466	1.115	0.4333	0.051	6.6	0.006
0.15	1.07	0.45	0.044	6.8	0.006
0.1533	1.025	0.4666	0.038	7.	0.006
0.1566	0.987	0.4833	0.031	7.2	0.006
0.16	0.949	0.5	0.031	7.4	0.006
0.1633	0.917	0.5166	0.025	7.6	0.006
0.1666	0.879	0.5333	0.025	7.8	0.006
0.17	0.841	0.55	0.025	8.	0.012
0.1733	0.809	0.5666	0.019	8.2	0.012
0.1766	0.777	0.5833	0.019	8.4	0.012
0.18	0.745	0.6	0.019	8.6	0.006
0.1833	0.72	0.6166	0.019	8.8	0.006
0.1866	0.694	0.6333	0.019	9.	0.006
0.19	0.669	0.65	0.019	9.2	0.012
0.1933	0.637	0.6666	0.012	9.4	0.006
0.1966	0.618	0.6833	0.019	9.6	0.006
0.2	0.592	0.7	0.012	9.8	0.012
0.2033	0.573	0.7166	0.012	10.	0.006
0.2066	0.548	0.7333	0.012	12.	0.012

SOLUTION

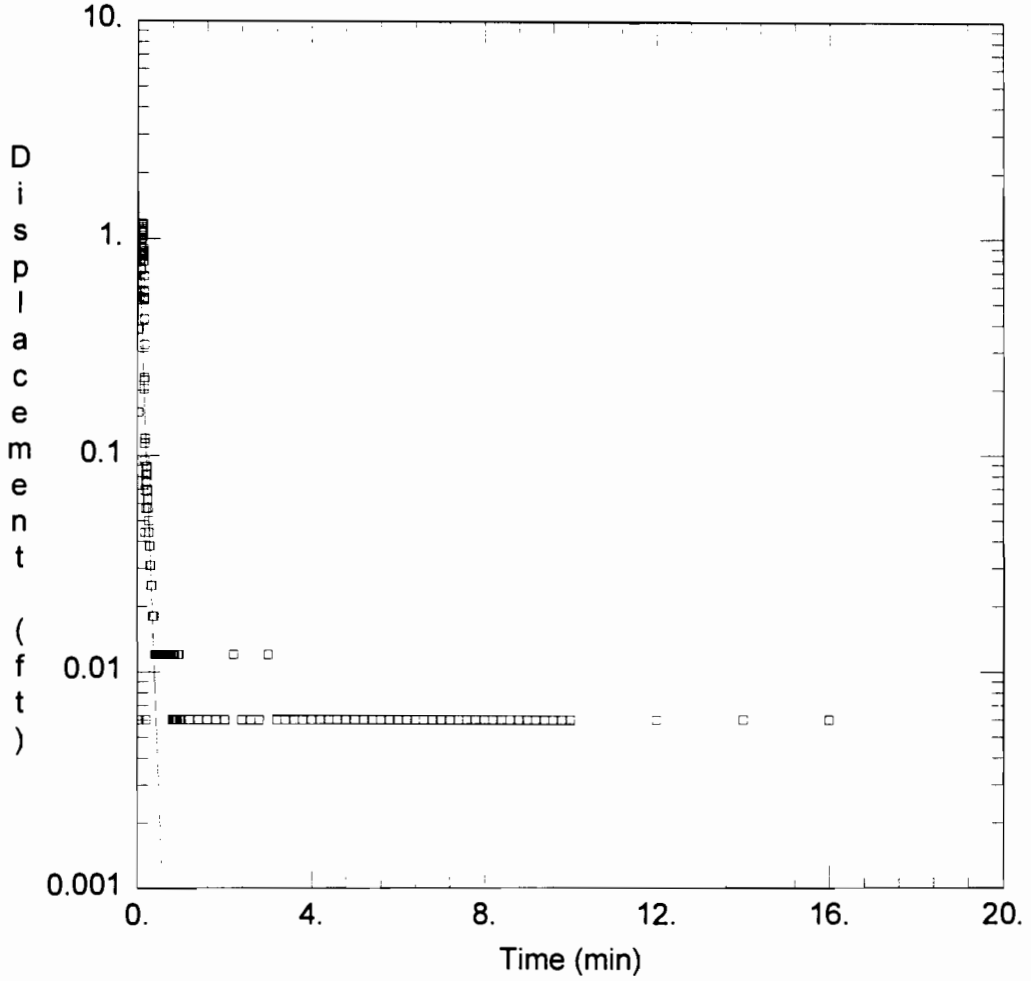
Aquifer Model: Confined

Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.1182	cm/sec
y0	5.749	ft



WELL TEST ANALYSIS

Data Set: H:\GEO\6967\MW5DFHT.AQT
Date: 11/10/98 Time: 14:59:28

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Test Location: Town of Salina Landfill
Test Well: MW-5D FHT
Test Date: 8/17/98

AQUIFER DATA

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 1.171 ft
Casing Radius: 0.08 ft
Screen Length: 10. ft
Water Column Height: 14. ft
Wellbore Radius: 0.67 ft
Gravel Pack Porosity: 0.35

SOLUTION

Aquifer Model: Confined
K = 0.1407 cm/sec

Data Set: H:\GEO\6967\MW5DFHT.AQT
Date: 11/10/98
Time: 15:00:04

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Location: Town of Salina Landfill
Test Date: 8/17/98
Test Well: MW-5D FHT

AQUIFER DATA

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: MW-5D RHT

X Location: 0. ft
Y Location: 0. ft

No. of observations: 180

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0233	0.006	0.23	0.082	0.8166	0.012
0.03	0.006	0.2333	0.076	0.8333	0.006
0.0333	0.159	0.2366	0.069	0.85	0.012
0.0366	0.381	0.24	0.069	0.8666	0.006
0.04	0.541	0.2433	0.063	0.8833	0.006
0.0433	0.566	0.2466	0.063	0.9	0.006
0.0466	0.63	0.25	0.057	0.9166	0.006
0.05	0.808	0.2533	0.057	0.9333	0.012
0.0533	0.725	0.2566	0.057	0.95	0.012
0.0566	0.795	0.26	0.05	0.9666	0.006
0.06	0.878	0.2633	0.05	0.9833	0.006
0.0633	0.897	0.2666	0.044	1.	0.006
0.0666	0.923	0.27	0.044	1.2	0.006
0.07	0.719	0.2733	0.044	1.4	0.006
0.0733	0.84	0.2766	0.038	1.6	0.006
0.0766	0.853	0.28	0.038	1.8	0.006
0.08	0.942	0.2833	0.038	2.	0.006
0.0833	0.993	0.2866	0.038	2.2	0.012

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0866	1.063	0.29	0.038	2.4	0.006
0.09	0.999	0.2933	0.031	2.6	0.006
0.0933	1.088	0.2966	0.031	2.8	0.006
0.0966	1.158	0.3	0.031	3.	0.012
0.1	1.171	0.3033	0.031	3.2	0.006
0.1033	1.127	0.3066	0.031	3.4	0.006
0.1066	1.158	0.31	0.031	3.6	0.006
0.11	1.165	0.3133	0.025	3.8	0.006
0.1133	1.107	0.3166	0.025	4.	0.006
0.1166	1.069	0.32	0.025	4.2	0.006
0.12	0.853	0.3233	0.025	4.4	0.006
0.1233	0.789	0.3266	0.025	4.6	0.006
0.1266	0.834	0.33	0.025	4.8	0.006
0.13	0.878	0.3333	0.025	5.	0.006
0.1333	0.897	0.35	0.018	5.2	0.006
0.1366	0.789	0.3666	0.018	5.4	0.006
0.14	0.674	0.3833	0.018	5.6	0.006
0.1433	0.566	0.4	0.012	5.8	0.006
0.1466	0.534	0.4166	0.012	6.	0.006
0.15	0.528	0.4333	0.012	6.2	0.006
0.1533	0.426	0.45	0.012	6.4	0.006
0.1566	0.203	0.4666	0.012	6.6	0.006
0.16	0.222	0.4833	0.012	6.8	0.006
0.1633	0.324	0.5	0.012	7.	0.006
0.1666	0.324	0.5166	0.012	7.2	0.006
0.17	0.229	0.5333	0.012	7.4	0.006
0.1733	0.114	0.55	0.012	7.6	0.006
0.1766	0.095	0.5666	0.012	7.8	0.006
0.18	0.12	0.5833	0.012	8.	0.006
0.1833	0.044	0.6	0.012	8.2	0.006
0.19	0.069	0.6166	0.012	8.4	0.006
0.1933	0.006	0.6333	0.012	8.6	0.006
0.1966	0.076	0.65	0.012	8.8	0.006
0.2	0.057	0.6666	0.012	9.	0.006
0.2033	0.082	0.6833	0.012	9.2	0.006
0.2066	0.082	0.7	0.012	9.4	0.006
0.21	0.089	0.7166	0.012	9.6	0.006
0.2133	0.089	0.7333	0.012	9.8	0.006
0.2166	0.089	0.75	0.012	10.	0.006
0.22	0.089	0.7666	0.012	12.	0.006
0.2233	0.089	0.7833	0.012	14.	0.006
0.2266	0.082	0.8	0.006	16.	0.006

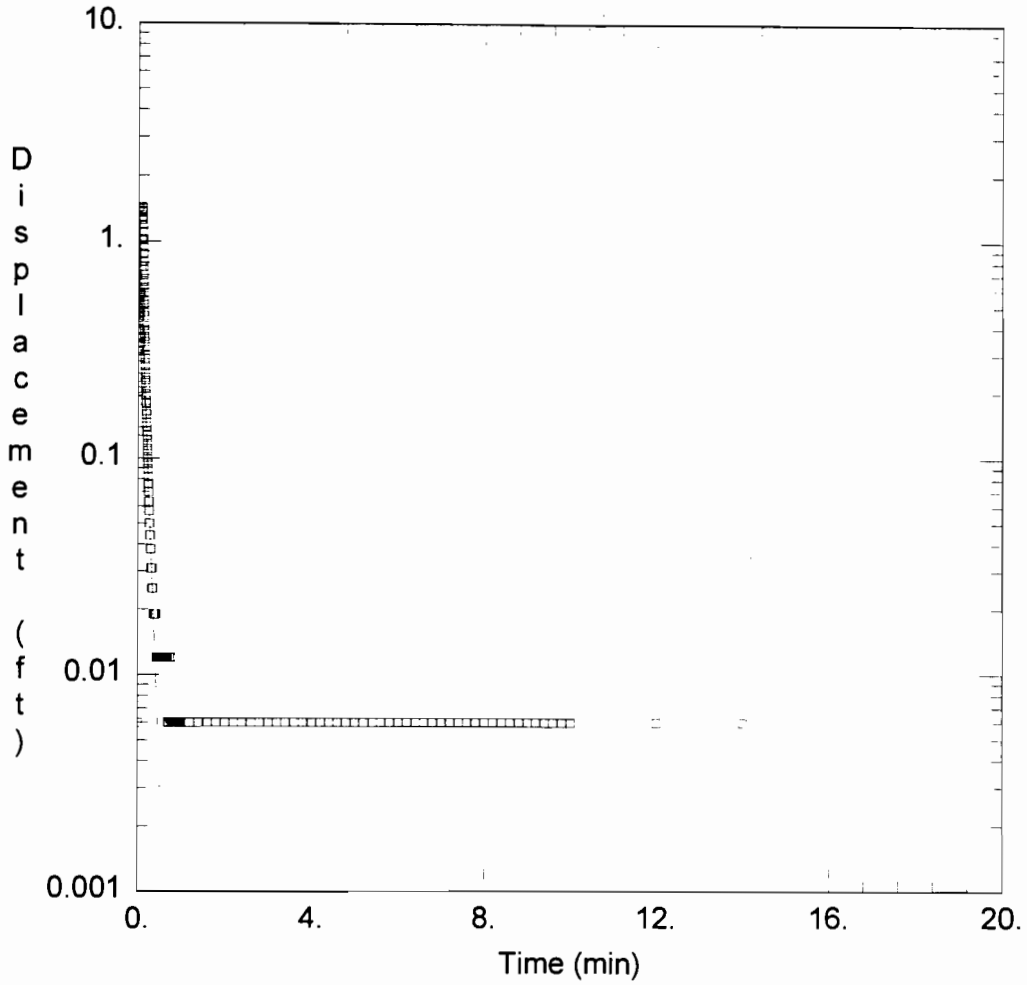
SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.1407	cm/sec
y0	1.427	ft



WELL TEST ANALYSIS

Data Set: H:\GEO\6967\MW5DRHT.AQT
Date: 11/10/98 Time: 14:57:49

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Test Location: Town of Salina Landfill
Test Well: MW-5D RHT
Test Date: 8/17/98

AQUIFER DATA

Saturated Thickness: 30. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Initial Displacement: 1.432 ft Water Column Height: 14. ft
Casing Radius: 0.08 ft Wellbore Radius: 0.67 ft
Screen Length: 10. ft Gravel Pack Porosity: 0.35

SOLUTION

Aquifer Model: Confined K = 0.1324 cm/sec

Data Set: H:\GEO\6967\MW5DRHT.AQT
Date: 11/10/98
Time: 14:58:03

PROJECT INFORMATION

Company: CHA
Client: NYSDEC
Project: 6967
Location: Town of Salina Landfill
Test Date: 8/17/98
Test Well: MW-5D RHT

AQUIFER DATA

Saturated Thickness: 30. ft
Anisotropy Ratio (Kz/Kr): 0.1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: MW-5D RHT

X Location: 0. ft
Y Location: 0. ft

No. of observations: 187

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0033	0.006	0.2133	0.127	0.7833	0.006
0.0066	0.235	0.2166	0.121	0.8	0.006
0.01	0.445	0.22	0.114	0.8166	0.006
0.0133	0.312	0.2233	0.108	0.8333	0.006
0.0166	0.203	0.2266	0.101	0.85	0.006
0.02	0.394	0.23	0.095	0.8666	0.006
0.0233	0.133	0.2333	0.089	0.8833	0.006
0.0266	0.452	0.2366	0.089	0.9	0.006
0.03	0.566	0.24	0.082	0.9166	0.006
0.0333	0.471	0.2433	0.076	0.9333	0.006
0.0366	0.547	0.2466	0.076	0.95	0.006
0.04	0.388	0.25	0.07	0.9666	0.006
0.0433	0.509	0.2533	0.07	0.9833	0.006
0.0466	0.292	0.2566	0.063	1.	0.006
0.05	0.464	0.26	0.063	1.2	0.006
0.0533	0.356	0.2633	0.057	1.4	0.006
0.0566	0.337	0.2666	0.057	1.6	0.006
0.06	0.184	0.27	0.057	1.8	0.006

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0633	0.362	0.2733	0.05	2.	0.006
0.0666	0.573	0.2766	0.05	2.2	0.006
0.07	0.764	0.28	0.044	2.4	0.006
0.0733	1.018	0.2833	0.044	2.6	0.006
0.0766	1.254	0.2866	0.044	2.8	0.006
0.08	1.375	0.29	0.044	3.	0.006
0.0833	1.432	0.2933	0.044	3.2	0.006
0.0866	1.407	0.2966	0.038	3.4	0.006
0.09	1.356	0.3	0.038	3.6	0.006
0.0933	1.279	0.3033	0.038	3.8	0.006
0.0966	1.19	0.3066	0.038	4.	0.006
0.1	1.101	0.31	0.031	4.2	0.006
0.1033	1.012	0.3133	0.031	4.4	0.006
0.1066	0.942	0.3166	0.031	4.6	0.006
0.11	0.878	0.32	0.031	4.8	0.006
0.1133	0.808	0.3233	0.031	5.	0.006
0.1166	0.764	0.3266	0.031	5.2	0.006
0.12	0.7	0.33	0.031	5.4	0.006
0.1233	0.655	0.3333	0.025	5.6	0.006
0.1266	0.611	0.35	0.025	5.8	0.006
0.13	0.579	0.3666	0.019	6.	0.006
0.1333	0.534	0.3833	0.019	6.2	0.006
0.1366	0.509	0.4	0.019	6.4	0.006
0.14	0.471	0.4166	0.019	6.6	0.006
0.1433	0.452	0.4333	0.012	6.8	0.006
0.1466	0.407	0.45	0.012	7.	0.006
0.15	0.388	0.4666	0.012	7.2	0.006
0.1533	0.362	0.4833	0.012	7.4	0.006
0.1566	0.343	0.5	0.012	7.6	0.006
0.16	0.324	0.5166	0.012	7.8	0.006
0.1633	0.299	0.5333	0.012	8.	0.006
0.1666	0.286	0.55	0.012	8.2	0.006
0.17	0.267	0.5666	0.012	8.4	0.006
0.1733	0.248	0.5833	0.012	8.6	0.006
0.1766	0.235	0.6	0.012	8.8	0.006
0.18	0.222	0.6166	0.012	9.	0.006
0.1833	0.21	0.6333	0.012	9.2	0.006
0.1866	0.197	0.65	0.012	9.4	0.006
0.19	0.184	0.6666	0.012	9.6	0.006
0.1933	0.178	0.6833	0.012	9.8	0.006
0.1966	0.165	0.7	0.006	10.	0.006
0.2	0.159	0.7166	0.006	12.	0.006
0.2033	0.146	0.7333	0.012	14.	0.006
0.2066	0.14	0.75	0.006		
0.21	0.133	0.7666	0.012		

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.1324	cm/sec
y0	1.409	ft

APPENDIX B-8

Sampling Logs

CLOUGH, HARBOUR & ASSOCIATES
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS

WELL SAMPLING LOG

WELL DESIGNATION: **MW-0**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/17/98
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 15.60 ft. (from TOC)

(2) Depth to Water: 6.60 ft. (from TOC)

(3) Column of Water: 9.00 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.47 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	16:10	16:20						
Vol Purged (gal)	1.0	3.0						
ORP/EH (MV)	OR-	OR-						
PH	6.2	6.2						
Cond. (MS/CM)	1900	2000						
Turb. (NTU)	215	>1000						
Temp. (°C)	18	17						

Total Volume Purged: 6.0 gal

Total Purge Time: 0:30

Sampling Info:

Sample Method: Submersible Pump

No. of Bottles: 16

Sample Time: 13:00

Sample Analyses:

Comments:
Well dry after 6.5 gallons purged.
Pump approximately one (1) foot of bottom of well.

Logged By: James Trasher

CLOUGH, HARBOUR & ASSOCIATES
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS

WELL SAMPLING LOG

WELL DESIGNATION: **MW-1**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/24/98
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 20.40 ft. (from TOC)

(2) Depth to Water: 7.08 ft. (from TOC)

(3) Column of Water: 13.32 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 2.17 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	09:40	09:46	09:50	09:55				
Vol Purged (gal)	1.0	3.0	5.0	7.0				
ORP/EH (MV)	OR-	OR-	OR-	OR-				
PH	6.8	6.7	6.7	6.6				
Cond. (MS/CM)	2.20	2.30	2.30	2.30				
Turb. (NTU)	651	131	50.1	24.9				
Temp. (°C)	16	16	16	15				

Total Volume Purged: 7.0 gal

Total Purge Time: 0:20

Sampling Info:

Sample Method: Submersible Pump

No. of Bottles: 16

Sample Time: 10:10

Sample Analyses:

Comments:

Logged By: James Trasher

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WELL SAMPLING LOG

WELL DESIGNATION: **MW-2**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/18/98
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 20.40 ft. (from TOC)

(2) Depth to Water: 9.13 ft. (from TOC)

(3) Column of Water: 11.27 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.84 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	11:38	11:44	11:49	11:53				
Vol Purged (gal)	1.0	2.5	4.0	5.0				
ORP/EH (MV)	OR-	OR-	OR-	OR-				
PH	7.4	7.5	7.4	7.4				
Cond. (MS/CM)	990	1310	1340	1350				
Turb. (NTU)	143	34.4	34.6	15.7				
Temp. (°C)	18	17	17	16				

Total Volume Purged: 5.0 gal

Total Purge Time: 0:20

Sampling Info:

Sample Method: Submersible Pump

No. of Bottles: 16

Sample Time: 11:30

Sample Analyses:

Comments:

Logged By: James Trasher

CLOUGH, HARBOUR & ASSOCIATES
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WELL SAMPLING LOG

WELL DESIGNATION: **MW-3**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/25/98
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 17.93 ft. (from TOC)

(2) Depth to Water: 4.10 ft. (from TOC)

(3) Column of Water: 13.83 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 2.25 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	08:43	08:45	08:48	08:54	08:57			
Vol Purged (gal)	1.0	2.0	4.0	6.0	7.5			
ORP/EH (MV)	OR-	OR-	-80	OR-	OR-			
PH	7.0	7.0	6.8	6.7	6.8			
Cond. (MS/CM)	3.10	3.00	3.00	3.10	3.00			
Turb. (NTU)	600	246	269	59.6	31.8			
Temp. (°C)	16	16	16	15	15			

Total Volume Purged: 7.5 gal

Total Purge Time: 0:20

Sampling Info:

Sample Method: Submersible Pump

No. of Bottles: 16

Sample Time: 09:00

Sample Analyses:

Comments:
Pump approximately one (1) foot of bottom of well.

Logged By: James Trasher

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WELL SAMPLING LOG

WELL DESIGNATION: **MW-4**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/25/98
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 17.70 ft. (from TOC)

(2) Depth to Water: 6.50 ft. (from TOC)

(3) Column of Water: 11.20 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.83 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	16:08	16:12	16:17	16:20	16:23			
Vol Purged (gal)	1.5	4.0	6.0	8.0	10.0			
ORP/EH (MV)	OR-	OR-	OR-	OR-	OR-			
PH	7.2	6.8	6.7	6.8	6.8			
Cond. (MS/CM)	920	1080	1290	1400	1380			
Turb. (NTU)	410	188	129	156	424			
Temp. (°C)	16	16	15	15	16			

Total Volume Purged: 12.0 gal

Total Purge Time: 0:23

Sampling Info:

Sample Method: Submersible Pump

No. of Bottles: 16

Sample Time: 16:45

Sample Analyses:

Comments:
Pump approximately one (1) foot of bottom of well.
Well purged dry after 11.5 gallons at 16:27.

Logged By: James Trasher

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WELL SAMPLING LOG

WELL DESIGNATION: **MW-5**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/25/98
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 20.10 ft. (from TOC)

(2) Depth to Water: 8.77 ft. (from TOC)

(3) Column of Water: 11.33 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.85 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	13:36	13:41	13:46	13:49				
Vol Purged (gal)	1.5	4.0	6.0	8.0				
ORP/EH (MV)	OR-	OR-	OR-	OR-				
PH	7.7	7.6	7.5	7.5				
Cond. (MS/CM)	790	820	830	820				
Turb. (NTU)	>1000	>1000	>1000	>1000				
Temp. (°C)	16	16	16	15				

Total Volume Purged: 8.0 gal

Total Purge Time: 0:25

Sampling Info:

Sample Method: Submersible Pump

No. of Bottles: 16

Sample Time: 14:30

Sample Analyses:

Comments:
Pump approximately one (1) foot of bottom of well.
Well purged dry after 10 gallons at 13:55.

Logged By: James Trasher

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WELL SAMPLING LOG

WELL DESIGNATION: **MW-6**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/25/98
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 19.85 ft. (from TOC)

(2) Depth to Water: 4.5 ft. (from TOC)

(3) Column of Water: 15.45 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 2.52 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	10:30	10:35	10:55	11:15				
Vol Purged (gal)	1.0	2.0	4.0	6.0				
ORP/EH (MV)	-60	-65	-60	-65				
PH	6.7	6.7	6.7	6.7				
Cond. (MS/CM)	2.10	2.20	2.40	2.60				
Turb. (NTU)	>1000	>1000	80.7	19.1				
Temp. (°C)	16	16	16	16				

Total Volume Purged: 6.0 gal. Total Purge Time: 0:45

Sampling Info:

Sample Method: Submersible Pump

No. of Bottles: 16

Sample Time: 12:30

Sample Analyses:

Comments:
Pump approximately one (1) foot of bottom of well.
.

Logged By: James Trasher

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WELL SAMPLING LOG

WELL DESIGNATION: **MW-8**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/18/98
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 19.10 ft. (from TOC)

(2) Depth to Water: 8.85 ft. (from TOC)

(3) Column of Water: 10.25 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.67 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	15:25	15:30	15:35	15:39				
Vol Purged (gal)	1.0	3.0	50	6.0				
ORP/EH (MV)	OR-	OR-	OR-	OR-				
PH	6.4	6.4	6.4	6.5				
Cond. (MS/CM)	1380	1390	1370	1380				
Turb. (NTU)	147	351	207	221				
Temp. (°C)	16	16	16	16				

Total Volume Purged: 6.0 gal

Total Purge Time: 0:30

Sampling Info:

Sample Method: Submersible Pump

No. of Bottles: 16

Sample Time: 16:45

Sample Analyses:

Comments:
Pump approximately one (1) foot of bottom of well.
Well purged dry after 5.75-6.0 gallons (14:40).

Logged By: James Trasher

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WELL SAMPLING LOG

WELL DESIGNATION: **MW-9**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/18/98
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 19.76 ft. (from TOC)

(2) Depth to Water: 9.60 ft. (from TOC)

(3) Column of Water: 10.16 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.66 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	08:32	08:50	09:05	11:31				
Vol Purged (gal)	1.0	3.0	5.0	6.0				
ORP/EH (MV)	OR-	-25	-25	-25				
PH	6.6	6.5	6.6	6.6				
Cond. (MS/CM)	1380	1350	1360	1380				
Turb. (NTU)	>1000	>1000	895	746				
Temp. (°C)	17	15	16	16				

Total Volume Purged: 6.0 gal

Total Purge Time: 2:00

Sampling Info:

Sample Method: Submersible Pump

No. of Bottles: 16

Sample Time: 11:30

Sample Analyses:

Comments:
Well dry after one (1) well volume purged.
Well went dry two (2) times during sampling.

Logged By: James Trasher

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WELL SAMPLING LOG

WELL DESIGNATION: **MW-10**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/25/98
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 26.40 ft. (from TOC)

(2) Depth to Water: 16.20 ft. (from TOC)

(3) Column of Water: 10.20 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.66 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	18:08	18:11	18:30					
Vol Purged (gal)	2.0	4.0	6.0					
ORP/EH (MV)	10	10	15					
PH	6.5	6.4	6.6					
Cond. (MS/CM)	1290	1280	1330					
Turb. (NTU)	>1000	>1000	>1000					
Temp. (°C)	16	16	16					

Total Volume Purged: 6.0 gal

Total Purge Time: 0:30

Sampling Info:

Sample Method: Submersible Pump

No. of Bottles: 16

Sample Time: 19:00

Sample Analyses:

Comments:
Pump approximately one (1) foot of bottom of well.
Well purged dry after 4.2 gallons at 18:15.

Logged By: James Trasher

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WELL SAMPLING LOG

WELL DESIGNATION: **MW-14**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/21/98
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 40.85 ft. (from TOC)

(2) Depth to Water: 21.00 ft. (from TOC)

(3) Column of Water: 19.85 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 3.24 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	10:46	11:00	11:32	11:37	11:45	11:49	08:02	08:08
Vol Purged (gal)	1.5	2.0	3.0	5.0	7.0	8.0	9.0	11.0
ORP/EH (MV)	OR-	OR-	OR-	OR-	OR-	OR-	OR-	OR-
PH							7.2	7.2
Cond. (MS/CM)	1280	1300	1380	1360	1420	1530	1350	1320
Turb. (NTU)	78.7	63.1	383	510	584	176	218	136
Temp. (°C)							16	16

Total Volume Purged: 7.0 gal

Total Purge Time: 0:20

Sampling Info:

Sample Method: Submersible Pump

No. of Bottles: 16

Sample Time: 08:30

Sample Analyses:

Comments:
Ph and Temperature meters are not functioning properly.
Well purged dry after 8.5 gallons at 11:52.
Recharge of well very slow, sampling to occur at later date.

Logged By: James Trasher

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WELL SAMPLING LOG

WELL DESIGNATION: **MW-15**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/18/98
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 30.25 ft. (from TOC)

(2) Depth to Water: 20.35 ft. (from TOC)

(3) Column of Water: 9.90 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.61 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	09:28	09:33	09:35	09:37	09:40			
Vol Purged (gal)	2.0	4.0	5.0	6.0	8.0			
ORP/EH (MV)	OR-	OR-	OR-	OR-	OR-			
PH								
Cond. (MS/CM)	2.40	2.40	2.50	2.40	2.40			
Turb. (NTU)	682	207	104	75.6	36.7			
Temp. (°C)	16							

Total Volume Purged: 8.0 gal

Total Purge Time: 0:15 hr

Sampling Info:

Sample Method: Submersible Pump

No. of Bottles: 16

Sample Time: 11:30

Sample Analyses:

Comments:
Ph and Temperature meter are malfunctioning.

Logged By: James Trasher

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WELL SAMPLING LOG

WELL DESIGNATION: **MW-0D**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/17/98
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 40.0 ft. (from TOC)

(2) Depth to Water: 4.21 ft. (from TOC)

(3) Column of Water: 35.79 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 5.83 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	14:20	14:29	14:37	14:42	14:47	14:52		
Vol Purged (gal)	3.0	6.0	9.0	12.0	15.0	18.0		
ORP/EH (MV)	-15	5	10	15	10	10		
PH	6.7	6.7	6.8	6.8	6.8	6.8		
Cond. (MS/CM)	1740	1640	1570	1530	1510	1510		
Turb. (NTU)	>1000	>1000	227	130	53.3	17.2		
Temp. (°C)	18	17	18	17	17	17		

Total Volume Purged: 18.0 gal

Total Purge Time: 0:40

Sampling Info:

Sample Method: Submersible Pump

No. of Bottles: 16

Sample Time: 15:00

Sample Analyses:

Comments:
Pump approximately one (8) foot of bottom of well.

Logged By: James Trasher

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WELL SAMPLING LOG

WELL DESIGNATION: **MW-5D**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/20/98
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 43.10 ft. (from TOC)

(2) Depth to Water: 8.72 ft. (from TOC)

(3) Column of Water: 34.38 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 5.60 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	15:11	15:20	15:27	15:32	15:36	15:42	15:45	
Vol Purged (gal)	3.0	5.0	8.0	11.0	13.0	15.0	17.0	
ORP/EH (MV)	-65	35	-60	-80	-65	-55	-60	
PH	7.5	7.2	7.0	7.3	7.4	7.0	7.2	
Cond. (MS/CM)	6500	1830	6300	6300	6200	6200	6200	
Turb. (NTU)	>1000	456	>1000	>1000	558	120	47.0	
Temp. (°C)	17	16	17	16	17	16	16	

Total Volume Purged: 17.0 gal

Total Purge Time: 0:40

Sampling Info:

Sample Method: Submersible Pump

No. of Bottles: 16

Sample Time: 16:00

Sample Analyses:

Comments:
Samples MW-MS and MW-MD were also taken at MW-5D.

Logged By: James Trasher

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WELL SAMPLING LOG

WELL DESIGNATION: **MW-12D**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/25/98
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 54.0 ft. (from TOC)

(2) Depth to Water: 1.2 ft. (from TOC)

(3) Column of Water: 52.80 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 8.50 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	13:24	13:26	13:30	13:34				
Vol Purged (gal)	2.0	4.0	8.0	16.0				
ORP/EH (MV)	OR-	OR-	OR-	OR-				
PH	7.6	7.7	7.6	7.5				
Cond. (MS/CM)	1070	1050	1100	1110				
Turb. (NTU)	99.0	45.3	32.1	33.1				
Temp. (°C)	17	16	16	16				

Total Volume Purged: 16.0 gal. Total Purge Time: 0:15

Sampling Info:

Sample Method: Submersible Pump

No. of Bottles: 16

Sample Time: 13:45

Sample Analyses:

Comments:
Pump approximately twenty (20) feet off bottom of well.
Field duplicate taken at MW-12D.

Logged By: James Trasher

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WELL SAMPLING LOG

WELL DESIGNATION: **WP-1**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/20/98
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 17.70 ft. (from TOC)

(2) Depth to Water: 4.45 ft. (from TOC)

(3) Column of Water: 13.25 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 2.15 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	13:20	13:30	13:55					
Vol Purged (gal)	1.0	3.0	5.0					
ORP/EH (MV)	OR-	-75	OR-					
PH	7.9	9.5	7.9					
Cond. (MS/CM)	690	620	1180					
Turb. (NTU)	>1000	>1000	>1000					
Temp. (°C)	15	16	16					

Total Volume Purged: 5.0 gal

Total Purge Time: 0:40

Sampling Info:

Sample Method: Submersible Pump

No. of Bottles: 16

Sample Time: 12:30 on 8/21/98

Sample Analyses:

Comments:
Well dry after one (1) well volume purged at 14:48.

Logged By: James Trasher

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WELL SAMPLING LOG

WELL DESIGNATION: **WP-2**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/20/98
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 20.10 ft. (from TOC)

(2) Depth to Water: 9.40 ft. (from TOC)

(3) Column of Water: 10.50 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.71 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	11:51	11:55	12:00	12:05				
Vol Purged (gal)	1.0	2.0	3.0	4.0				
ORP/EH (MV)	OR-	OR-	OR-	OR-				
PH	6.7	6.7	6.7	6.6				
Cond. (MS/CM)	2000	1960	2000	1940				
Turb. (NTU)	654	194	39.8	22.0				
Temp. (°C)	15	16	16	16				

Total Volume Purged: 5.0 gal Total Purge Time: 0:20

Sampling Info:

Sample Method: Submersible Pump

No. of Bottles: 7

Sample Time: 12:10

Sample Analyses:

Comments:

Logged By: James Trasher

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WELL SAMPLING LOG

WELL DESIGNATION: **WP-3**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/20/98
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 19.60 ft. (from TOC)

(2) Depth to Water: 8.50 ft. (from TOC)

(3) Column of Water: 11.10 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.81 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	10:47	10:53	11:00	11:07	11:15	11:17		
Vol Purged (gal)	1.0	2.0	3.0	4.0	7.0	8.0		
ORP/EH (MV)	OR-	OR-	OR-	OR-	OR-	-80		
PH	6.3	6.3	6.3	6.3	6.4	6.5		
Cond. (MS/CM)	2000	1900	1900	2000	1900	1900		
Turb. (NTU)	>1000	199	382	90.7	75.0	47.6		
Temp. (°C)	16	17	17	17	17	16		

Total Volume Purged: 8.0 gal

Total Purge Time: 0:35

Sampling Info:

Sample Method: Submersible Pump

No. of Bottles: 7

Sample Time: 11:30

Sample Analyses:

Comments:

Logged By: James Trasher

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WELL SAMPLING LOG

WELL DESIGNATION: **WP-4**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/20/98
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 20.35 ft. (from TOC)

(2) Depth to Water: 7.26 ft. (from TOC)

(3) Column of Water: 13.09 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 2.13 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	08:14	08:21	08:25					
Vol Purged (gal)	2.0	3.0	4.0					
ORP/EH (MV)	OR-	OR-	OR-					
PH	6.4	6.4	6.4					
Cond. (MS/CM)	1900	1900	1900					
Turb. (NTU)	667	40.9	27.4					
Temp. (°C)	13	13	14					

Total Volume Purged: 8.0 gal

Total Purge Time: 0:35

Sampling Info:

Sample Method: Submersible Pump

No. of Bottles: 7

Sample Time: 08:30

Sample Analyses:

Comments:

Logged By: James Trasher

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WELL SAMPLING LOG

WELL DESIGNATION: **WP-5**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/19/98
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 29.60 ft. (from TOC)

(2) Depth to Water: 18.45 ft. (from TOC)

(3) Column of Water: 11.15 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.82 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	16:46	16:50	16:55	17:00	17:03	17:06	17:10	
Vol Purged (gal)	2.0	3.0	4.0	5.0	6.0	7.0	8.0	
ORP/EH (MV)	OR-	-55	-75	-65	-70	-70	-70	
PH	6.1	6.2	7.1	7.0	7.0	7.0	7.1	
Cond. (MS/CM)	860	830	890	870	850	870	880	
Turb. (NTU)	>1000	311	236	271	272	268	118	
Temp. (°C)	17	17	16	16	16	15	15	

Total Volume Purged: 8.0 gal

Total Purge Time: 0:30

Sampling Info:

Sample Method: Submersible Pump

No. of Bottles: 7

Sample Time: 17:15

Sample Analyses:

Comments:

Logged By: James Trasher

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WELL SAMPLING LOG

WELL DESIGNATION: **WP-6**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/19/98
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 24.90 ft. (from TOC)

(2) Depth to Water: 14.50 ft. (from TOC)

(3) Column of Water: 10.40 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.65 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	15:53	16:02	16:08	16:10				
Vol Purged (gal)	1.0	3.0	5.0	6.0				
ORP/EH (MV)	OR-	OR-	OR-	OR-				
PH	6.6	6.7	6.7	6.7				
Cond. (MS/CM)	2000	2400	2400	2300				
Turb. (NTU)	598	127	31.5	19.2				
Temp. (°C)	15	14	14	14				

Total Volume Purged: 8.0 gal

Total Purge Time: 0:20

Sampling Info:

Sample Method: Submersible Pump

No. of Bottles: 7

Sample Time: 16:15

Sample Analyses:

Comments:

Logged By: James Trasher

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WELL SAMPLING LOG

WELL DESIGNATION: **WP-7**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967.07.24
Date: 8/19/98
Screen Length: 10'

Purge Information:

(1) Depth to Bottom of Well: 19.00 ft. (from TOC)

(2) Depth to Water: 9.23 ft. (from TOC)

(3) Column of Water: 9.77 ft. (#1 - #2)

(4) Casing Diameter: 2 in

(5) Volume Conversion: 0.163 gal/ft

(6) 1 Vol. of Well: 1.63 gal

Method of Purging: Grundfos Rediflow 2 Submersible Pump

Volume Conversion:

2" = 0.163 4" = 0.653 6" = 1.469 8" = 2.611 10" = 4.08

Field Analysis:

Time	15:05	15:11	15:17					
Vol Purged (gal)	1.0	3.0	5.0					
ORP/EH (MV)	OR-	OR-	OR-					
PH	6.7	6.7	6.7					
Cond. (MS/CM)	1170	1190	1190					
Turb. (NTU)	>1000	239	51.9					
Temp. (°C)	16	14	14					

Total Volume Purged: 8.0 gal

Total Purge Time: 0:20

Sampling Info:

Sample Method: Submersible Pump

No. of Bottles: 7

Sample Time: 15:30

Sample Analyses:

Comments:

Logged By: James Trasher

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SURFACE WATER & SEDIMENT SAMPLING LOG

SAMPLE DESIGNATION: **SW/SED-20**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967
Date: 8/28/98

Flow Information:

(1) Width of Stream: 50 ft.

(2) Depth of Stream: 3.5 ft.

(3) Cross Sectional Area: 175 ft^2
(#1 x #2)

(4) Travel Time: 52 sec.

(5) Flow Velocity: 0.96 ft/sec.
(50/#4)

(6) Discharge Rate: 168 ft^3/sec
(#3 x #5)

Field Analysis:

Time	ORP/EH (mv)	pH	Cond. (ms/cm)	Turb. (ntu)	Temp. (C)
13:00	115	9.6	700	46.5	19

Sampling Info:

Sample Method: Beaker/Split Spoon

Sample Depth: 0" to 6" & 6" to 12"

Sample Time: 13:00

Sample Type: Grab

Sample Analysis: Target Compounds & TOCs

No. of Bottles: 10

Adjacent Land Use: % woodland: 10 % wetland: 10 % farmland: 0 % comm/ind: 50 %res: 30

Water Color: Light Brown

Sediment Substrate: % gravel: % sand: % silt and clay: 50 % organic material: 50

Sediment Odors: Petroleum odors

Comments:
Surface water and sediment MS/MD taken at this location.

Logged By: James F. Trasher

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SURFACE WATER & SEDIMENT SAMPLING LOG

SAMPLE DESIGNATION: **SW/SED-21**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967
Date: 8/26/98

Flow Information:

(1) Width of Stream: 45 ft.

(2) Depth of Stream: 3.5 ft.

(3) Cross Sectional Area: 157.5 ft^2
(#1 x #2)

(4) Travel Time: 49 sec.

(5) Flow Velocity: 1.02 ft/sec.
(50/#4)

(6) Discharge Rate: 160.2 ft^3/sec
(#3 x #5)

Field Analysis:

Time	ORP/EH (mv)	pH	Cond. (ms/cm)	Turb. (ntu)	Temp. (C)
17:00	110	8.4	790	34.0	27

Sampling Info:

Sample Method: Beaker/Split Spoon

Sample Depth: 0" to 6" & 6" to 12"

Sample Time: 17:00

Sample Type: Grab

Sample Analysis: Target Compounds & TOCs

No. of Bottles: 10

Adjacent Land Use: % woodland: 50 % wetland: 50 % farmland: 0 % comm/ind: 0 %res: 0

Water Color: Light Brown

Sediment Substrate: % gravel: % sand: % silt and clay: 50 % organic material: 50

Sediment Odors: Petroleum odors

Comments:
Sample taken downstream from 48" CMP

Logged By: James F. Trasher

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SURFACE WATER & SEDIMENT SAMPLING LOG

SAMPLE DESIGNATION: **SW/SED-22**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967
Date: 8/26/98

Flow Information:

(1) Width of Stream: 38 ft.

(2) Depth of Stream: 3.0 ft.

(3) Cross Sectional Area: 114 ft^2
(#1 x #2)

(4) Travel Time: 32 sec.

(5) Flow Velocity: 1.56 ft/sec.
(50/#4)

(6) Discharge Rate: 177.8 ft^3/sec
(#3 x #5)

Field Analysis:

Time	ORP/EH (mv)	pH	Cond. (ms/cm)	Turb. (ntu)	Temp. (C)
18:30	125	9.1	180	33.7	18

Sampling Info:

Sample Method: Beaker/Split Spoon

Sample Depth: 0" to 6" & 6" to 12"

Sample Time: 18:30

Sample Type: Grab

Sample Analysis: Target Compounds & TOCs

No. of Bottles: 10

Adjacent Land Use: % woodland: 50 % wetland: 50 % farmland: 0 % comm/ind: 0 %res: 0

Water Color: Light Brown

Sediment Substrate: % gravel: % sand: % silt and clay: 50 % organic material: 50

Sediment Odors: Petroleum odors

Comments:
Sample taken after intersection of Ley Creek and Old Ley Creek

Logged By: James F. Trasher

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SURFACE WATER & SEDIMENT SAMPLING LOG

SAMPLE DESIGNATION: **SW/SED-23**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967
Date: 8/28/98

Flow Information:

(1) Width of Stream: 35 ft.

(2) Depth of Stream: 4.0 ft.

(3) Cross Sectional Area: 140 ft^2
(#1 x #2)

(4) Travel Time: 43 sec.

(5) Flow Velocity: 1.16 ft/sec.
(50/#4)

(6) Discharge Rate: 162.8 ft^3/sec
(#3 x #5)

Field Analysis:

Time	ORP/EH (mv)	pH	Cond. (ms/cm)	Turb. (ntu)	Temp. (C)
08:15	185	13.7	950	39.9	14

Sampling Info:

Sample Method: Beaker/Split Spoon

Sample Depth: 0" to 6" & 6" to 12"

Sample Time: 08:15

Sample Type: Grab

Sample Analysis: Target Compounds & TOCs

No. of Bottles: 10

Adjacent Land Use: % woodland: 30 % wetland: 70 % farmland: 0 % comm/ind: 0 %res: 0

Water Color: Light Brown

Sediment Substrate: % gravel: % sand: % silt and clay: 50 % organic material: 50

Sediment Odors: Petroleum odors

Comments:
Location downstream of small inlet at end of landfill.

Logged By: James F. Trasher

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SURFACE WATER & SEDIMENT SAMPLING LOG

SAMPLE DESIGNATION: **SW/SED-24**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967
Date: 8/28/98

Flow Information:

(1) Width of Stream: 40 ft.

(2) Depth of Stream: 4.5 ft.

(3) Cross Sectional Area: 180 ft^2
(#1 x #2)

(4) Travel Time: 165 sec.

(5) Flow Velocity: 0.30 ft/sec.
(50/#4)

(6) Discharge Rate: 64 ft^3/sec
(#3 x #5)

Field Analysis:

Time	ORP/EH (mv)	pH	Cond. (ms/cm)	Turb. (ntu)	Temp. (C)
10:20	110	9.8	1040	19.9	13

Sampling Info:

Sample Method: Beaker/Split Spoon

Sample Depth: 0" to 6" & 6" to 12"

Sample Time: 08:15

Sample Type: Grab

Sample Analysis: Target Compounds & TOCs

No. of Bottles: 10

Adjacent Land Use: % woodland: 30 % wetland: 10 % farmland: 0 % comm/ind: 50 %res: 10

Water Color: Light Brown

Sediment Substrate: % gravel: % sand: % silt and clay: 50 % organic material: 50

Sediment Odors: Petroleum odors

Comments:
Location downstream from Bear Trap Creek inflow. (Near 7th North Bridge)

Logged By: James F. Trasher

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SURFACE WATER & SEDIMENT SAMPLING LOG

SAMPLE DESIGNATION: **SW/SED-25**

Project Name: Town of Salina Landfill
Project Location: Salina, New York

Project No: 6967
Date: 8/26/98

Flow Information:

(1) Width of Stream: 10 ft.

(2) Depth of Stream: 1.0 ft.

(3) Cross Sectional Area: 10.0 ft^2
(#1 x #2)

(4) Travel Time: NA

(5) Flow Velocity: NA
(50/#4)

(6) Discharge Rate: NA
(#3 x #5)

Field Analysis:

Time	ORP/EH (mv)	pH	Cond. (ms/cm)	Turb. (ntu)	Temp. (C)
09:50	130	7.6	530	21.0	20

Sampling Info:

Sample Method: Beaker/Split Spoon

Sample Depth: 0" to 6" & 6" to 12"

Sample Time: 09:50

Sample Type: Grab

Sample Analysis: Target Compounds & TOCs

No. of Bottles: 10

Adjacent Land Use: % woodland: 0 % wetland: 50 % farmland: 0 % comm/ind: 50 %res: 0

Water Color: Brown/Orange

Sediment Substrate: % gravel: % sand: % silt and clay: 50 % organic material: 50

Sediment Odors: Petroleum odors

Comments:
Location in drainage swale off the NYS Thruway

Logged By: James F. Trasher

APPENDIX C
Analytical Laboratory Data

Complete List of Data Qualifiers

Organic Data Qualifiers:

B	Indicates compound was found in the associated blank as well as in the sample.
C	Indicates pesticide results where the identification was confirmed by GC/MS.
D	Indicates compound identified in analysis at secondary dilution factor.
E	Indicates compounds whose concentrations exceeded the calibration range.
G	Indicates compound concentration considered estimated based on review of data.
J	Indicates an estimated value.
N	Indicates a spike sample recovery was not within the control limits.
NA	Indicates not analyzed.
P	Indicates there was a greater than 25% difference between the two GC column results for a pesticide/Aroclor. The lower value is reported.
R	Indicates value rejected but useable to show the magnitude of contaminated level.
U	Indicates compound was analyzed for but not detected.
X	Indicates the use of alternate chromatographic peaks.

Dioxin Data For Groundwater

*	Estimated Maximum Possible Concentration (EMPC) value.

Inorganic Data Qualifiers:

B	Indicates compound concentration was more than or same as the instrument detection limit, but less than the contract required limit.
E	Indicates compound concentration is an estimated value or not reported due to the presence of interference.
G	Indicates compound concentration considered estimated based on review of data.
J	Indicates an estimated value.
K	Indicates the post digestion spike recovery was not within the control limits.
M	Indicates duplicate injection results exceeded control limits.
N	Indicates a spike sample recovery was not within the control limits.
NA	Indicates not analyzed.
S	Indicates value determined by the Method of Standard Dilution.
U	Indicates compound was analyzed for but not detected.
*	Indicates duplicate analyses were not within the control limits.

APPENDIX C-1

Groundwater Data

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER

Sample ID		MW-0		MW-0		MW-0D		MW-1		MW-2	
Lab Sample Number		A8340501		23199073		A8338501		A8349801		A8349804	
Sampling Date		08/18/98		09/23/99		08/17/98		08/24/98		08/24/98	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
TCL Volatile Organics											
1,1,1-Trichloroethane	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	ug/l	40	40	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	ug/l	10 U	10 U	NA	NA	10 U	10 U	4 J	4 J	10 U	10 U
Bromodichloromethane	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	ug/l	1 J	1 J	NA	NA	10 U	10 U	9 J	9 J	10 U	10 U
Chloroethane	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
Chloromethane	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	ug/l	10 U	10 U	NA	NA	10 U	10 U	4 BJ	4 BJ	4 BJ	4 BJ
trans-1,3-Dichloropropene	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	ug/l	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 UJ
Xylene (total)	ug/l	10 U	10 U	NA	NA	10 U	10 U	11	12	10 U	10 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER

Sample ID Lab Sample Number Sampling Date	Units	MW-3 A8352701 08/25/98				MW-4 A8349806 08/24/98				MW-5 A8349805 08/24/98				MW-5D A8346002 08/20/98				MW-6 A8340301 08/18/98			
		Lab		Validated		Lab		Validated		Lab		Validated		Lab		Validated		Lab		Validated	
TCL Volatile Organics																					
1,1,1-Trichloroethane	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	4	J	4	J
1,1,2,2-Tetrachloroethane	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2-Trichloroethane	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
1,1-Dichloroethane	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
1,1-Dichloroethene	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
1,2-Dichloroethane	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
1,2-Dichloroethene (total)	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	81		83	
1,2-Dichloropropane	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2-Butanone	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2-Hexanone	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
4-Methyl-2-Pentanone	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Acetone	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Benzene	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Bromodichloromethane	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Bromoform	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Bromomethane	ug/l	20	U	20	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Carbon Disulfide	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Carbon Tetrachloride	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Chlorobenzene	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Chloroethane	ug/l	94		94		10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Chloroform	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Chloromethane	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
cis-1,3-Dichloropropene	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Dibromochloromethane	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Ethylbenzene	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Methylene Chloride	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Styrene	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Tetrachloroethene	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Toluene	ug/l	6	BJ	6	BJ	3	BJ	3	BJ	3	BJ	3	BJ	10	U	10	U	10	U	10	U
trans-1,3-Dichloropropene	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Trichloroethene	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Vinyl Chloride	ug/l	20	U	20	UJ	10	U	10	UJ	10	U	10	UJ	10	U	10	U	10	U	10	U
Xylene (total)	ug/l	20	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER

Sample ID Lab Sample Number Sampling Date	Units	MW-7 A8343201 08/19/98		MW-8 A8340302 08/18/98		MW-9 A8340502 08/18/98		MW-10 A8349901 08/24/98		MW-10 23199074 09/23/99	
		Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
TCL Volatile Organics											
1,1,1-Trichloroethane	ug/l	6 J	6 J	10 U	10 U	10 U	10 U	2,800 D	2,822 D	2800 DJ	2800 DJ
1,1,2,2-Tetrachloroethane	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	ug/l	20 U	20 U	10 U	10 U	2 J	3 J	700 E	704 EJ	5000 U	570 EG
1,1-Dichloroethene	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	260 E	259 EJ	5000 U	360 EG
1,2-Dichloroethane	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)	ug/l	200	206	10 U	10 U	11	12	27,000 D	26,742 D	38011 D	38011 DG
1,2-Dichloropropane	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	3,100 E	3,100 EJ	10 U	10 U
Benzene	ug/l	20 U	20 U	3 J	3 J	10 U	10 U	25	25	29	29 G
Bromodichloromethane	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	ug/l	20 U	20 U	23	23	10 U	10 U	3 J	3 J	3 J	3 J
Chloroethane	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	140	136	47	47
Chloroform	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloromethane	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	47 G
cis-1,3-Dichloropropene	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	1,700 DJ	1,700 DJ	3100 DJ	3100 DJ
Methylene Chloride	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	52	52	10 U	10 U
Styrene	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	200 E	209 EJ	10 U	10 U
Tetrachloroethene	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	75	75	6 J	6 G
Toluene	ug/l	20 U	20 U	10 U	10 U	7 J	7 J	93,000 BD	92,774 BD	61000 D	61000 DG
trans-1,3-Dichloropropene	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	ug/l	6 J	6 J	10 U	10 U	10 U	10 U	11,000 D	11,138 D	5000 U	570 EG
Vinyl Chloride	ug/l	20 U	20 U	10 U	10 U	110	107	1,000 E	1,059 EJ	5000 U	740 EG
Xylene (total)	ug/l	20 U	20 U	2 J	2 J	10 U	10 U	11,000 D	11,394 D	17900 DJ	17900 DJ

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER

Sample ID Lab Sample Number Sampling Date	Units	MW-12 A8352702 08/25/98		MW-12D A8352703 08/25/98		MW-14 A8349802 08/24/98		MW-15 A8348201 08/21/98	
		Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
TCL Volatile Organics									
1,1,1-Trichloroethane	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 U
1,1,2,2-Tetrachloroethane	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 U
1,1,2-Trichloroethane	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 UJ
1,1-Dichloroethane	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 U
1,1-Dichloroethene	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 U
1,2-Dichloroethane	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 U
1,2-Dichloroethene (total)	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 U
1,2-Dichloropropane	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 U
2-Butanone	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 U
2-Hexanone	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 U
4-Methyl-2-Pentanone	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 U
Acetone	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 U
Benzene	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 U
Bromodichloromethane	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 U
Bromoform	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 U
Bromomethane	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 U
Carbon Disulfide	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 U
Carbon Tetrachloride	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 U
Chlorobenzene	ug/l	4 J	4 J	10 U	10 U	10 U	10 U	20 U	20 U
Chloroethane	ug/l	9 J	9 J	10 U	10 U	10 U	10 U	20 U	20 U
Chloroform	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 U
Chloromethane	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	7 J	7 J
cis-1,3-Dichloropropene	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 U
Dibromochloromethane	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 U
Ethylbenzene	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 U
Methylene Chloride	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 U
Styrene	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 U
Tetrachloroethene	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	20 U	20 U
Toluene	ug/l	14 BJ	14 BJ	7 BJ	7 BJ	7 BJ	7 BJ	20 U	20 U
trans-1,3-Dichloropropene	ug/l	20 U	20 U	10 U	10 U	10 U	10 U	120	125
Trichloroethene	ug/l	20 U	20 U	10 U	10 U	2 J	2 J	20 U	20 U
Vinyl Chloride	ug/l	20 U	20 UJ	10 U	10 UJ	10 U	10 UJ	20 U	20 U
Xylene (total)	ug/l	20 U	20 U	10 U	10 U	1 J	1 J	8 J	8 J

TOWN OF S...NA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER

Sample ID Lab Sample Number Sampling Date	Units	MW-0 A8340501 08/18/98		MW-0 23199073 09/23/99		MW-0D A8338501 08/17/98		MW-1 A8349801 08/24/98		MW-2 A8349804 08/24/98	
		Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
TCL Semivolatile Organics											
1,2,4-Trichlorobenzene	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
1,2-Dichlorobenzene	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
1,3-Dichlorobenzene	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
1,4-Dichlorobenzene	ug/l	10 U	10 U	NA	NA	9 U	9 U	2 J	2 J	10 U	10 U
2,2'-Oxybis(1-Chloropropane)	ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/l	24 U	24 U	NA	NA	24 U	24 U	24 U	24 U	24 U	24 U
2,4,6-Trichlorophenol	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
2,4-Dichlorophenol	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
2,4-Dimethylphenol	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
2,4-Dinitrophenol	ug/l	24 U	24 U	NA	NA	24 U	24 U	24 U	24 U	24 U	24 U
2,4-Dinitrotoluene	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
2,6-Dinitrotoluene	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
2-Chloronaphthalene	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
2-Chlorophenol	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
2-Methyl-4,6-dinitrophenol	ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
2-Methylphenol	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
2-Nitroaniline	ug/l	24 U	24 U	NA	NA	24 U	24 U	24 U	24 U	24 U	24 U
2-Nitrophenol	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
3,3'-Dichlorobenzidine	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
3-Nitroaniline	ug/l	24 U	24 U	NA	NA	24 U	24 U	24 U	24 U	24 U	24 U
4,6-Dinitro-2-methylphenol	ug/l	24 U	24 U	NA	NA	24 U	24 U	24 U	24 U	24 U	24 U
4-Bromophenyl-phenylether	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 UJ	10 U	10 UJ
4-Chloro-3-methylphenol	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
4-Chloroaniline	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
4-Chlorophenyl-phenylether	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
4-Methylphenol	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
4-Nitroaniline	ug/l	24 U	24 U	NA	NA	24 U	24 U	24 U	24 U	24 U	24 U
4-Nitrophenol	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER

Sample ID Lab Sample Number Sampling Date	Units	MW-3 A8352701 08/25/98				MW-4 A8349806 08/24/98				MW-5 A8349805 08/24/98				MW-5D A8346002 08/20/98				MW-6 A8340301 08/18/98			
		Lab		Validated		Lab		Validated		Lab		Validated		Lab		Validated		Lab		Validated	
TCL Semivolatile Organics																					
1,2,4-Trichlorobenzene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
1,2-Dichlorobenzene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
1,3-Dichlorobenzene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
1,4-Dichlorobenzene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
2,2'-Oxybis(1-Chloropropane)	ug/l	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,4,5-Trichlorophenol	ug/l	24	U	24	U	24	U	24	U	24	U	24	U	24	U	25	U	24	U	24	U
2,4,6-Trichlorophenol	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
2,4-Dichlorophenol	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
2,4-Dimethylphenol	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
2,4-Dinitrophenol	ug/l	24	U	24	U	24	U	24	U	24	U	24	U	24	U	25	U	24	U	24	U
2,4-Dinitrotoluene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
2,6-Dinitrotoluene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
2-Chloronaphthalene	ug/l	2	J	2	J	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
2-Chlorophenol	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
2-Methyl-4,6-dinitrophenol	ug/l	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Methylnaphthalene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
2-Methylphenol	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
2-Nitroaniline	ug/l	24	U	24	U	24	U	24	U	24	U	24	U	24	U	25	U	24	U	24	U
2-Nitrophenol	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
3,3'-Dichlorobenzidine	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
3-Nitroaniline	ug/l	24	U	24	U	24	U	24	U	24	U	24	U	24	U	25	U	24	U	24	U
4,6-Dinitro-2-methylphenol	ug/l	24	U	24	U	24	U	24	U	24	U	24	U	24	U	25	U	24	U	24	U
4-Bromophenyl-phenylether	ug/l	9	U	9	U	9	U	9	UJ	9	U	9	UJ	10	U	10	U	10	U	10	U
4-Chloro-3-methylphenol	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
4-Chloroaniline	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
4-Chlorophenyl-phenylether	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
4-Methylphenol	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
4-Nitroaniline	ug/l	24	U	24	U	24	U	24	U	24	U	24	U	24	U	25	U	24	U	24	U
4-Nitrophenol	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER

Sample ID Lab Sample Number Sampling Date	Units	MW-7 A8343201 08/19/98		MW-8 A8340302 08/18/98		MW-9 A8340502 08/18/98		MW-10 A8349901 08/24/98		MW-10 23199074 09/23/99	
		Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
TCL Semivolatile Organics											
1,2,4-Trichlorobenzene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
1,2-Dichlorobenzene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	4 J	4 J	5 J	5 J
1,3-Dichlorobenzene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
1,4-Dichlorobenzene	ug/l	10 U	10 U	5 J	5 J	10 U	10 U	10	10	9 J	9 J
2,2'-Oxybis(1-Chloropropane)	ug/l	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U
2,4,5-Trichlorophenol	ug/l	24 U	24 U	24 U	24 U	24 U	24 U	24 U	24 U	50 U	50 U
2,4,6-Trichlorophenol	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
2,4-Dichlorophenol	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
2,4-Dimethylphenol	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	20	20	20 G	20 G
2,4-Dinitrophenol	ug/l	24 U	24 U	24 U	24 U	24 U	24 U	24 U	24 U	50 U	50 U
2,4-Dinitrotoluene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
2,6-Dinitrotoluene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
2-Chloronaphthalene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
2-Chlorophenol	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
2-Methyl-4,6-dinitrophenol	ug/l	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U
2-Methylnaphthalene	ug/l	10 U	10 U	6 J	6 J	10 U	10 U	4 J	4 J	9 J	9 J
2-Methylphenol	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	180 D	184 D	78 G	78 G
2-Nitroaniline	ug/l	24 U	24 U	24 U	24 U	24 U	24 U	24 U	24 U	50 U	50 U
2-Nitrophenol	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
3,3'-Dichlorobenzidine	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
3-Nitroaniline	ug/l	24 U	24 U	24 U	24 U	24 U	24 U	24 U	24 U	50 U	50 U
4,6-Dinitro-2-methylphenol	ug/l	24 U	24 U	24 U	24 U	24 U	24 U	24 U	24 U	NA	NA
4-Bromophenyl-phenylether	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 UJ	10 U	10 U
4-Chloro-3-methylphenol	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
4-Chloroaniline	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
4-Chlorophenyl-phenylether	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
4-Methylphenol	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	220 D	184 D	130 D	130 D
4-Nitroaniline	ug/l	24 U	24 U	24 U	24 U	24 U	24 U	24 U	24 U	50 U	50 U
4-Nitrophenol	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	50 U	50 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER

Sample ID Lab Sample Number Sampling Date	Units	MW-12 A8352702 08/25/98		MW-12D A8352703 08/25/98		MW-14 A8349802 08/24/98		MW-15 A8348201 08/21/98	
		Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
TCL Semivolatile Organics									
1,2,4-Trichlorobenzene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
1,2-Dichlorobenzene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	4 J	4 J
1,3-Dichlorobenzene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
1,4-Dichlorobenzene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	4 J	4 J
2,2'-Oxybis(1-Chloropropane)	ug/l	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/l	25 U	25 U	24 U	24 U	24 U	24 U	24 U	24 U
2,4,6-Trichlorophenol	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
2,4-Dichlorophenol	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
2,4-Dimethylphenol	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
2,4-Dinitrophenol	ug/l	25 U	25 U	24 U	24 U	24 U	24 U	24 U	24 U
2,4-Dinitrotoluene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
2,6-Dinitrotoluene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
2-Chloronaphthalene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
2-Chlorophenol	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
2-Methyl-4,6-dinitrophenol	ug/l	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	2 J	2 J
2-Methylphenol	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
2-Nitroaniline	ug/l	25 U	25 U	24 U	24 U	24 U	24 U	24 U	24 U
2-Nitrophenol	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
3,3'-Dichlorobenzidine	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
3-Nitroaniline	ug/l	25 U	25 U	24 U	24 U	24 U	24 U	24 U	24 U
4,6-Dinitro-2-methylphenol	ug/l	25 U	25 U	24 U	24 U	24 U	24 U	24 U	24 U
4-Bromophenyl-phenylether	ug/l	10 U	10 U	9 U	9 U	9 U	9 UJ	10 U	10 U
4-Chloro-3-methylphenol	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
4-Chloroaniline	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
4-Chlorophenyl-phenylether	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
4-Methylphenol	ug/l	10 U	10 U	9 U	9 U	2 J	2 J	10 U	10 U
4-Nitroaniline	ug/l	25 U	25 U	24 U	24 U	24 U	24 U	24 U	24 U
4-Nitrophenol	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER

Sample ID		MW-0		MW-0		MW-0D		MW-1		MW-2	
Lab Sample Number		A8340501		23199073		A8338501		A8349801		A8349804	
Sampling Date		08/18/98		09/23/99		08/17/98		08/24/98		08/24/98	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Acenaphthene	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Acenaphthylene	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Anthracene	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Benzo(a)anthracene	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Benzo(a)pyrene	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Benzo(b)fluoranthene	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Benzo(g,h,i)perylene	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Benzo(k)fluoranthene	ug/l	10 U	10 UJ	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
bis(2-Chloroethoxy)methane	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
bis(2-Chloroethyl)Ether	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
bis(2-Chloroisopropyl)ether	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Bis(2-Ethylhexyl)phthalate	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Butylbenzylphthalate	ug/l	1 J	1 J	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Carbazole	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Chrysene	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Dibenz(a,h)anthracene	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Dibenzofuran	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Diethylphthalate	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Dimethylphthalate	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Di-n-Butylphthalate	ug/l	2 J	2 J	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Di-n-octylphthalate	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Fluoranthene	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Fluorene	ug/l	10 U	9 U	NA	NA	9 U	9 U	9 U	9 U	10 U	9 U
Hexachlorobenzene	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Hexachlorobutadiene	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Hexachlorocyclopentadiene	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Hexachloroethane	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Isophorone	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Naphthalene	ug/l	10 U	10 U	NA	NA	9 U	9 U	3 J	3 J	10 U	10 U
Nitrobenzene	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
N-Nitroso-di-n-propylamine	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
N-Nitrosodiphenylamine (1)	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Pentachlorophenol	ug/l	24 U	24 U	NA	NA	24 U	24 U	24 U	24 U	24 U	24 U
Phenanthrene	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Phenol	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U
Pyrene	ug/l	10 U	10 U	NA	NA	9 U	9 U	9 U	9 U	10 U	10 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
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Sample ID Lab Sample Number Sampling Date	Units	MW-3 A8352701 08/25/98				MW-4 A8349806 08/24/98				MW-5 A8349805 08/24/98				MW-5D A8346002 08/20/98				MW-6 A8340301 08/18/98			
		Lab		Validated		Lab		Validated		Lab		Validated		Lab		Validated		Lab		Validated	
Acenaphthene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Acenaphthylene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Anthracene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Benzo(a)anthracene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Benzo(a)pyrene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Benzo(b)fluoranthene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Benzo(g,h,i)perylene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Benzo(k)fluoranthene	ug/l	9	U	9	UJ	9	U	9	U	9	U	9	U	10	U	10	UJ	10	U	10	UJ
bis(2-Chloroethoxy)methane	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
bis(2-Chloroethyl)Ether	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
bis(2-Chloroisopropyl)ether	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Bis(2-Ethylhexyl)phthalate	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	2	J	2	J
Butylbenzylphthalate	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Carbazole	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Chrysene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Dibenz(a,h)anthracene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Dibenzofuran	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Diethylphthalate	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Dimethylphthalate	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Di-n-Butylphthalate	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Di-n-octylphthalate	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Fluoranthene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Fluorene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	9	U
Hexachlorobenzene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Hexachlorobutadiene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Hexachlorocyclopentadiene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Hexachloroethane	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Indeno(1,2,3-cd)pyrene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Isophorone	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Naphthalene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Nitrobenzene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
N-Nitroso-di-n-propylamine	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
N-Nitrosodiphenylamine (1)	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Pentachlorophenol	ug/l	24	U	24	U	24	U	24	U	24	U	24	U	24	U	25	U	24	U	24	U
Phenanthrene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Phenol	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U
Pyrene	ug/l	9	U	9	U	9	U	9	U	9	U	9	U	10	U	10	U	10	U	10	U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER

Sample ID Lab Sample Number Sampling Date	Units	MW-7 A8343201 08/19/98		MW-8 A8340302 08/18/98		MW-9 A8340502 08/18/98		MW-10 A8349901 08/24/98		MW-10 23199074 09/23/99	
		Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Acenaphthene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
Acenaphthylene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
Anthracene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
Benzo(a)anthracene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
Benzo(a)pyrene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
Benzo(b)fluoranthene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
Benzo(g,h,i)perylene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
Benzo(k)fluoranthene	ug/l	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	9 U	9 U	10 U	10 U
bis(2-Chloroethoxy)methane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
bis(2-Chloroethyl)Ether	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
bis(2-Chloroisopropyl)ether	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	NA	NA
Bis(2-Ethylhexyl)phthalate	ug/l	1 J	1 J	10 U	10 U	17	17	9 U	9 U	3 JB	3 JB
Butylbenzylphthalate	ug/l	5 J	5 J	2 J	2 J	5 J	5 J	9 U	9 U	10 U	10 U
Carbazole	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
Chrysene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
Dibenz(a,h)anthracene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
Dibenzofuran	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
Diethylphthalate	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	14	14	16 G	16 G
Dimethylphthalate	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
Di-n-Butylphthalate	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	1 J	1 J	10 G	10 G
Di-n-octylphthalate	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
Fluoranthene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
Fluorene	ug/l	10 U	9 U	10 U	9 U	10 U	9 U	9 U	9 U	10 U	10 U
Hexachlorobenzene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
Hexachlorobutadiene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
Hexachlorocyclopentadiene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
Hexachloroethane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
Isophorone	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
Naphthalene	ug/l	10 U	10 U	3 J	3 J	10 U	10 U	25	25	36 G	36 G
Nitrobenzene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
N-Nitroso-di-n-propylamine	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
N-Nitrosodiphenylamine (1)	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
Pentachlorophenol	ug/l	24 U	24 U	24 U	24 U	24 U	24 U	24 U	24 U	50 U	50 U
Phenanthrene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U
Phenol	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	6 J	6 J	10 U	10 U
Pyrene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	9 U	9 U	10 U	10 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER

Sample ID Lab Sample Number Sampling Date	Units	MW-12 A8352702 08/25/98		MW-12D A8352703 08/25/98		MW-14 A8349802 08/24/98		MW-15 A8348201 08/21/98	
		Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Acenaphthene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
Acenaphthylene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
Anthracene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
Benzo(a)anthracene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
Benzo(a)pyrene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
Benzo(b)fluoranthene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
Benzo(g,h,i)perylene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
Benzo(k)fluoranthene	ug/l	10 U	10 UJ	9 U	9 UJ	9 U	9 U	10 U	10 UJ
bis(2-Chloroethoxy)methane	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
bis(2-Chloroethyl)Ether	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
bis(2-Chloroisopropyl)ether	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
Bis(2-Ethylhexyl)phthalate	ug/l	10 U	10 U	9 U	9 U	3 J	3 J	10 U	10 U
Butylbenzylphthalate	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	5 J	5 J
Carbazole	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
Chrysene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
Dibenz(a,h)anthracene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
Dibenzofuran	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
Diethylphthalate	ug/l	10 U	10 U	9 U	9 U	4 J	4 J	1 J	1 J
Dimethylphthalate	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
Di-n-Butylphthalate	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
Di-n-octylphthalate	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
Fluoranthene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
Fluorene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	1 J	1 J
Hexachlorobenzene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
Hexachlorobutadiene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
Hexachlorocyclopentadiene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
Hexachloroethane	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
Isophorone	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
Naphthalene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	1 J	1 J
Nitrobenzene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
N-Nitroso-di-n-propylamine	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
N-Nitrosodiphenylamine (1)	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
Pentachlorophenol	ug/l	25 U	25 U	24 U	24 U	24 U	24 U	24 U	24 U
Phenanthrene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	1 J	1 J
Phenol	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U
Pyrene	ug/l	10 U	10 U	9 U	9 U	9 U	9 U	10 U	10 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER

Sample ID Lab Sample Number Sampling Date	Units	MW-0 A8340501 08/18/98		MW-0 23199073 09/23/99		MW-0D A8338501 08/17/98		MW-1 A8349801 08/24/98		MW-2 A8349804 08/24/98	
		Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Pesticides & PCBs											
4,4' - DDD	ug/l	0.095 U	0.095 U	NA	NA	0.095 U	0.095 U	0.095 U	0.095 U	0.094 U	0.094 U
4,4'- DDE	ug/l	0.095 U	0.095 U	NA	NA	0.095 U	0.095 U	0.095 U	0.095 U	0.094 U	0.094 U
4,4'-DDT	ug/l	0.095 U	0.095 U	NA	NA	0.095 U	0.095 U	0.095 U	0.095 U	0.47 U	0.47 U
Aldrin	ug/l	0.048 U	0.048 U	NA	NA	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U	0.047 U
alpha-Chlordane	ug/l	0.048 U	0.048 U	NA	NA	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U	0.047 U
BHC-alpha	ug/l	0.048 U	0.048 U	NA	NA	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U	0.047 U
BHC-beta	ug/l	0.048 U	0.048 U	NA	NA	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U	0.047 U
BHC-delta	ug/l	0.048 U	0.048 U	NA	NA	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U	0.047 U
BHC-gamma (Lindane)	ug/l	0.048 U	0.048 U	NA	NA	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U	0.047 U
Dieldrin	ug/l	0.095 U	0.095 U	NA	NA	0.095 U	0.095 U	0.095 U	0.095 U	0.094 U	0.094 U
Endosulfan I	ug/l	0.048 U	0.048 U	NA	NA	0.048 U	0.048 U	0.048 U	0.048 U	0.094 U	0.094 U
Endosulfan II	ug/l	0.095 U	0.095 U	NA	NA	0.095 U	0.095 U	0.095 U	0.095 U	0.094 U	0.094 U
Endosulfan Sulfate	ug/l	0.095 U	0.095 U	NA	NA	0.095 U	0.095 U	0.095 U	0.095 U	0.094 U	0.094 U
Endrin	ug/l	0.095 U	0.095 U	NA	NA	0.095 U	0.095 U	0.095 U	0.095 U	0.094 U	0.094 U
Endrin Aldehyde	ug/l	0.095 U	0.095 U	NA	NA	0.095 U	0.095 U	0.095 U	0.095 U	0.047 U	0.047 U
Endrin Ketone	ug/l	0.095 U	0.095 U	NA	NA	0.095 U	0.095 U	0.095 U	0.095 U	0.094 U	0.094 U
gamma-Chlordane	ug/l	0.048 U	0.048 U	NA	NA	0.048 U	0.048 U	0.048 U	0.048 U	4.7 U	4.7 U
Heptachlor	ug/l	0.048 U	0.048 U	NA	NA	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U	0.047 U
Heptachlor Epoxide	ug/l	0.048 U	0.048 U	NA	NA	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U	0.047 U
Isodrin	ug/l	NA	NA	NA	NA	NA	NA	NA	NA	0.047 U	0.047 U
Methoxychlor	ug/l	0.031 JP	0.031 JP	NA	NA	0.48 U	0.48 U	0.48 U	0.48 U	0.015 JP	0.015 JP
Toxaphene	ug/l	4.8 U	4.8 U	NA	NA	4.8 U	4.8 U	4.8 U	4.8 U	0.94 U	0.94 U
Aroclor-1016	ug/l	0.95 U	0.95 U	NA	NA	0.95 U	0.95 U	0.95 U	0.95 U	1.9 U	1.9 U
Aroclor-1221	ug/l	1.9 U	1.9 U	NA	NA	1.9 U	1.9 U	1.9 U	1.9 U	0.94 U	0.94 U
Aroclor-1232	ug/l	0.95 U	0.95 U	NA	NA	0.95 U	0.95 U	0.95 U	0.95 U	0.94 U	0.94 U
Aroclor-1242	ug/l	0.95 U	0.95 U	NA	NA	0.95 U	0.95 U	0.95 U	0.95 U	0.94 U	0.94 U
Aroclor-1248	ug/l	0.95 U	0.95 U	NA	NA	0.95 U	0.95 U	0.18 JP	0.18 JP	0.94 U	0.94 U
Aroclor-1254	ug/l	0.95 U	0.95 U	NA	NA	0.95 U	0.95 U	0.95 U	0.95 U	0.94 U	0.94 U
Aroclor-1260	ug/l	0.95 U	0.95 U	NA	NA	0.95 U	0.95 U	0.95 U	0.95 U	0.94 U	0.94 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER

Sample ID Lab Sample Number Sampling Date	Units	MW-3 A8352701 08/25/98				MW-4 A8349806 08/24/98				MW-5 A8349805 08/24/98				MW-5D A8346002 08/20/98				MW-6 A8340301 08/18/98			
		Lab		Validated		Lab		Validated		Lab		Validated		Lab		Validated		Lab		Validated	
Pesticides & PCBs																					
4,4' - DDD	ug/l	0.097	U	0.097	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U
4,4'- DDE	ug/l	0.097	U	0.097	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U
4,4'-DDT	ug/l	0.015	JP	0.015	JP	0.47	U	0.47	U	0.47	U	0.47	U	0.094	U	0.094	U	0.47	U	0.47	U
Aldrin	ug/l	0.049	U	0.049	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U
alpha-Chlordane	ug/l	0.049	U	0.049	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U
BHC-alpha	ug/l	0.49	U	0.049	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U
BHC-beta	ug/l	0.049	U	0.049	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U
BHC-delta	ug/l	0.049	U	0.049	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U
BHC-gamma (Lindane)	ug/l	0.049	U	0.049	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U
Dieldrin	ug/l	0.097	U	0.097	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U
Endosulfan I	ug/l	0.049	U	0.049	U	0.094	U	0.094	U	0.094	U	0.094	U	0.047	U	0.047	U	0.094	U	0.094	U
Endosulfan II	ug/l	0.097	U	0.097	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U
Endosulfan Sulfate	ug/l	0.097	U	0.097	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U
Endrin	ug/l	0.097	U	0.097	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U
Endrin Aldehyde	ug/l	0.097	U	0.097	U	0.047	U	0.047	U	0.047	U	0.047	U	0.094	U	0.094	U	0.047	U	0.047	U
Endrin Ketone	ug/l	0.097	U	0.097	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U	0.094	U
gamma-Chlordane	ug/l	0.049	U	0.049	U	4.7	U	4.7	U	4.7	U	4.7	U	0.047	U	0.047	U	4.7	U	4.7	U
Heptachlor	ug/l	0.049	U	0.049	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U
Heptachlor Epoxide	ug/l	0.049	U	0.049	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U	0.047	U
Isodrin	ug/l		NA		NA	0.047	U	0.047	U	0.047	U	0.047	U		NA		NA	0.047	U	0.047	U
Methoxychlor	ug/l	0.012	JP	0.012	JP	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U
Toxaphene	ug/l	4.9	U	4.9	U	0.94	U	0.94	U	0.94	U	0.94	U	4.7	U	4.7	U	0.94	U	0.94	U
Aroclor-1016	ug/l	0.97	U	0.97	U	1.9	U	1.9	U	1.9	U	1.9	U	0.94	U	0.94	U	1.9	U	1.9	U
Aroclor-1221	ug/l	1.9	U	1.9	U	0.94	U	0.94	U	0.94	U	0.94	U	1.9	U	1.9	U	0.94	U	0.94	U
Aroclor-1232	ug/l	0.97	U	0.97	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U
Aroclor-1242	ug/l	0.97	U	0.97	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U
Aroclor-1248	ug/l	0.97	U	0.97	U	0.94	U	0.94	U	0.27	JP	0.27	JP	0.94	U	0.94	U	1		1	
Aroclor-1254	ug/l	0.97	U	0.97	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U
Aroclor-1260	ug/l	0.97	U	0.97	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U	0.94	U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER

Sample ID Lab Sample Number Sampling Date	Units	MW-7 A8343201 08/19/98				MW-8 A8340302 08/18/98				MW-9 A8340502 08/18/98				MW-10 A8349901 08/24/98				MW-10 23199074 09/23/99			
		Lab		Validated		Lab		Validated		Lab		Validated		Lab		Validated		Lab		Validated	
Pesticides & PCBs																					
4,4' - DDD	ug/l	0.095	U	0.095	U	0.094	U	0.094	U	0.094	U	0.094	U	0.1	U	0.1	U	0.10	U	0.10	U
4,4'- DDE	ug/l	0.095	U	0.095	U	0.094	U	0.094	U	0.094	U	0.094	U	0.1	U	0.1	U	0.10	U	0.10	U
4,4'-DDT	ug/l	0.095	U	0.095	U	0.47	U	0.47	U	0.47	U	0.47	U	0.1	U	0.1	U	0.10	U	0.10	U
Aldrin	ug/l	0.048	U	0.048	U	0.047	U	0.047	U	0.047	U	0.047	U	0.011	JP	0.011	JP	0.05	U	0.05	U
alpha-Chlordane	ug/l	0.048	U	0.048	U	0.047	U	0.047	U	0.047	U	0.047	U	0.05	U	0.05	U	0.05	U	0.05	U
BHC-alpha	ug/l	0.048	U	0.048	U	0.047	U	0.047	U	0.047	U	0.047	U	0.014	JP	0.014	JP	0.05	U	0.05	U
BHC-beta	ug/l	0.048	U	0.048	U	0.047	U	0.047	U	0.047	U	0.047	U	0.05	U	0.05	U	0.05	U	0.05	U
BHC-delta	ug/l	0.048	U	0.048	U	0.047	U	0.047	U	0.047	U	0.047	U	0.05	U	0.05	U	0.05	U	0.05	U
BHC-gamma (Lindane)	ug/l	0.048	U	0.048	U	0.047	U	0.047	U	0.047	U	0.047	U	0.05	U	0.05	U	0.05	U	0.05	U
Dieldrin	ug/l	0.095	U	0.095	U	0.094	U	0.094	U	0.094	U	0.094	U	0.1	U	0.1	U	0.10	U	0.10	U
Endosulfan I	ug/l	0.048	U	0.048	U	0.094	U	0.094	U	0.094	U	0.094	U	0.05	U	0.05	U	0.05	U	0.05	U
Endosulfan II	ug/l	0.095	U	0.095	U	0.094	U	0.094	U	0.094	U	0.094	U	0.1	U	0.1	U	0.10	U	0.10	U
Endosulfan Sulfate	ug/l	0.095	U	0.095	U	0.094	U	0.094	U	0.094	U	0.094	U	0.1	U	0.1	U	0.10	U	0.10	U
Endrin	ug/l	0.0025	J	0.0025	J	0.094	U	0.094	U	0.094	U	0.094	U	0.1	U	0.1	U	0.10	U	0.10	U
Endrin Aldehyde	ug/l	0.095	U	0.095	U	0.047	U	0.047	U	0.047	U	0.047	U	0.1	U	0.1	U	0.10	U	0.10	U
Endrin Ketone	ug/l	0.095	U	0.095	U	0.094	U	0.094	U	0.094	U	0.094	U	0.1	U	0.1	U	0.10	U	0.10	U
gamma-Chlordane	ug/l	0.048	U	0.048	U	4.7	U	4.7	U	4.7	U	4.7	U	0.05	U	0.05	U	0.05	U	0.05	U
Heptachlor	ug/l	0.0016	JP	0.0016	JP	0.047	U	0.047	U	0.047	U	0.047	U	0.05	U	0.05	U	0.05	U	0.05	U
Heptachlor Epoxide	ug/l	0.048	U	0.048	U	0.047	U	0.047	U	0.047	U	0.047	U	0.05	U	0.05	U	0.05	U	0.05	U
Isodrin	ug/l		NA		NA	0.047	U	0.047	U	0.047	U	0.047	U		NA		NA		NA		NA
Methoxychlor	ug/l	0.016	JP	0.016	JP	0.11	JP	0.055	JP	0.47	U	0.47	U	0.028	JP	0.028	JP	0.50	U	0.50	U
Toxaphene	ug/l	4.8	U	4.8	U	0.94	U	0.94	U	0.94	U	0.94	U	5	U	5	U	5.0	U	5.0	U
Aroclor-1016	ug/l	0.95	U	0.95	U	1.9	U	1.9	U	1.9	U	1.9	U	1	U	1	U	0.05	U	0.05	U
Aroclor-1221	ug/l	1.9	U	1.9	U	0.94	U	0.94	U	0.94	U	0.94	U	2	U	2	U	0.05	U	0.05	U
Aroclor-1232	ug/l	0.95	U	0.95	U	0.94	U	0.94	U	0.94	U	0.94	U	1	U	1	U	0.05	U	0.05	U
Aroclor-1242	ug/l	0.95	U	0.95	U	0.94	U	0.94	U	0.94	U	0.94	U	1	U	1	U	0.05	U	0.05	U
Aroclor-1248	ug/l	0.95	U	0.95	U	1.5		1.6		0.43	JP	0.43	JP	1	U	1	U	0.05	U	0.05	U
Aroclor-1254	ug/l	0.95	U	0.95	U	0.94	U	0.94	U	0.94	U	0.94	U	1	U	1	U	0.05	U	0.05	U
Aroclor-1260	ug/l	0.95	U	0.95	U	0.94	U	0.94	U	0.94	U	0.94	U	1	U	1	U	0.05	U	0.05	U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER

Sample ID Lab Sample Number Sampling Date	Units	MW-12 A8352702 08/25/98		MW-12D A8352703 08/25/98		MW-14 A8349802 08/24/98		MW-15 A8348201 08/21/98	
		Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Pesticides & PCBs									
4,4' - DDD	ug/l	0.095 U	0.095 U	0.095 U	0.095 U	0.094 U	0.094 U	0.094 U	0.094 U
4,4'- DDE	ug/l	0.095 U	0.095 U	0.095 U	0.095 U	0.094 U	0.094 U	0.094 U	0.094 U
4,4'-DDT	ug/l	0.095 U	0.095 U	0.095 U	0.095 U	0.47 U	0.47 U	0.47 U	0.47 U
Aldrin	ug/l	0.0098 JP	0.0098 JP	0.048 U	0.048 U	0.047 U	0.047 U	0.047 U	0.047 U
alpha-Chlordane	ug/l	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U	0.047 U	0.047 U	0.047 U
BHC-alpha	ug/l	0.0033 JP	0.0033 JP	0.048 U	0.048 U	0.047 U	0.047 U	0.047 U	0.047 U
BHC-beta	ug/l	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U	0.047 U	0.047 U	0.047 U
BHC-delta	ug/l	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U	0.047 U	0.047 U	0.047 U
BHC-gamma (Lindane)	ug/l	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U	0.047 U	0.047 U	0.047 U
Dieldrin	ug/l	0.095 U	0.095 U	0.095 U	0.095 U	0.094 U	0.094 U	0.094 U	0.094 U
Endosulfan I	ug/l	0.048 U	0.048 U	0.048 U	0.048 U	0.094 U	0.094 U	0.094 U	0.094 U
Endosulfan II	ug/l	0.095 U	0.095 U	0.095 U	0.095 U	0.094 U	0.094 U	0.094 U	0.094 U
Endosulfan Sulfate	ug/l	0.095 U	0.095 U	0.095 U	0.095 U	0.094 U	0.094 U	0.094 U	0.094 U
Endrin	ug/l	0.095 U	0.095 U	0.095 U	0.095 U	0.094 U	0.094 U	0.094 U	0.094 U
Endrin Aldehyde	ug/l	0.095 U	0.095 U	0.095 U	0.095 U	0.047 U	0.047 U	0.047 U	0.047 U
Endrin Ketone	ug/l	0.095 U	0.095 U	0.095 U	0.095 U	0.094 U	0.094 U	0.094 U	0.094 U
gamma-Chlordane	ug/l	0.048 U	0.048 U	0.048 U	0.048 U	4.7 U	4.7 U	4.7 U	4.7 U
Heptachlor	ug/l	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U	0.047 U	0.047 U	0.047 U
Heptachlor Epoxide	ug/l	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U	0.047 U	0.047 U	0.047 U
Isodrin	ug/l	NA	NA	NA	NA	0.047 U	0.047 U	0.047 U	0.047 U
Methoxychlor	ug/l	0.48 U	0.48 U	0.48 U	0.48 U	0.47 U	0.47 U	0.47 U	0.47 U
Toxaphene	ug/l	4.8 U	4.8 U	4.8 U	4.8 U	0.94 U	0.94 U	0.94 U	0.94 U
Aroclor-1016	ug/l	0.95 U	0.95 U	0.95 U	0.95 U	1.9 U	1.9 U	1.9 U	1.9 U
Aroclor-1221	ug/l	1.9 U	1.9 U	1.9 U	1.9 U	0.94 U	0.94 U	0.94 U	0.94 U
Aroclor-1232	ug/l	0.95 U	0.95 U	0.95 U	0.95 U	0.94 U	0.94 U	0.94 U	0.94 U
Aroclor-1242	ug/l	0.95 U	0.95 U	0.95 U	0.95 U	0.94 U	0.94 U	0.94 U	0.94 U
Aroclor-1248	ug/l	0.95 U	0.95 U	0.95 U	0.95 U	0.94 U	0.94 U	0.98	0.98
Aroclor-1254	ug/l	0.95 U	0.95 U	0.95 U	0.95 U	0.94 U	0.94 U	0.94 U	0.94 U
Aroclor-1260	ug/l	0.95 U	0.95 U	0.95 U	0.95 U	0.94 U	0.94 U	0.94 U	0.94 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER

Sample ID Lab Sample Number Sampling Date	Units	MW-0 A8340501 08/18/98		MW-0 23199073 09/23/99		MW-0D A8338501 08/17/98		MW-1 A8349801 08/24/98		MW-2 A8349804 08/24/98	
		Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Total Metals Analyses											
Aluminum	ug/l	3550	3551	3890	3890	116 B	116 B	192 B	192 B	67 B	67 B
Antimony	ug/l	5.6 U	5.6 U	15.0 U	15.0 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
Arsenic	ug/l	12	12	10.0 U	10.0 U	4 U	4 U	3.6 U	3.6 U	3.6 U	3.6 U
Barium	ug/l	541.0 EN	541.3 ENJ	493	493	29.4 EN	29.4 EJ	403 EN	403 ENJ	324 EN	324 ENJ
Beryllium	ug/l	1.00 U	1.00 U	3.0 U	3.0 U	1.00 U	1.00 U	1 U	1 U	1 U	1 U
Cadmium	ug/l	23.9	23.9	5.0 U	5.0 U	0.5 U	0.5 U	34	34	12.3	12.34
Calcium	ug/l	208000 N	208860 NJ	222000	222000	230000 N	230360	152000 N	151700 NJ	135000 N	134640 NJ
Chromium	ug/l	12.7	12.7	25.8	25.8	1.8 U	1.8 U	5 B	5.04 B	2.8 B	2.77 B
Cobalt	ug/l	6.6 B	6.6 B	38.4	38.4 B	1.3 U	1.3 U	4.7 B	4.69 B	1.5 B	1.47 B
Copper	ug/l	14.9 B	14.9 B	23.5	23.5 B	1.6 U	1.6 U	4.5 B	4.48 B	2 B	2.05 B
Iron	ug/l	40500	40465	9880	9880 G	701	701	56000	56000	20600	20600
Lead	ug/l	11.6	11.7	13.9	13.9 G	2.0 U	2.0 U	27.4	27.4	4.1	4.15 J
Magnesium	ug/l	59700	59738	66800	66800	45400	45396	56500	56453	52300	52339
Manganese	ug/l	481	481	504	504	121	121	397	397.24	258	257.8
Mercury	ug/l	0.2 U	0.2 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	ug/l	24.8 B	24.8 B	34.6	34.6 B	1.9 U	1.9 U	29.6 B	29.66 B	6.8 B	6.75 B
Potassium	ug/l	21400 EN	21361 R	20100	20100	8080 EN	8077 ENJ	73200 EN	73238 R	29400 EN	29410 R
Selenium	ug/l	5.0 U	5.0 U	7.8	7.8	5.0 U	5.0 U	5 U	5 U	5 U	5 U
Silver	ug/l	1.60 U	1.60 U	10.0 U	10.0 U	1.60 U	1.60 U	1.6 U	1.6 U	1.6 U	1.6 U
Sodium	ug/l	80200 EN	80169 EJ	21900	21900	80600 EN	80602 EJ	242000 EN	242440 EJ	97100 EN	97106 EJ
Thallium	ug/l	5.8 U	5.8 U	10.0 U	10.0 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Vanadium	ug/l	8.0 B	8.0 B	30.0 U	30.0 U	1.3 U	1.3 U	3 B	3.03 B	2 B	1.96 B
Zinc	ug/l	140.0 *	139.8 R	87.5	87.5	4.5 *	4.5 R	48.6 *	48.63 R	13 B	13.02 R
Cyanide	ug/l	10.0 U	10.0 U			10.0 U	10.0 U	10 U	10 U	10 U	10 U
Soluble Metals Analyses											
Aluminum	ug/l	50 U	50 U	NA	NA	50 U	50 U	80 U	80 U	50 U	50 U
Antimony	ug/l	5.6 U	5.6 U	NA	NA	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
Arsenic	ug/l	19.6	19.66	NA	NA	4.7 B	4.7 B	6.8 B	6.8 B	3.6 U	3.6 U
Barium	ug/l	456 E	455.71 EJ	NA	NA	31.7 E	31.7 EJ	417 E	416.89 EJ	322 E	322.24 EJ
Beryllium	ug/l	1 U	1 U	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	ug/l	3.2 B	3.15 B	NA	NA	1.2 B	1.17 B	31.4	31.41	10.8	10.79
Calcium	ug/l	209000	209150	NA	NA	230000	230050	158000	157870	140000	139540
Chromium	ug/l	1.8 U	1.8 U	NA	NA	1.8 U	1.8 U	3.1 B	3.08 B	1.8 U	1.8 U
Cobalt	ug/l	3.6 B	3.65 B	NA	NA	1.9 B	1.89 B	4.1 B	4.13 B	1.4 B	1.36 B
Copper	ug/l	2.1 B	2.09 B	NA	NA	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Iron	ug/l	4790	4791.5	NA	NA	634	633.84	53600	53568	18500	18518
Lead	ug/l	2.1 B	2.08 R	NA	NA	2 U	2 U	2 B	2.02 R	2.1 B	2.08 R
Magnesium	ug/l	62100	62067	NA	NA	45500	45501	57900	57902	54100	54101
Manganese	ug/l	538	538.45	NA	NA	117	116.73	370	370.09	239	239.5
Mercury	ug/l	0.2 U	0.2 U	NA	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	ug/l	11.7 B	11.75 B	NA	NA	1.9 U	1.9 U	27.6 B	27.6 B	7.4 B	7.36 B
Potassium	ug/l	25600 E	25563 ENJ	NA	NA	8520 E	8521.5 EJ	80400 E	80403 ENJ	33100 E	32888 ENJ
Selenium	ug/l	12	12.04	NA	NA	5 U	5 U	5 U	5 U	5 U	5 U
Silver	ug/l	1.6 U	1.6 R	NA	NA	1.6 U	1.6 U	1.6 U	1.6 R	1.6 U	1.6 R
Sodium	ug/l	110000 E	109990 EJ	NA	NA	80300 E	80295 EJ	239000 E	238730 EJ	103000 E	102650 EJ
Thallium	ug/l	5.8 U	5.8 U	NA	NA	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Vanadium	ug/l	1.3 U	1.3 U	NA	NA	1.3 U	1.3 U	2.1 B	2.12 B	1.3 U	1.3 U
Zinc	ug/l	31 E	31.01 EJ	NA	NA	15.7 E	15.71 EJ	10.2 E	10.21 EJ	14 E	14.02 EJ

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER

Sample ID Lab Sample Number Sampling Date	Units	MW-3 A8352701 08/25/98		MW-4 A8349806 08/24/98		MW-5 A8349805 08/24/98		MW-5D A8346002 08/20/98		MW-6 A8340301 08/18/98	
		Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Total Metals Analyses											
Aluminum	ug/l	174 B	174 B	196 B	196 B	2520	2515.9	111 B	110.61 B	32400	32444
Antimony	ug/l	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
Arsenic	ug/l	7.4 B	7.44 B	5 B	5.02 B	14.2	14.2	11.4	11.42	73.6	73.57
Barium	ug/l	849	849	529 EN	529 ENJ	95.7 EN	95.71 ENJ	29.9 EN	29.9 ENJ	291 EN	291.4 ENJ
Beryllium	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.7 B	1.72 B
Cadmium	ug/l	24.4	24.39	11.7	11.7	7	7.01	1.4 B	1.41 B	33	33.06
Calcium	ug/l	146000	146380	211000 N	211180 NJ	341000 N	341100 NJ	264000 N	264050 NJ	322000 N	322230 NJ
Chromium	ug/l	5.4 B	5.4 B	12.9	12.92	17.5	17.48	1.8 U	1.8 U	143	143.08
Cobalt	ug/l	5 B	4.96 B	9.4 B	9.36 B	12 B	11.96 B	1.6 B	1.63 B	27.1 B	27.07 B
Copper	ug/l	3.3 B	3.27 B	4.3 B	4.33 B	37.5	37.53	1.6 U	1.6 U	69.1	69.14
Iron	ug/l	40300	40328	19600	19645	11300	11286	2290	2288.4	55700	55674
Lead	ug/l	7.3	7.26 J	2.4 B	2.44 J	19.1	19.14	2 U	2 U	23.5	23.55
Magnesium	ug/l	56000	55991	51800	51762	118000	117800	53500	53503	95100	95137
Manganese	ug/l	276	275.88	889	889.42	1560	1563.6	53.8	53.83	2110	2107.6
Mercury	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	ug/l	37.2 B	37.24 B	15 B	14.95 B	21.7 B	21.68 B	1.9 U	1.9 U	118	118.13
Potassium	ug/l	142000	141530	30200 EN	30209 ENR	4760 EN	4769.7 R	29800 EN	29755 R	17500 EN	17711 R
Selenium	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Silver	ug/l	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Sodium	ug/l	357000	356940	83000 EN	83005 EJ	25900 EN	25869 EJ	1260000 EN	1256700 EJ	29900 EN	29865 EJ
Thallium	ug/l	5.8 U	5.8 J	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Vanadium	ug/l	5.7 B	5.68 B	2.8 B	2.79 B	11 B	10.99 B	1.3 U	1.3 U	51.3	51.28
Zinc	ug/l	22.8	22.81	23.3 *	23.34 R	66.1 *	66.13 R	6.1 *	6.07 *	185 *	184.94 R
Cyanide	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Soluble Metals Analyses											
Aluminum	ug/l	50 U	50 U	62.4 B	62.38 B	147 B	147 B	50 U	50 U	50 U	50 U
Antimony	ug/l	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.9 U	5.6 U	5.6 U
Arsenic	ug/l	8.2 B	8.17 B	7.7 B	7.69 B	6.5 B	6.47 B	14.9	14.93	67.6	67.6
Barium	ug/l	810	809.7	576 E	575.51 EJ	46 E	45.97 EJ	32.4 E	32.44 EJ	79.7 E	79.72 EJ
Beryllium	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	ug/l	26.8	26.78	11.6	11.56	0.5 U	0.5 U	1.2 B	1.15 B	0.5 U	0.5 U
Calcium	ug/l	159000	159170	222000	222270	117000	116710	278000	277750	192000	191760
Chromium	ug/l	4.6 B	4.59 B	8.7 B	8.7 B	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Cobalt	ug/l	5.2 B	5.21 B	9 B	9.06 B	2.3 B	2.33 B	1.3 U	1.3 U	3.8 B	3.83 B
Copper	ug/l	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	3.6 B	3.63 B
Iron	ug/l	45100	45061	19700	19711	306	306.41	2200	2202.7	288	287.82
Lead	ug/l	2 U	2 U	2 U	2 R	2 U	2 R	2 U	2 R	2 U	2 R
Magnesium	ug/l	60800	60777	52900	52851	36700	36747	55300	55265	53600	53609
Manganese	ug/l	279	279.39	832	831.72	19.8	19.79	47.2	47.15	664	664.09
Mercury	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	ug/l	36 B	35.98 B	11.8 B	11.84 B	7.9 B	7.88 B	1.9 U	1.9 U	11.2 B	11.23 B
Potassium	ug/l	155000	154670	31300 E	31696 ENJ	3430 E	3430.1 ENJ	31300 E	29331 ENJ	8880 E	8880.9 ENJ
Selenium	ug/l	5.7	5.74 J	5 U	5 U	5 U	5 U	5 U	5 U	6.1	6.12
Silver	ug/l	1.6 U	1.6 U	1.6 U	1.6 R	1.6 U	1.6 R	1.6 U	1.6 R	1.6 U	1.6 R
Sodium	ug/l	372000	372040	82400 E	82360 EJ	22600 E	22604 EJ	1170000 E	1169800 EJ	31900 E	31860 EJ
Thallium	ug/l	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Vanadium	ug/l	3.4 B	3.36 B	2.9 B	2.[illegible] B	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Zinc	ug/l	9.5 B	9.55 B	3.2 E	[illegible]J	18.7 E	18.73 EJ	4.6 E	4.6 EJ	33.1 E	33.1 EJ

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER

Sample ID Lab Sample Number Sampling Date	Units	MW-7 A8343201 08/19/98		MW-8 A8340302 08/18/98		MW-9 A8340502 08/18/98		MW-10 A8349901 08/24/98		MW-10 23199074 09/23/99	
		Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Total Metals Analyses											
Aluminum	ug/l	182 B	182.18 B	1320	1315.5	5440	5440.1	57 B	56.99 B	23300	23300
Antimony	ug/l	5.6 U	5.6 U	9 B	9 B	5.6 U	5.6 U	5.6 U	5.6 U	15.0 U	15.0 U
Arsenic	ug/l	3.6 U	3.6 U	3.6 U	3.6 U	40	40.06	10.1	10.08	10.0 U	10.0 U
Barium	ug/l	639 EN	638.58 ENJ	287 EN	286.53 ENJ	91.6 EN	91.56 ENJ	1690	1687.3	802	802
Beryllium	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3.0 U	3.0 U
Cadmium	ug/l	6.1	6.13	10.4	10.38	10.3	10.32	3.3 B	0.5 B	5.0 U	5.0 U
Calcium	ug/l	140000 N	139690 NJ	122000 N	122060 NJ	206000 N	205580 NJ	632000	631820	321000	321000
Chromium	ug/l	1.8 U	1.8 U	17.8	17.78	55.2	55.17	1.8 U	1.8 U	309	309
Cobalt	ug/l	4.8 B	4.82 B	2.2 B	2.16 B	6.7 B	6.75 B	49.4 B	49.4 B	50.7	50.7
Copper	ug/l	8.2 B	8.16 B	16.9 B	16.86 B	17.1 B	17.11 B	23.5 B	23.5 B	70.7	70.7
Iron	ug/l	9740	9737.4	15900	15893	17300	17266	4570	4572.2	40800	40800 G
Lead	ug/l	2 B	2 J	11.4	11.45	11.3	11.28	2 U	2 U	22.9	22.9 G
Magnesium	ug/l	63000	62987	28700	28738	34300	34317	129000	129160	99700	99700
Manganese	ug/l	1340	1340.7	363	362.59	648	647.85	7630	7633.1	3710	3710
Mercury	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U
Nickel	ug/l	18.7 B	18.72 B	15 B	14.95 B	44	44.05	137	136.77	269	269
Potassium	ug/l	23800 EN	23806 R	11000 EN	11018 R	23600 EN	23553 R	27700	27696	29400	29400
Selenium	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	7.1	7.06 J	5.0 U	5.0 U
Silver	ug/l	1.6 U	1.6 U	4.1 B	4.11 B	1.9 U	1.9 U	1.6 U	1.6 U	10.0 U	10.0 U
Sodium	ug/l	99000 EN	98973 EJ	27000 EN	26980 EJ	48200 EN	48167 EJ	22900	22919	22600	22600
Thallium	ug/l	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 J	10.0 U	10.0 U
Vanadium	ug/l	1.3 U	1.3 U	3.6 B	3.58 B	12.8 B	12.81 B	1.3 U	1.3 U	36.2	36.2 B
Zinc	ug/l	48.9 *	48.9 R	89 *	89.03 R	199 *	198.95 R	59.7	59.74	255	255
Cyanide	ug/l	11.3	14.8	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Soluble Metals Analyses											
Aluminum	ug/l	50 U	50 U	50 U	50 U	279	279.38	1070	1067.7	NA	NA
Antimony	ug/l	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	NA	NA
Arsenic	ug/l	6.3 B	6.31 B	8 B	8 B	27.6	27.57	17	16.96	NA	NA
Barium	ug/l	696 E	695.9 EJ	308 E	307.8 EJ	74 E	73.96 EJ	1700	1702.5	NA	NA
Beryllium	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	NA
Cadmium	ug/l	8.9	8.92	7	7.03	3.6 B	3.56 B	1.2 B	1.24 B	NA	NA
Calcium	ug/l	135000	135430	134000	134280	208000	207770	656000	656090	NA	NA
Chromium	ug/l	1.8 U	1.8 U	2 B	1.98 B	3.6 B	3.55 B	1.8 U	1.8 U	NA	NA
Cobalt	ug/l	4.6 B	4.65 B	1.4 B	1.39 B	1.6 B	1.6 B	50.8	50.75	NA	NA
Copper	ug/l	2 B	2.04 B	1.9 B	1.89 B	7.9 B	7.88 B	22 B	21.95 B	NA	NA
Iron	ug/l	14100	14123	11400	11373	5330	5333	1730	1729.5	NA	NA
Lead	ug/l	2 U	2 R	2 U	2 R	6.2	6.16 R	2.2 B	2.2 B	NA	NA
Magnesium	ug/l	60400	60401	28900	28938	29400	29444	144000	143.54	NA	NA
Manganese	ug/l	1120	1123.4	405	404.59	559	558.63	7600	7595.8	NA	NA
Mercury	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA
Nickel	ug/l	18.8 B	18.8 B	12.1 B	12.07 B	8.9 B	8.9 B	142	141.88	NA	NA
Potassium	ug/l	25200 E	25153 ENJ	11800 E	11825 ENJ	26200 E	26231 ENJ	29200	29226	NA	NA
Selenium	ug/l	5.9	5.9	7.4	7.46	5 U	5 U	18.2	18.17 J	NA	NA
Silver	ug/l	1.6 U	1.6 R	1.6 U	1.6 R	1.6 U	1.6 R	1.6 U	1.6 U	NA	NA
Sodium	ug/l	99400 E	99411 EJ	26600 E	26573 EJ	49400 E	49412 EJ	23200	231181	NA	NA
Thallium	ug/l	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	NA	NA
Vanadium	ug/l	1.3 U	1.3 U	1.3 U	1.3 U	4.8 B	4.84 B	1.7 B	1.75 B	NA	NA
Zinc	ug/l	79.2 E	79.26 EJ	29.7 E	29.68 EJ	81.9 E	81.91 EJ	52.2	52.16	NA	NA

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER

Sample ID Lab Sample Number Sampling Date	Units	MW-12 A8352702 08/25/98		MW-12D A8352703 08/25/98		MW-14 A8349802 08/24/98		MW-15 A8348201 08/21/98	
		Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Total Metals Analyses									
Aluminum	ug/l	332	332.07	149 B	149.36 B	825	825	687	687.17
Antimony	ug/l	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
Arsenic	ug/l	5.3 B	5.3 B	3.6 U	3.6 U	3.6 U	3.6 U	5.2 B	5.16 B
Barium	ug/l	692	691.75	73.7 B	73.67 B	286 EN	286 ENJ	670 EN	670.09 ENJ
Beryllium	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	ug/l	9.2	9.15	0.5 U	0.5 U	2.8 B	2.83 B	31.4	31.38
Calcium	ug/l	196000	195540	124000	123540	126000 N	126040 NJ	166000 N	166180 NJ
Chromium	ug/l	6.2 B	6.24 B	1.8 U	1.8 U	19.1	19.09	18.5	18.54
Cobalt	ug/l	5.5 B	5.54 B	1.3 U	1.3 U	15.7 B	15.68 B	5.4 B	5.37 B
Copper	ug/l	3.1 B	3.14 B	1.6 U	1.6 U	9.4 B	9.41 B	15.8 B	15.85 B
Iron	ug/l	15000	14960	826	825.87	3830	3828	50700	50699
Lead	ug/l	4.2	4.21 J	2 U	2 U	6.7	6.69 J	52.2	52.16
Magnesium	ug/l	57100	57111	42500	42499	52600	52571	61200	61180
Manganese	ug/l	713	712.98	33.4	33.36	336	336.34	342	341.55
Mercury	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	ug/l	25.2 B	25.18 B	1.9 U	1.9 U	29 B	29.01 B	55.6	55.59
Potassium	ug/l	101000	100960	2880 B	2880.5 B	58400 EN	58441 R	88200 EN	88161 R
Selenium	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Silver	ug/l	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Sodium	ug/l	209000	208810	66900	66930	140000 EN	139790 EJ	168000 EN	167750 EJ
Thallium	ug/l	5.8 U	5.8 J	5.8 U	5.8 J	5.8 U	5.8 U	5.8 U	5.8 U
Vanadium	ug/l	2.6 B	2.62 B	1.3 U	1.3 U	4 B	4.05 B	3.4 B	3.37 B
Zinc	ug/l	22.2	22.16	41.8	41.79	65.6 *	65.56 R	140 *	140.11 R
Cyanide	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	13.1	16.4
Soluble Metals Analyses									
Aluminum	ug/l	50 U	50 U	50 U	50 U	350	349.88	50 U	50 U
Antimony	ug/l	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
Arsenic	ug/l	8.3 B	8.28 B	4.7 B	4.67 B	3.6 U	3.6 U	4.7 B	4.7 B
Barium	ug/l	666	665.79	70.9 B	70.89 B	310 E	310.46 EJ	703 E	702.88 EJ
Beryllium	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	ug/l	9.1	9.07	0.5 U	0.5 U	2.2 B	2.24 B	29.7	29.72
Calcium	ug/l	209000	208930	131000	131290	133000	133030	178000	177540
Chromium	ug/l	2.6 B	2.58 B	1.8 U	1.8 U	8 B	8.01 B	3.4 B	3.39 B
Cobalt	ug/l	4 B	3.98 B	1.3 U	1.3 U	10.8 B	10.81 B	5.2 B	5.23 B
Copper	ug/l	1.6 U	1.6 U	1.6 U	1.6 U	6 B	5.97 B	1.6 U	1.6 U
Iron	ug/l	15000	14987	840	840.93	3470	3475.5	50800	50752
Lead	ug/l	2 U	2 U	2 U	2 U	6	6 R	2.2 B	2.21 R
Magnesium	ug/l	61300	61328	46700	46735	52700	52684	64500	64544
Manganese	ug/l	670	670.32	30.6	30.56	344	343.98	295	294.58
Mercury	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	ug/l	22.7 B	22.69 B	1.9 U	1.9 U	21.4 B	21.46 B	44.7	44.72
Potassium	ug/l	110000	109990	2930 B	2931.2 B	51500 E	51495 ENJ	101000 E	100940 ENJ
Selenium	ug/l	7.2	7.25 J	5 U	5 U	5 U	5 U	6	6
Silver	ug/l	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 R	1.6 U	1.6 R
Sodium	ug/l	215000	214830	69000	69019	118000 E	117540 EJ	162000 E	162300 EJ
Thallium	ug/l	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Vanadium	ug/l	1.3 U	1.3 U	1.3 U	1.3 U	1.8 B	1.8 B	1.7 B	1.67 B
Zinc	ug/l	5.1 B	5.07 B	26	26.45	33.9 E	33.91 EJ	25.6 E	25.62 EJ

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER

Sample ID Lab Sample Number Sampling Date	Units	MW-0 A8340501 08/18/98		MW-0 23199073 09/23/99		MW-0D A8338501 08/17/98		MW-1 A8349801 08/24/98		MW-2 A8349804 08/24/98	
		Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Wet Chemistry											
Ammonia	mg/l	40	40	NA	NA	0.084	0.084	71.6	71.59	19.7	19.683
Biochemical Oxygen Demand	mg/l	2.2	2.22	NA	NA	2 U	2 U	2.9	2.86	2 U	2 U
Chloride	mg/l	81	81.007	NA	NA	205	204.725	284	283.855	149	148.678
Filterable Residue	mg/l	480	480	NA	NA	1130	1130	1320	1322	822	820
Nitrate	mg/l	0.05 U	0.05 U	NA	NA	0.05 U	0.05 U	0.05 U	0.05 JP	0.05 U	0.05 J
Nitrite	mg/l	NA	NA	NA	NA	NA	NA	0.051	0.051 J	0.05 U	0.05 J
Sulfate	mg/l	23	23	NA	NA	412	412	15.2	15.2	21.5	21.5
Sulfide	mg/l	1 U	1 U	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U
Total Alkalinity	mg/l	1140	1122	NA	NA	267	266.88	1040	1037.85	649	645.15
Total Hardness	mg/l	1160	1164.8	NA	NA	795	794.56	970	970.2	576	576.24
Total Kjeldahl Nitrogen	mg/l	38.1	38.145	NA	NA	0.23	0.232	71.5	71.468	19.5	19.473
Total Organic Carbon	mg/l	26.2	26.2	NA	NA	2 U	2 U	253	253	111	111
Total Recoverable Phenolics	mg/l	0.01 U	0.01 U	NA	NA	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Turbidity	N.T.U.	200	200	NA	NA	16	16	175	175	165	165

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER

Sample ID Lab Sample Number Sampling Date	Units	MW-3 A8352701 08/25/98		MW-4 A8349806 08/24/98		MW-5 A8349805 08/24/98		MW-5D A8346002 08/20/98		MW-6 A8340301 08/18/98	
		Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Wet Chemistry											
Ammonia	mg/l	99.8	99.803	32.5	32.498	0.12	0.125	0.76	0.743	0.71	0.712
Biochemical Oxygen Demand	mg/l	5.2	5.24	2 U	2 U	2 U	2 U	2 U	2 U	3.9	3.92
Chloride	mg/l	414	414.48	86.5	86.531	4	75.245	2040	2040	42.4	42.385
Filterable Residue	mg/l	1680	1677	1040	1034	598	600	4700	4696	995	995
Nitrate	mg/l	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 J	0.05 U	0.05 U	0.05 U	0.05 U
Nitrite	mg/l	NA	NA	0.05 U	0.05 U	0.05 U	0.05 J	NA	NA	NA	NA
Sulfate	mg/l	24.9	24.9	6	6	114	114	346	346	279	279
Sulfide	mg/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total Alkalinity	mg/l	1180	1184.4	968	963.05	630	626.45	281	281.2	639	639.36
Total Hardness	mg/l	529	529.2	646	646.8	1820	1822.8	986	985.5	1020	1019.2
Total Kjeldahl Nitrogen	mg/l	98.8	98.785	36.6	36.578	0.27	0.266	0.99	0.993	1	1.04
Total Organic Carbon	mg/l	254	254.4	186	186	40.8	40.8	2 U	2 U	9.2	9.2
Total Recoverable Phenolics	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Turbidity	N.T.U.	78	78	210	210	680	680	14	14	6000	6000

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER

Sample ID Lab Sample Number Sampling Date	Units	MW-7 A8343201 08/19/98		MW-8 A8340302 08/18/98		MW-9 A8340502 08/18/98		MW-10 A8349901 08/24/98		MW-10 23199074 09/23/99	
		Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Wet Chemistry											
Ammonia	mg/l	68.8	68.758	67	67	18.8	18.773	14.9	14.9	NA	NA
Biochemical Oxygen Demand	mg/l	3.6	3.6 J	11.1	11.1	2.3	2.3	93.9	93.9	NA	NA
Chloride	mg/l	217	217.311	54.6	54.648	97.2	97.167	72.6	72.595	NA	NA
Filterable Residue	mg/l	987	987	10 U	539	776	776	992	990 J	NA	NA
Nitrate	mg/l	0.78	0.78	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	NA	NA
Nitrite	mg/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	18.4	18.4	10.5	10.5	76.4	76.4	25.1	25.1	NA	NA
Sulfide	mg/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	NA
Total Alkalinity	mg/l	813	813.45	684	676.8	627	617.1	1020	1043.4	NA	NA
Total Hardness	mg/l	603	603.2	478	478.4	686	686.4	1820	1822.8	NA	NA
Total Kjeldahl Nitrogen	mg/l	72.4	72.376	61.1	31.124	18.9	18.935	88.2	88.16	NA	NA
Total Organic Carbon	mg/l	148	148	25.8	25.8	2 U	2 U	238	239	NA	NA
Total Recoverable Phenolics	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.08	0.08	NA	NA
Turbidity	N.T.U.	56	56	96	96	160	160	12800	12800	NA	NA

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER

Sample ID Lab Sample Number Sampling Date	Units	MW-12 A8352702 08/25/98		MW-12D A8352703 08/25/98		MW-14 A8349802 08/24/98		MW-15 A8348201 08/21/98	
		Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Wet Chemistry									
Ammonia	mg/l	93.7	93.7	0.058	0.058	15.6	15.6	76.7	76.7
Biochemical Oxygen Demand	mg/l	11.9	11.9	2 U	2 U	6	5.98	10.5	10.5
Chloride	mg/l	278	277.847	146	146.186	124	123.876	196	196.403
Filterable Residue	mg/l	1440	1440	657	657	828	830	1360	1361
Nitrate	mg/l	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 J	0.05 U	0.05 U
Nitrite	mg/l	NA	NA	NA	NA	0.05 U	0.05 J	NA	NA
Sulfate	mg/l	16	16	74	74	37.3	37.3	5 U	5 U
Sulfide	mg/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total Alkalinity	mg/l	1230	1231.4	376	376	724	719.95	1290	1271.6
Total Hardness	mg/l	755	754.6	474	474.32	623	623.28	709	709.5
Total Kjeldahl Nitrogen	mg/l	90.3	90.253	0.15	0.15	15.6	15.592	87.5	87.511
Total Organic Carbon	mg/l	210	209.6	19.5	19.5	90	90	48.8	48.8
Total Recoverable Phenolics	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Turbidity	N.T.U.	80	80	8.8	8.8	136	136	95	95

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
DIOXIN DATA FOR GROUNDWATER

Sample ID Lab Sample Number Sampling Date	UNITS	MW-10 23099070 8/31/99		MW-10(DUP) 23099071 8/31/99		MW-0 23199073 8/31/99		TOXICITY EQUIVALENCY FACTOR (TEF)
ANALYTES								
2,3,7,8-TCDD	pg/l	2.0	U	1.5	U	1.4	U	1.000
1,2,3,7,8-PeCDD	pg/l	3.0	U	2.4	U	2.2	U	0.500
1,2,3,4,7,8-HxCDD	pg/l	2.9	U	2.8	J*	2.8	J	0.100
1,2,3,6,7,8-HxCDD	pg/l	2.7	U	4.0	JB	3.8	JB*	0.100
1,2,3,7,8,9-HxCDD	pg/l	2.7	U	4.4	JB	3.4	JB*	0.100
1,2,3,4,6,7,8-HpCDD	pg/l	6.7	J	10.6	JB	15.0	JB	0.010
1,2,3,4,6,7,8,9-OCDD	pg/l	172.0		181.0		134.0		0.001
2,3,7,8-TCDF	pg/l	1.7	U	4.0	J	7.8	J	0.100
1,2,3,7,8-PeCDF	pg/l	2.1	U	1.4	U	2.5	J	0.050
2,3,4,7,8-PeCDF	pg/l	2.1	U	1.4	U	2.5	J	0.500
1,2,3,4,7,8-HxCDF	pg/l	2.4	J	3.0	JB	3.4	JB	0.100
1,2,3,6,7,8-HxCDF	pg/l	1.6	U	2.8	JB	2.2	JB	0.100
2,3,4,6,7,8-HxCDF	pg/l	1.8	U	2.9	J	1.7	J*	0.100
1,2,3,7,8,9-HxCDF	pg/l	2.0	U	3.9	JB	2.5	JB	0.100
1,2,3,4,6,7,8-HpCDF	pg/l	2.3	U	4.1	JB*	5.7	JB	0.010
1,2,3,4,7,8,9-HPCDF	pg/l	3.1	U	2.6	U	2.6	J*	0.010
1,2,3,4,6,7,8,9-OCDF	pg/l	6.5	U	8.1	J	13.0	J	0.001
Total TEQ:	pg/l	0.48		3.12		4.50		

Notes:

1. The congener equivalent for the standard is obtained by multiplying the concentration of that congener by its TEF.

* - Estimated Maximum Possible Concentration (EMPC) value.

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER FROM TEMPORARY WELLS

Sample ID Lab Sample Number Sampling Date	UNITS	WP-1 A8348202 8/21/98		WP-2 A8346004 8/20/98		WP-3 A8346005 8/20/98		WP-4 A8346001 8/20/98		WP-5 A8342803 8/19/98		WP-6 A8342802 8/19/98		WP-7 A8342801 8/19/98	
		Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Wet Chemistry															
Ammonia	mg/l	6.4	6.36	54.5	54.51	56.8	56.825	60	59.966	0.76	0.765	10.20	10.08	7.3	7.27
Biochemical Oxygen Demand	mg/l	4 U	4 U	3.6	3.6	3.7	3.7	4	4	2 U	2 J	14.80	14.80 J	2 U	2 J
Chloride	mg/l	76	76.012	66.2	66.247	108	107.81	72.4	72.39	66.1	66.081	557.00	557.00	130	1130
Filterable Residue	mg/l	522	522	1080	1076	1060	1061	1100	1100	581	581	1,711.00	1,711.00	760	760
Nitrate	mg/l	0.062	0.062	0.1	0.105	0.069	0.069	0.087	0.087	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Sulfate	mg/l	57.2	57.2	6.2	6.2	8.8	8.83	8.6	8.6	115	114.8	34.000	34.00	96	96
Sulfide	mg/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.00 U	1.00 U	1 U	1 U
Total Alkalinity	mg/l	1900	1900	969	969	1010	1007	1026	1026	311	324	591.00	616.00	422	440
Total Cyanide	ug/l	13 40	14.00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Hardness	mg/l	9570	9567.5	788	788.4	723	722.7	723	722.7	520	520	790.00	790.40	562	561.6
Total Kjeldahl Nitrogen	mg/l	8	7.958	59.6	59.657	66.1	66.094	61.9	61.936	0.85	0.848	13.30	13.34	8.9	8.865
Total Organic Carbon	mg/l	86.8	86.8	31.9	31.9	33.8	33.8	30.9	30.9	13.5	13.5	82.00	82.00	33.2	33.2
Total Recoverable Phenolics	mg/l	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.010 U	0.010 U	0.01 U	0.01 U
Turbidity	N.T.U.	85	85	120	120	70	70	79	79	56	56	102.00	102.00	72	72

APPENDIX C-2

Leachate Data

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
LEACHATE

Sample ID Lab Sample Number Sampling Date	Units	L-1 A8415902 9/30/98 Lab	 Validated	L-2 A8415903 9/30/98 Lab	 Validated	L-6 A8415901 9/30/98 Lab	 Validated
TCL Volatile Organics							
1,1,1-Trichloroethane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	ug/l	4 J	4 J	10 U	10 U	10 U	10 U
Bromodichloromethane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	ug/l	22	22	10	10	10 U	10 U
Chloroethane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Chloromethane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Xylene (total)	ug/l	10 U	10 U	10 U	10 U	10 U	10 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
LEACHATE

Sample ID Lab Sample Number Sampling Date	Units	L-1 A8415902 9/30/98		L-2 A8415903 9/30/98		L-6 A8415901 9/30/98	
		Lab	Validated	Lab	Validated	Lab	Validated
TCL Semivolatile Organics							
1,2,4-Trichlorobenzene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	ug/l	2 J	2 J	2 J	2 J	10 U	10 U
2,4,5-Trichlorophenol	ug/l	24 U	25 U	24 U	25 U	24 U	25 U
2,4,6-Trichlorophenol	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	ug/l	24 U	25 U	24 U	25 U	24 U	25 U
2,4-Dinitrotoluene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
2-Chloronaphthalene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	ug/l	24 U	25 U	24 U	25 U	24 U	25 U
2-Nitrophenol	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline	ug/l	24 U	25 U	24 U	25 U	24 U	25 U
4,6-Dinitro-2-methylphenol	ug/l	24 U	25 U	24 U	25 U	24 U	25 U
4-Bromophenyl-phenylether	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline	ug/l	24 U	25 U	24 U	25 U	24 U	25 U
4-Nitrophenol	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethoxy)methane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethyl)Ether	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroisopropyl)ether	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Bis(2-Ethylhexyl)phthalate	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Butylbenzylphthalate	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Carbazole	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Dibenz(a,h)anthracene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzofuran	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Dimethylphthalate	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-Butylphthalate	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-octylphthalate	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Isophorone	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
N-Nitrosodiphenylamine (1)	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	ug/l	24 U	25 U	24 U	25 U	24 U	25 U
Phenanthrene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Phenol	ug/l	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
LEACHATE

Sample ID Lab Sample Number Sampling Date	Units	L-1 A8415902 9/30/98		L-2 A8415903 9/30/98		L-6 A8415901 9/30/98	
		Lab	Validated	Lab	Validated	Lab	Validated
Pesticides & PCBs							
4,4' - DDD	ug/l	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4,4'- DDE	ug/l	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDT	ug/l	0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.1 U	0.1 UJ
Aldrin	ug/l	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
alpha-Chlordane	ug/l	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
BHC-alpha	ug/l	0.05 U	0.05 UJ	0.05 U	0.05 UJ	0.05 U	0.05 UJ
BHC-beta	ug/l	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
BHC-delta	ug/l	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
BHC-gamma (Lindane)	ug/l	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Dieldrin	ug/l	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Endosulfan I	ug/l	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Endosulfan II	ug/l	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Endosulfan Sulfate	ug/l	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Endrin	ug/l	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Endrin Aldehyde	ug/l	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Endrin Ketone	ug/l	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
gamma-Chlordane	ug/l	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Heptachlor	ug/l	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Heptachlor Epoxide	ug/l	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Methoxychlor	ug/l	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toxaphene	ug/l	5 U	5 U	5 U	5 U	5 U	5 U
Aroclor-1016	ug/l	1 U	1 U	1 U	1 U	1 U	1 U
Aroclor-1221	ug/l	2 U	2 U	2 U	2 U	2 U	2 U
Aroclor-1232	ug/l	1 U	1 U	1 U	1 U	1 U	1 U
Aroclor-1242	ug/l	1 U	1 U	1 U	1 U	1 U	1 U
Aroclor-1248	ug/l	0.98 J	1 J	0.3 JP	1 JP	0.54 JP	0.7 JP
Aroclor-1254	ug/l	1 U	1 U	1 U	1 U	1 U	1 U
Aroclor-1260	ug/l	1 U	1 U	1 U	1 U	1 U	1 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
LEACHATE

Sample ID Lab Sample Number Sampling Date	Units	L-1 A8415902 9/30/98		L-2 A8415903 9/30/98		L-6 A8415901 9/30/98	
		Lab	Validated	Lab	Validated	Lab	Validated
Total Metals Analyses							
Aluminum	ug/l	1050 EN	1052 ENJ	12100 EN	12131 ENJ	7260 EN	7260 ENJ
Antimony	ug/l	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
Arsenic	ug/l	4 U	4 U	4 U	4 U	4 U	4 U
Barium	ug/l	697.0 EN	697.4 ENJ	1500.0 E	1501.6 EJ	460.0 E	460.4 EJ
Beryllium	ug/l	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
Cadmium	ug/l	0.2 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U
Calcium	ug/l	220000 EN	219970 ENJ	264000 EN	263910 ENJ	252000 EN	251980 ENJ
Chromium	ug/l	42.1 E	42.1 EJ	126.0 E	125.7 EJ	106.0 E	106.4 EJ
Cobalt	ug/l	3.4 B	3.4 B	13.0 B	13.0 B	8.9 B	8.9 B
Copper	ug/l	30.0 E	30.0 EJ	140.0 E	140.4 EJ	86.4 E	86.4 EJ
Iron	ug/l	53700 E	53718 EJ	156000 E	156090 EJ	31200 E	31183 EJ
Lead	ug/l	29.4 E	29.4 EJ	199.0 E	198.9 EJ	120.0 E	120.1 EJ
Magnesium	ug/l	52700 E	52694 EJ	69400 E	69371 EJ	65200 E	65219 EJ
Manganese	ug/l	412 E	412 EJ	735 E	735 EJ	1000 E	1001 EJ
Mercury	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	ug/l	40.4	40.4	61.6	61.6	63.1	63.1
Potassium	ug/l	42900 E	42867 EJ	48400 E	48356 EJ	66500 E	66501 EJ
Selenium	ug/l	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Silver	ug/l	1.60 U	1.60 U	1.60 B	1.60 B	1.60 U	1.60 U
Sodium	ug/l	67600 E	67612 EJ	81800 E	81777 EJ	190000 E	190190 EJ
Thallium	ug/l	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
Vanadium	ug/l	1.3 U	1.3 U	19.3 B	19.3 B	1.3 U	1.3 U
Zinc	ug/l	91.1 E	91.1 EJ	404.0 E	403.6 EJ	321.0 E	321.1 EJ
Cyanide	ug/l	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U

APPENDIX C-3

Surface Water Data

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE WATER

Sample ID Lab Sample Number Sampling Date	Units	SW-20 A8355202 8/26/98		SW-21 A8355203 8/26/98		SW-22 A8355204 8/26/98		SW-23 A8359201 8/27/98		SW-24 A8359202 8/27/98		SW-25 A8355201 8/26/98	
		Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
TCL Volatile Organics													
1,1,1-Trichloroethane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
2-Butanone	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
2-Hexanone	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
Acetone	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
Benzene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
Bromodichloromethane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
Bromoform	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
Bromomethane	ug/l	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	11 UJ	10 U	10 UJ	10 U	10 UJ
Carbon Disulfide	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
Chlorobenzene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
Chloroethane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
Chloroform	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
Chloromethane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
Dibromochloromethane	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
Ethylbenzene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
Methylene Chloride	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
Styrene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
Tetrachloroethene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
Toluene	ug/l	1 BJ	1 BJ	1 BJ	1 BJ	1 BJ	1 BJ	2 BJ	2 BJ	2 BJ	2 BJ	1 BJ	1 BJ
trans-1,3-Dichloropropene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
Trichloroethene	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
Vinyl Chloride	ug/l	10 U	10 UJ	10 U	10 UJ	10 U	10 UJ	10 U	11 UJ	10 U	10 UJ	10 U	10 UJ
Xylene (total)	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE WATER

Sample ID Lab Sample Number Sampling Date	Units	SW-20 A8355202 8/26/98		SW-21 A8355203 8/26/98		SW-22 A8355204 8/26/98		SW-23 A8359201 8/27/98		SW-24 A8359202 8/27/98		SW-25 A8355201 8/26/98	
		Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
TCL Semivolatile Organics													
1,2,4-Trichlorobenzene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
1,2-Dichlorobenzene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
1,3-Dichlorobenzene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
1,4-Dichlorobenzene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
2,4,5-Trichlorophenol	ug/l	24 U	24 U	24 U	25 U	24 U	24 U	25 U	25 U	25 U	25 U	24 U	24 U
2,4,6-Trichlorophenol	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
2,4-Dichlorophenol	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
2,4-Dimethylphenol	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
2,4-Dinitrophenol	ug/l	24 U	24 U	24 U	25 U	24 U	24 U	25 U	25 U	25 U	25 U	24 U	24 U
2,4-Dinitrotoluene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
2,6-Dinitrotoluene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
2-Chloronaphthalene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
2-Chlorophenol	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
2-Methylnaphthalene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
2-Methylphenol	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
2-Nitroaniline	ug/l	24 U	24 U	24 U	25 U	24 U	24 U	25 U	25 U	25 U	25 U	24 U	24 U
2-Nitrophenol	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
3,3'-Dichlorobenzidine	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
3-Nitroaniline	ug/l	24 U	24 U	24 U	25 U	24 U	24 U	25 U	25 U	25 U	25 U	24 U	24 U
4,6-Dinitro-2-methylphenol	ug/l	24 U	24 U	24 U	25 U	24 U	24 U	25 U	25 U	25 U	25 U	24 U	24 U
4-Bromophenyl-phenylether	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
4-Chloro-3-methylphenol	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
4-Chloroaniline	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
4-Chlorophenyl-phenylether	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
4-Methylphenol	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
4-Nitroaniline	ug/l	24 U	24 U	24 U	25 U	24 U	24 U	25 U	25 U	25 U	25 U	24 U	24 U
4-Nitrophenol	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE WATER

Sample ID Lab Sample Number Sampling Date	Units	SW-20 A8355202 8/26/98		SW-21 A8355203 8/26/98		SW-22 A8355204 8/26/98		SW-23 A8359201 8/27/98		SW-24 A8359202 8/27/98		SW-25 A8355201 8/26/98	
		Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Acenaphthene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Acenaphthylene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Anthracene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Benzo(a)anthracene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Benzo(a)pyrene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Benzo(b)fluoranthene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Benzo(g,h,i)perylene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Benzo(k)fluoranthene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 J	10 U	10 J	9 U	9 U
bis(2-Chloroethoxy)methane	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
bis(2-Chloroethyl)Ether	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
bis(2-Chloroisopropyl)ether	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Bis(2-Ethylhexyl)phthalate	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Butylbenzylphthalate	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Carbazole	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Chrysene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Dibenz(a,h)anthracene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Dibenzofuran	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Diethylphthalate	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Dimethylphthalate	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Di-n-Butylphthalate	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Di-n-octylphthalate	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Fluoranthene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Fluorene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Hexachlorobenzene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Hexachlorobutadiene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Hexachlorocyclopentadiene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Hexachloroethane	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Indeno(1,2,3-cd)pyrene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Isophorone	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Naphthalene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Nitrobenzene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
N-Nitroso-di-n-propylamine	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
N-Nitrosodiphenylamine (1)	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Pentachlorophenol	ug/l	24 U	9 U	24 U	25 U	24 U	24 U	25 U	25 U	25 U	25 U	24 U	24 U
Phenanthrene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Phenol	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U
Pyrene	ug/l	9 U	9 U	9 U	10 U	9 U	9 U	10 U	10 U	10 U	10 U	9 U	9 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE WATER

Sample ID Lab Sample Number Sampling Date	Units	SW-20 A8355202 8/26/98		SW-21 A8355203 8/26/98		SW-22 A8355204 8/26/98		SW-23 A8359201 8/27/98		SW-24 A8359202 8/27/98		SW-25 A8355201 8/26/98	
		Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Pesticides & PCBs													
4,4' - DDD	ug/l	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.094 U	0.094 U
4,4'- DDE	ug/l	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.094 U	0.094 U
4,4'-DDT	ug/l	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.094 U	0.094 U
Aldrin	ug/l	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U	0.047 U
alpha-Chlordane	ug/l	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U	0.047 U
BHC-alpha	ug/l	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U	0.047 U
BHC-beta	ug/l	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U	0.047 U
BHC-delta	ug/l	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U	0.047 U
BHC-gamma (Lindane)	ug/l	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U	0.047 U
Dieldrin	ug/l	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.094 U	0.094 U
Endosulfan I	ug/l	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U	0.047 U
Endosulfan II	ug/l	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.094 U	0.094 U
Endosulfan Sulfate	ug/l	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.094 U	0.094 U
Endrin	ug/l	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.094 U	0.094 U
Endrin Aldehyde	ug/l	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.094 U	0.094 U
Endrin Ketone	ug/l	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.094 U	0.094 U
gamma-Chlordane	ug/l	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U	0.047 U
Heptachlor	ug/l	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U	0.047 U
Heptachlor Epoxide	ug/l	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U	0.047 U
Methoxychlor	ug/l	0.48 U	0.48 U	0.48 U	0.48 U	0.48 U	0.48 U	0.48 U	0.48 U	0.48 U	0.48 U	0.47 U	0.47 U
Toxaphene	ug/l	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.7 U	4.7 U
Aroclor-1016	ug/l	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.94 U	0.94 U
Aroclor-1221	ug/l	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Aroclor-1232	ug/l	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.94 U	0.94 U
Aroclor-1242	ug/l	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.94 U	0.94 U
Aroclor-1248	ug/l	0.95 U	0.95 U	0.95 U	0.95 U	0.095 JP	0.095 JP	0.12 JP	0.14 JP	0.95 U	0.95 U	0.94 U	0.94 U
Aroclor-1254	ug/l	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.94 U	0.94 U
Aroclor-1260	ug/l	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.95 U	0.94 U	0.94 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE WATER

Sample ID Lab Sample Number Sampling Date	Units	SW-20 A8355202 8/26/98		SW-21 A8355203 8/26/98		SW-22 A8355204 8/26/98		SW-23 A8359201 8/27/98		SW-24 A8359202 8/27/98		SW-25 A8355201 8/26/98	
		Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Total Metals Analyses													
Aluminum	mg/l	217	217.23	169 B	168.53 B	204	203.89	221	221.24	238	237.65	137 B	136.56 B
Antimony	mg/l	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
Arsenic	mg/l	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U
Barium	mg/l	63.9 B	63.89 B	70.4 B	70.41 B	66.2 B	66.25 B	75.9 B	75.91 B	77.8 B	77.83 B	50.2 B	50.18 B
Beryllium	mg/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	mg/l	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Calcium	mg/l	70000	70050	77200	77173	80300	80277	94200	94166	93500	93411	40200	40240
Chromium	mg/l	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	2.3 B	2.29 B	1.8 U	1.8 U
Cobalt	mg/l	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Copper	mg/l	5.5 B	5.48 B	7.2 B	7.18 B	8.6 B	8.57 B	7.2 B	7.24 B	6.4 B	6.44 B	12.7 B	12.71 B
Iron	mg/l	576	576.38	444	444.39	528	527.87	607	607.27	702	701.59	566	565.95
Lead	mg/l	3.2	3.25 J	4	4 J	3.6	3.59 J	3.6	3.65 J	5.6	5.56 J	2.1 B	2.07 J
Magnesium	mg/l	11100	11143	12300	12319	12600	12588	15500	15455	16000	16045	8360	8358.5
Manganese	mg/l	80.8	80.77	80.2	80.21	82.4	82.48	114	113.66	125	124.52	217	217.25
Mercury	mg/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	mg/l	1.9 B	1.92 B	2.4 B	2.36 B	2.6 B	2.62 B	2.9 B	2.93 B	3 B	2.96 B	1.9 U	1.9 U
Potassium	mg/l	3830 B	3825.6 B	3700 B	3702.9 B	3720 B	3717.1 B	4080 B	4075.6 B	4100 B	4096 B	3660 B	3664.9 B
Selenium	mg/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Silver	mg/l	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Sodium	mg/l	57500	57471	68500	68457	67800	67847	83300	83318	85400	85413	50400	50466
Thallium	mg/l	5.8 U	5.8 UJ	5.8 U	5.8 UJ	5.8 U	5.8 UJ	5.8 U	5.8 UJ	5.8 U	5.8 UJ	5.8 U	5.8 UJ
Vanadium	mg/l	1.3 B	1.33 B	1.3 U	1.3 U	1.5 B	1.49 B	1.8 B	1.79 B	1.6 B	1.56 B	1.3 U	1.3 U
Zinc	mg/l	19 B	18.96 B	23.6	23.64	53.1	53.1	33.3	33.28	20	20.01	18.9 B	18.95 B
Cyanide	mg/l	10 U	10 U	20.6	18.6	15.8	13.6	11	10 U	15.8	13.6	10 U	10 U
Wet Chemistry													
Biochemical Oxygen Demand	mg/l	2 U	2 U	2 U	2 U	2.4	2	2 U	2 U	2 U	2 U	4.1	4
Total Hardness	mg/l	219	220	231	231	239	239	282	282.24	290	290.08	125	125

APPENDIX C-4

Sediment Data

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SEDIMENT

Sample ID		SED-20		SED-20D		SED-21		SED-21D		SED-22		SED-22D	
Lab Sample Number		A8356403		A8356404		A8356405		A8356406		A8356407		A8356408	
Sample Date		08/26/98		08/26/98		08/26/98		08/26/98		08/26/98		08/26/98	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
TCL Volatile Organics													
1,1,1-Trichloroethane	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
1,1,2,2-Tetrachloroethane	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
1,1,2-Trichloroethane	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
1,1-Dichloroethane	ug/kg	14 U	15 UJ	17 U	17 UJ	16 U	16 UJ	16 U	16 UJ	16 U	16 UJ	14 U	14 UJ
1,1-Dichloroethene	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
1,2-Dichloroethane	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
1,2-Dichloroethene (total)	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
1,2-Dichloropropane	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
2-Butanone	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
2-Hexanone	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
4-Methyl-2-Pentanone	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	12 J	14 U
Acetone	ug/kg	14	14	14 J	14 J	37	37	32	32	26	26	24	24
Benzene	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
Bromodichloromethane	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
Bromoform	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
Bromomethane	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
Carbon Disulfide	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
Carbon Tetrachloride	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
Chlorobenzene	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
Chloroethane	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
Chloroform	ug/kg	14 U	15 UJ	17 U	17 UJ	16 U	16 UJ	16 U	16 UJ	16 U	16 UJ	14 U	14 UJ
Chloromethane	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
cis-1,3-Dichloropropene	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
Dibromochloromethane	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
Ethylbenzene	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
Methylene Chloride	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
Styrene	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
Tetrachloroethene	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
Toluene	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
trans-1,3-Dichloropropene	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
Trichloroethene	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
Vinyl Chloride	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	16 U	16 U	14 U	14 U
Xylene (total)	ug/kg	14 U	15 U	17 U	17 U	16 U	16 U	16 U	16 U	5 J	5 J	14 U	14 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SEDIMENT

Sample ID		SED-23		SED-23D		SED-24		SED-24D		SED-25		SED-25D	
Lab Sample Number		A8359701		A8359702		A8359703		A8359704		A8356401		A8356402	
Sample Date		08/27/98		08/27/98		08/27/98		08/27/98		08/26/98		08/26/98	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
TCL Volatile Organics													
1,1,1-Trichloroethane	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
1,1,2,2-Tetrachloroethane	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
1,1,2-Trichloroethane	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
1,1-Dichloroethane	ug/kg	16 U	16 UJ	17 U	17 UJ	33 U	33 U	36 U	36 U	48 U	49 UJ	47 U	47 UJ
1,1-Dichloroethene	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
1,2-Dichloroethane	ug/kg	16 U	16 U	17 U	17 U	33 U	33 UJ	36 U	36 UJ	48 U	49 U	47 U	47 U
1,2-Dichloroethene (total)	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
1,2-Dichloropropane	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
2-Butanone	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
2-Hexanone	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
4-Methyl-2-Pentanone	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
Acetone	ug/kg	16 U	16 U	26	26	140	138	78	78	50	50	71	71
Benzene	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
Bromodichloromethane	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
Bromoform	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
Bromomethane	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
Carbon Disulfide	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
Carbon Tetrachloride	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
Chlorobenzene	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
Chloroethane	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
Chloroform	ug/kg	16 U	16 UJ	17 U	17 UJ	33 U	33 UJ	36 U	36 UJ	48 U	49 UJ	47 U	47 UJ
Chloromethane	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
cis-1,3-Dichloropropene	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
Dibromochloromethane	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
Ethylbenzene	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
Methylene Chloride	ug/kg	16 U	16 U	17 U	17 U	3 J	3 J	4 J	4 J	7 J	7 J	47 U	47 U
Styrene	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
Tetrachloroethene	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
Toluene	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
trans-1,3-Dichloropropene	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
Trichloroethene	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
Vinyl Chloride	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U
Xylene (total)	ug/kg	16 U	16 U	17 U	17 U	33 U	33 U	36 U	36 U	48 U	49 U	47 U	47 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SEDIMENT

Sample ID		SED-20		SED-20D		SED-21		SED-21D		SED-22		SED-22D	
Lab Sample Number		A8356403		A8356404		A8356405		A8356406		A8356407		A8356408	
Sample Date		08/26/98		08/26/98		08/26/98		08/26/98		08/26/98		08/26/98	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
TCL Semivolatile Organics													
1,2,4-Trichlorobenzene	ug/kg	3,400 U	3,500 U	2300 U	2300 U	2600 U	2650 UR	3300 U	3500 U	2400 U	2450 U	5600 U	5800 U
1,2-Dichlorobenzene	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
1,3-Dichlorobenzene	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
1,4-Dichlorobenzene	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	2400 U	2450 U	5600 U	5800 U
2,4,5-Trichlorophenol	ug/kg	8,400 U	8,800 U	5500 U	5750 UJ	6400 U	6650 UJ	8000 U	8750 U	5800 U	6100 U	14000 U	14400 U
2,4,6-Trichlorophenol	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
2,4-Dichlorophenol	ug/kg	3,400 U	3,500 U	2300 U	2300 U	2600 U	2650 UR	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
2,4-Dimethylphenol	ug/kg	3,400 U	3,500 U	2300 U	2300 U	2600 U	2650 UR	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
2,4-Dinitrophenol	ug/kg	8,400 U	8,800 U	5500 U	5750 UJ	6400 U	6650 UJ	8000 U	8750 U	5800 U	6100 U	2000 J	2000 J
2,4-Dinitrotoluene	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	2400 U	2450 U	2000 J	2000 J
2,6-Dinitrotoluene	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
2-Chloronaphthalene	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
2-Chlorophenol	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	2400 U	2450 U	5600 U	5800 U
2-Methylnaphthalene	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UR	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
2-Methylphenol	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
2-Nitroaniline	ug/kg	8,400 U	8,800 U	5500 U	5750 UJ	6400 U	6650 UJ	8000 U	8750 U	5800 U	6100 U	14000 U	14400 U
2-Nitrophenol	ug/kg	3,400 U	3,500 U	2300 U	2300 U	2600 U	2650 UR	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
3,3'-Dichlorobenzidine	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 U	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
3-Nitroaniline	ug/kg	8,400 U	8,800 U	5500 U	5750 UJ	6400 U	6650 UJ	8000 U	8750 U	5800 U	6100 U	14000 U	14400 U
4,6-Dinitro-2-methylphenol	ug/kg	8,400 U	8,800 U	5500 U	5750 UJ	6400 U	6650 UJ	8000 U	8750 U	5800 U	6100 U	14000 U	14400 U
4-Bromophenyl-phenylether	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
4-Chloro-3-methylphenol	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UR	3300 U	3500 U	2400 U	2450 U	5600 U	5800 U
4-Chloroaniline	ug/kg	3,400 U	3,500 U	2300 U	2300 U	2600 U	2650 UR	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
4-Chlorophenyl-phenylether	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
4-Methylphenol	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
4-Nitroaniline	ug/kg	8,400 U	8,800 U	5500 U	5750 UJ	6400 U	6650 UJ	8000 U	8750 U	5800 U	6100 U	14000 U	14400 U
4-Nitrophenol	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	2400 U	2450 U	5600 U	5800 U
Acenaphthene	ug/kg	3,400 U	3,500 U	230 J	250 J	290 J	300 J	3300 U	3500 U	2900	2900	5600 U	5800 U
Acenaphthylene	ug/kg	630 J	650 J	280 J	300 J	520 J	500 J	380 J	400 J	1000 J	1050 J	590 J	600 J
Anthracene	ug/kg	800 J	800 J	550 J	550 J	1100 J	1150 J	830 J	850 J	2500	2550	1200 J	1200 J
Benzo(a)anthracene	ug/kg	3,300 J	3,300 J	2400	2400 J	4800	4750	2700 J	2950 J	9000	9100	4100 J	4100 J
Benzo(a)pyrene	ug/kg	3,900	3,950	2600	2600 J	4800	4850	3100 J	3200 J	7400	7450	4400 J	4500 J
Benzo(b)fluoranthene	ug/kg	6,000	6,000	3200	3200 J	11000	11200	4700	4900	12000	11700	7100	7200
Benzo(g,h,i)perylene	ug/kg	1,100 J	1,100 J	760 J	750 J	2600 U	2650 U	1200 J	1250 J	2000 J	2000 J	1400 J	1500 J
Benzo(k)fluoranthene	ug/kg	1,600 J	1,550 J	1200 J	1200 J	2600 U	2650 U	1600 J	1700 J	2200 J	2200 J	2700 J	2700 J
bis(2-Chloroethoxy)methane	ug/kg	3,400 U	3,500 U	2300 U	2300 U	2600 U	2650 UR	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
bis(2-Chloroethyl)Ether	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
bis(2-Chloroisopropyl)ether	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
Bis(2-Ethylhexyl)phthalate	ug/kg	4,200	4,250	2500	2550 J	5800	5800	3000 J	3200 J	690 J	700 J	6100	6200
Butylbenzylphthalate	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 U	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
Carbazole	ug/kg	370 J	350 J	2300 U	2300 UJ	420 J	400 J	3300 U	3500 U	880 J	900 J	5700 U	5800 U
Chrysene	ug/kg	4,800	4,900	3200	3150 J	6600	6600	4100	4250	10000	10150	6200	6300
Dibenz(a,h)anthracene	ug/kg	380 J	400 J	2300 U	2300 J	2600 U	2650 U	460 J	500 J	960 J	900 J	570 J	600 J
Dibenzofuran	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	580 J	600 J	5700 U	5800 U
Diethylphthalate	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
Dimethylphthalate	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
Di-n-Butylphthalate	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	2400 U	2450 U	1800 J	1800 J
Di-n-octylphthalate	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 U	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
Fluoranthene	ug/kg	8,000	8,100	6000	6050 J	11000	11250 J	6600	6900	19000	19150	11000	10700
Fluorene	ug/kg	3,400 U	3,400 U	310 J	300 J	990 J	1000 J	640 J	650 J	4100	4100	820 J	800 J
Hexachlorobenzene	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
Hexachlorobutadiene	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UR	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
Hexachlorocyclopentadiene	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
Hexachloroethane	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
Indeno(1,2,3-cd)pyrene	ug/kg	1,600 J	1,600 J	1200 J	1200 J	2600 U	2650 U	1700 J	1800 J	3200	3200	2300 J	2300 J
Isophorone	ug/kg	3,400 U	3,500 U	2300 U	2300 U	2600 U	2650 UR	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
Naphthalene	ug/kg	3,400 U	3,500 U	2300 U	2300 U	2600 U	2650 UR	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
Nitrobenzene	ug/kg	3,400 U	3,500 U	2300 U	2300 U	2600 U	2650 UR	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
N-Nitroso-di-n-propylamine	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	2400 U	2450 U	5600 U	5800 U
N-Nitrosodiphenylamine (1)	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	2400 U	2450 U	5700 U	5800 U
Pentachlorophenol	ug/kg	8,400 U	8,800 U	5500 U	5750 UJ	6400 U	6650 UJ	8000 U	8750 U	5800 U	6100 U	14000 U	14400 U
Phenanthrene	ug/kg	2,900 J	2,950 J	1200 J	1200 J	5700	5700	3800	3950	9400	9500	5200 J	5300 J
Phenol	ug/kg	3,400 U	3,500 U	2300 U	2300 UJ	2600 U	2650 UJ	3300 U	3500 U	2400 U	2450 U	5600 U	5800 U
Pyrene	ug/kg	7,600	7,700	5300	5350 J	24000 E	23700 EJ	7100	7400	19000	19400	8000	8200

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SEDIMENT

Sample ID		SED-23		SED-23D		SED-24		SED-24D		SED-25		SED-25D	
Lab Sample Number		A8359701		A8359702		A8359703		A8359704		A8356401		A8356402	
Sample Date		08/27/98		08/27/98		08/27/98		08/27/98		08/26/98		08/26/98	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
TCL Semivolatile Organics													
1,2,4-Trichlorobenzene	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
1,2-Dichlorobenzene	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
1,3-Dichlorobenzene	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
1,4-Dichlorobenzene	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
2,4,5-Trichlorophenol	ug/kg	8100 U	8500 U	6700 U	6950 U	120000 U	135500 U	3600 U	3910 U	1200 U	1300 U	4300 U	4680 U
2,4,6-Trichlorophenol	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
2,4-Dichlorophenol	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
2,4-Dimethylphenol	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
2,4-Dinitrophenol	ug/kg	8100 U	8500 U	6700 U	6950 U	120000 U	135500 U	3600 U	3910 U	1200 U	1300 U	4300 U	4680 U
2,4-Dinitrotoluene	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
2,6-Dinitrotoluene	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
2-Chloronaphthalene	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
2-Chlorophenol	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
2-Methylnaphthalene	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
2-Methylphenol	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
2-Nitroaniline	ug/kg	8100 U	8500 U	6700 U	6950 U	120000 U	135500 U	3600 U	3910 U	1200 U	1300 U	4300 U	4680 U
2-Nitrophenol	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
3,3'-Dichlorobenzidine	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
3-Nitroaniline	ug/kg	8100 U	8500 U	6700 U	6950 U	120000 U	135500 U	3600 U	3910 U	1200 U	1300 U	4300 U	4680 U
4,6-Dinitro-2-methylphenol	ug/kg	8100 U	8500 U	6700 U	6950 U	120000 U	135500 U	3600 U	3910 U	1200 U	1300 U	4300 U	4680 U
4-Bromophenyl-phenylether	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
4-Chloro-3-methylphenol	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
4-Chloroaniline	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
4-Chlorophenyl-phenylether	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
4-Methylphenol	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
4-Nitroaniline	ug/kg	8100 U	8500 U	6700 U	6950 U	120000 U	135500 U	3600 U	3910 U	1200 U	1300 U	4300 U	4680 U
4-Nitrophenol	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
Acenaphthene	ug/kg	3300 U	3400 U	340 J	350 J	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
Acenaphthylene	ug/kg	3300 U	3400 U	510 J	500 J	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
Anthracene	ug/kg	370 J	400 J	820 J	800 J	2100 J	2000 J	300 J	310 J	490 U	510 U	1800 U	1840 U
Benzo(a)anthracene	ug/kg	2000 J	2050 J	3900	3950	4100 J	4500 J	1000 J	1230 J	490 U	520 U	1800 U	1870 U
Benzo(a)pyrene	ug/kg	2400 J	2400 J	4400	4350	3600 J	4000 J	1000 J	1090 J	490 U	520 U	1800 U	1870 U
Benzo(b)fluoranthene	ug/kg	3300	3400	6900	6850	5300 J	5500 J	1600	1560	490 U	520 U	1800 U	1870 U
Benzo(g,h,i)perylene	ug/kg	780 J	800 J	1300 J	1300 J	1300 J	1500 J	260 J	270 J	490 U	520 U	1800 U	1870 U
Benzo(k)fluoranthene	ug/kg	1500 J	1500 J	2500 J	2500 J	2200 J	2500 J	450 J	470 J	490 U	520 U	1800 U	1870 U
bis(2-Chloroethoxy)methane	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
bis(2-Chloroethyl)Ether	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
bis(2-Chloroisopropyl)ether	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
Bis(2-Ethylhexyl)phthalate	ug/kg	960 J	950 J	2800	2800	7700 J	8000 J	390 J	420 J	100 J	110 J	1800 U	1870 U
Butylbenzylphthalate	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
Carbazole	ug/kg	3300 U	3400 U	380 J	400 J	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
Chrysene	ug/kg	2800 J	2900 J	4900	4900	6200 J	6500 J	1200 J	1250 J	490 U	520 U	1800 U	1870 U
Dibenz(a,h)anthracene	ug/kg	3300 U	3400 U	560 J	550 J	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
Dibenzofuran	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
Diethylphthalate	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
Dimethylphthalate	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
Di-n-Butylphthalate	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	64 J	70 J	1800 U	1870 U
Di-n-octylphthalate	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
Fluoranthene	ug/kg	5000	5000	8800	8750	11000 J	11500 J	2700	2940	490 U	520 U	1800 U	1870 U
Fluorene	ug/kg	3300 U	3300 U	600 J	600 J	1200 J	1000 J	1500 U	1520 U	490 U	510 U	1800 U	1820 U
Hexachlorobenzene	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
Hexachlorobutadiene	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
Hexachlorocyclopentadiene	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
Hexachloroethane	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
Indeno(1,2,3-cd)pyrene	ug/kg	1300 J	1300 J	1900 J	1900 J	2100 J	2000 J	380 J	400 J	490 U	520 U	1800 U	1870 U
Isophorone	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
Naphthalene	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
Nitrobenzene	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
N-Nitroso-di-n-propylamine	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
N-Nitrosodiphenylamine (1)	ug/kg	3300 U	3400 U	2800 U	2800 U	51000 U	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1870 U
Pentachlorophenol	ug/kg	8100 U	8500 U	6700 U	6950 U	120000 U	135500 U	3600 U	3910 U	1200 U	1300 U	4300 U	4680 U
[illegible]nthrene	ug/kg	2200 J	2200 J	4500	4500	780[illegible]	8000 J	950 J	1010 J	490 U	520 U	1800 U	187[illegible]
[illegible]	ug/kg	3300 U	3400 U	2800 U	2800 U	510[illegible]	54000 U	1500 U	1560 U	490 U	520 U	1800 U	1[illegible]
[illegible]	ug/kg	4300	4300	10000	9950	110[illegible]	11500 J	1800	1920	490 U	520 U	1800 U	1[illegible]

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SEDIMENT

Sample ID		SED-20		SED-20D		SED-21		SED-21D		SED-22		SED-22D	
Lab Sample Number		A8356403		A8356404		A8356405		A8356406		A8356407		A8356408	
Sample Date		08/26/98		08/26/98		08/26/98		08/26/98		08/26/98		08/26/98	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Pesticides & PCBs													
4,4' - DDD	ug/kg	34 U	34 UJ	450 U	450 UJ	51 U	51 UJ	67 U	67 UJ	34 U	34 UJ	560 U	560 UJ
4,4'- DDE	ug/kg	34 U	34 UJ	450 U	450 UJ	51 U	51 UJ	67 U	67 UJ	34 U	34 UJ	560 U	560 UJ
4,4'-DDT	ug/kg	34 U	34 UJ	450 U	450 UJ	51 U	51 UJ	67 U	67 UJ	34 U	34 UJ	560 U	560 UJ
Aldrin	ug/kg	18 U	18 UJ	230 U	230 UJ	26 U	26 UJ	34 U	34 UJ	12 U	12 UJ	290 U	290 UJ
alpha-Chlordane	ug/kg	18 U	18 UJ	230 U	230 UJ	26 U	26 UJ	34 U	34 UJ	12 U	12 UJ	290 U	290 UJ
BHC-alpha	ug/kg	18 U	18 UJ	230 U	230 UJ	26 U	26 UJ	34 U	34 UJ	12 U	12 UJ	290 U	290 UJ
BHC-beta	ug/kg	18 U	18 UJ	230 U	230 UJ	26 U	26 UJ	34 U	34 UJ	12 U	12 UJ	290 U	290 UJ
BHC-delta	ug/kg	18 U	18 UJ	230 U	230 UJ	26 U	26 UJ	34 U	34 UJ	12 U	12 UJ	290 U	290 UJ
BHC-gamma (Lindane)	ug/kg	18 U	18 UJ	230 U	230 UJ	26 U	26 UJ	34 U	34 UJ	12 U	12 UJ	290 U	290 UJ
Dieldrin	ug/kg	34 U	34 UJ	450 U	450 UJ	51 U	51 UJ	67 U	67 UJ	34 U	34 UJ	560 U	560 UJ
Endosulfan I	ug/kg	18 U	18 UJ	230 U	230 UJ	26 U	26 UJ	34 U	34 UJ	12 U	12 UJ	290 U	290 UJ
Endosulfan II	ug/kg	34 U	34 UJ	450 U	450 UJ	51 U	51 UJ	67 U	67 UJ	34 U	34 UJ	560 U	560 UJ
Endosulfan Sulfate	ug/kg	34 U	34 UJ	450 U	450 UJ	51 U	51 UJ	67 U	67 UJ	34 U	34 UJ	560 U	560 UJ
Endrin	ug/kg	34 U	34 UJ	450 U	450 UJ	51 U	51 UJ	67 U	67 UJ	34 U	34 UJ	560 U	560 UJ
Endrin Aldehyde	ug/kg	34 U	34 UJ	450 U	450 UJ	51 U	51 UJ	67 U	67 UJ	34 U	34 UJ	560 U	560 UJ
Endrin Ketone	ug/kg	34 U	34 UJ	450 U	450 UJ	51 U	51 UJ	67 U	67 UJ	34 U	34 UJ	560 U	560 UJ
gamma-Chlordane	ug/kg	18 U	18 UJ	230 U	230 UJ	26 U	26 UJ	34 U	34 UJ	12 U	12 UJ	290 U	290 UJ
Heptachlor	ug/kg	18 U	18 UJ	230 U	230 UJ	26 U	26 UJ	34 U	34 UJ	12 U	12 UJ	290 U	290 UJ
Heptachlor Epoxide	ug/kg	18 U	18 UJ	230 U	230 UJ	26 U	26 UJ	34 U	34 UJ	12 U	12 UJ	290 U	290 UJ
Methoxychlor	ug/kg	180 U	180 UJ	2300 U	2300 UJ	260 U	260 UJ	340 U	340 UJ	120 U	120 UJ	2900 U	2900 UJ
Toxaphene	ug/kg	1800 U	1800 UJ	23000 U	23000 UJ	2600 U	2600 UJ	3400 U	3400 UJ	1200 U	1200 UJ	29000 U	29000 UJ
Aroclor-1016	ug/kg	340 U	340 UJ	4500 U	4500 UJ	510 U	510 UJ	370 U	370 UJ	340 U	340 UJ	5600 U	5600 UJ
Aroclor-1221	ug/kg	690 U	690 UJ	9100 U	9100 UJ	1000 U	1000 UJ	1400 U	1400 UJ	490 U	490 UJ	1100 U	1100 UJ
Aroclor-1232	ug/kg	340 U	340 UJ	4500 U	4500 UJ	510 U	510 UJ	370 U	370 UJ	340 U	340 UJ	5600 U	5600 UJ
Aroclor-1242	ug/kg	340 U	340 UJ	4500 U	4500 UJ	510 U	510 UJ	370 U	370 UJ	340 U	340 UJ	5600 U	5600 UJ
Aroclor-1248	ug/kg	49000 PD	49000 PDJ	48000 P	48000 PJ	51000 PD	51000 PDJ	73000 PD	73000 PDJ	2400 PD	2400 PDJ	81000 P	81000 PJ
Aroclor-1254	ug/kg	340 U	340 UJ	4500 U	4500 UJ	510 U	510 UJ	370 U	370 UJ	340 U	340 UJ	5600 U	5600 UJ
Aroclor-1260	ug/kg	2300	2300 J	1700	1700 J	2400	2400 J	4800	4800 J	1200	1200 J	4100 J	4100 J
Total Metals Analyses													
Aluminum	mg/kg	11100	11074	6340	6100	8180	8179	7570	7572	8160	8158	7870	7874
Antimony	mg/kg	2.3 UN	2.3 UNJ	1.5 UN	1.5 UNJ	2.4 BN	2.4 UNJ	2.3 UN	2.3 UNJ	2.2 BN	2.2 BNJ	7.5 BN	7.5 BNJ
Arsenic	mg/kg	7	7.0	15.7	15.1	9.6	9.6	8.6	8.6	7.4	7.4	7.2	7.2
Barium	mg/kg	73.8 B	73.8 B	41.6 B	40.0 B	107	107.3	103	102.8	109	108.8	70.3	79.9
Beryllium	mg/kg	0.61 B	0.6 B	0.3 B	0.3 B	0.47 B	0.5 B	0.41 U	0.4 U	0.41 B	0.4 B	0.35 B	0.4 B
Cadmium	mg/kg	13.2	13.2	13.3	12.8	16.7	16.7	15.1	15.1	17.7	17.7	10.5	10.5
Calcium	mg/kg	39700 *	39731 *J	32700 *	31396 *J	35400 *	35407 *J	54000 *	53982 *J	49200 *	49219 *J	67500 *	67533 *J
Chromium	mg/kg	84.3 N*	84 N*J	176 N*	169 N*J	608 N*	608 N*J	372 N*	372 N*J	619 N*	619 N*J	232 N*	232 N*J
Cobalt	mg/kg	10.4 B	10.4 B	6.9 B	6.7 B	7.3 B	7.3 B	7.2 B	7.2 B	6.2 B	6.2 B	6.4 B	6.4 B
Copper	mg/kg	79.7 N*	80 N*J	151 N*	145 N*J	354 N*	354 N*J	197 N*	197 N*J	174 N*	174 N*J	123 N*	123 N*J
Iron	mg/kg	20700	20688	19700	18911	17500	17472	18200	18236	15000	14973	13800	13827
Lead	mg/kg	216 N*	216.2 N*R	66.2 N*	63.7 N*R	207 N*	206.5 N*R	197 N*	196.7 N*R	340 N*	339.8 N*R	124 N*	124.1 N*R
Magnesium	mg/kg	11000 *	11019.01 *J	5560 *	5347.96 *J	8750 *	8750.2714 *J	11100 *	11102 *J	11300 *	11287 *J	24000 *	23996.7 *J
Manganese	mg/kg	712 N	728 NJ	191 N	189 NJ	293 N	301 NJ	361 N	371 NJ	267 N	267 NJ	287 N	296 NJ
Mercury	mg/kg	0.21 U	0.21 U	0.14 U	0.14 U	0.26	0.26	0.20 U	0.20 U	0.30	0.29	0.26	0.26
Nickel	mg/kg	47 N*	47.0 N*J	80.2 N*	80.5 N*J	190 N*	197.1 N*J	120 N*	125.1 N*J	116 N*	119.2 N*J	78.4 N*	81.9 N*J
Potassium	mg/kg	1560 BE	1561 BEJ	1060 BE	1022 BEJ	1170 BE	1169 BEJ	1260 BE	1256 BEJ	1710 E	1708 EJ	1780 E	1779 EJ
Selenium	mg/kg	2.0 U	2.0 U	1.4 U	1.3 U	1.6 U	1.6 U	2.1 U	2.1 U	1.5 U	1.5 U	1.7 U	1.7 U
Silver	mg/kg	0.65 UN	0.7 UNJ	1.2 BN	1.2 BNJ	3.4 N	3.4 NJ	2.3 BN	2.3 BNJ	2.8 BN	2.8 BNJ	1.7 BN	1.7 BNJ
Sodium	mg/kg	2160	2156	1700	1630	1170 B	1166 B	1580 B	1581 B	1250 B	1253 B	1410 B	1411 B
Thallium	mg/kg	2.4 U	2.4 UJ	1.6 U	1.5 UJ	1.8 U	1.8 UJ	2.4 U	2.3 UJ	1.7 U	1.7 UJ	1.9 U	1.9 UJ
Vanadium	mg/kg	22.3	22.3	16.1	15.5	22.1	22.1	21.1	21.1	26.5	26.5	20.2	20.2
Zinc	mg/kg	106 EN	106 ENJ	148 EN	142 ENJ	345 EN	345 ENJ	365 EN	365 ENJ	394 EN	394 ENJ	149 EN	149 ENJ
Cyanide	mg/kg	3.9 N	4 NJ	4 N	4 NJ	2.9 N	3 NJ	6.1 N	6 NJ	8.6 N	9 NJ	2.7 N	3 NJ
Other Parameters													
Total Organic Carbon	mg/kg	1960	1960	1340	1340	1450	1450	1950	1950	1100	1100	1730	1730
% Solids	%	48	48	72	72	63	63	49	49	68	68	58	58

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SEDIMENT

Sample ID		SED-23		SED-23D		SED-24		SED-24D		SED-25		SED-25D	
Lab Sample Number		A8359701		A8359702		A8359703		A8359704		A8356401		A8356402	
Sample Date		08/27/98		08/27/98		08/27/98		08/27/98		08/26/98		08/26/98	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Pesticides & PCBs													
4,4' - DDD	ug/kg	67 U	67 UJ	53 U	53 UJ	52 U	52 UJ	29 U	29 UJ	5 U	5 UJ	18 U	18 UJ
4,4'- DDE	ug/kg	67 U	67 UJ	53 U	53 UJ	52 U	52 UJ	29 U	29 UJ	5 U	5 UJ	18 U	18 UJ
4,4'-DDT	ug/kg	67 U	67 UJ	53 U	53 UJ	52 U	52 UJ	29 U	29 UJ	5 U	5 UJ	18 U	18 UJ
Aldrin	ug/kg	35 U	35 UJ	28 U	28 UJ	27 U	27 UJ	15 U	15 UJ	2.6 U	2.6 UJ	9.2 U	9.2 UJ
alpha-Chlordane	ug/kg	35 U	35 UJ	28 U	28 UJ	27 U	27 UJ	15 U	15 UJ	2.6 U	2.6 UJ	9.2 U	9.2 UJ
BHC-alpha	ug/kg	35 U	35 UJ	28 U	28 UJ	27 U	27 UJ	15 U	15 UJ	2.6 U	2.6 UJ	9.2 U	9.2 UJ
BHC-beta	ug/kg	35 U	35 UJ	28 U	28 UJ	27 U	27 UJ	15 U	15 UJ	2.6 U	2.6 UJ	9.2 U	9.2 UJ
BHC-delta	ug/kg	35 U	35 UJ	28 U	28 UJ	27 U	27 UJ	15 U	15 UJ	2.6 U	2.6 UJ	9.2 U	9.2 UJ
BHC-gamma (Lindane)	ug/kg	35 U	35 UJ	28 U	28 UJ	27 U	27 UJ	15 U	15 UJ	2.6 U	2.6 UJ	9.2 U	9.2 UJ
Dieldrin	ug/kg	67 U	67 UJ	53 U	53 UJ	52 U	52 UJ	29 U	29 UJ	5 U	5 UJ	18 U	18 UJ
Endosulfan I	ug/kg	35 U	35 UJ	28 U	28 UJ	27 U	27 UJ	15 U	15 UJ	2.6 U	2.6 UJ	9.2 U	9.2 UJ
Endosulfan II	ug/kg	67 U	67 UJ	53 U	53 UJ	52 U	52 UJ	29 U	29 UJ	5 U	5 UJ	18 U	18 UJ
Endosulfan Sulfate	ug/kg	67 U	67 UJ	53 U	53 UJ	52 U	52 UJ	29 U	29 UJ	5 U	5 UJ	18 U	18 UJ
Endrin	ug/kg	67 U	67 UJ	53 U	53 UJ	52 U	52 UJ	29 U	29 UJ	5 U	5 UJ	18 U	18 UJ
Endrin Aldehyde	ug/kg	67 U	67 UJ	53 U	53 UJ	52 U	52 UJ	29 U	29 UJ	5 U	5 UJ	18 U	18 UJ
Endrin Ketone	ug/kg	67 U	67 UJ	53 U	53 UJ	52 U	52 UJ	29 U	29 UJ	5 U	5 UJ	18 U	18 UJ
gamma-Chlordane	ug/kg	35 U	35 UJ	28 U	28 UJ	27 U	27 UJ	15 U	15 UJ	2.6 U	2.6 UJ	9.2 U	9.2 UJ
Heptachlor	ug/kg	35 U	35 UJ	28 U	28 UJ	27 U	27 UJ	15 U	15 UJ	2.6 U	2.6 UJ	9.2 U	9.2 UJ
Heptachlor Epoxide	ug/kg	35 U	35 UJ	28 U	28 UJ	27 U	27 UJ	15 U	15 UJ	2.6 U	2.6 UJ	9.2 U	9.2 UJ
Methoxychlor	ug/kg	350 U	350 UJ	280 U	280 UJ	270 U	270 UJ	150 U	150 UJ	26 U	26 UJ	17 U	17 UJ
Toxaphene	ug/kg	3500 U	3500 UJ	2800 U	2800 UJ	2,700 U	2,700 UJ	1500 U	1500 UJ	260 U	260 UJ	920 U	920 UJ
Aroclor-1016	ug/kg	670 U	670 UJ	530 U	530 UJ	520 U	520 UJ	290 U	290 UJ	50 U	50 UJ	180 U	180 UJ
Aroclor-1221	ug/kg	1400 U	1400 UJ	1100 U	1100 UJ	1,100 U	1,100 UJ	600 U	600 UJ	100 U	100 UJ	360 U	360 UJ
Aroclor-1232	ug/kg	670 U	670 UJ	530 U	530 UJ	520 U	520 UJ	290 U	290 UJ	50 U	50 UJ	180 U	180 UJ
Aroclor-1242	ug/kg	670 U	670 UJ	530 U	530 UJ	520 U	520 UJ	290 U	290 UJ	50 U	50 UJ	180 U	180 UJ
Aroclor-1248	ug/kg	3600 P	3600 PJ	2100 PE	2100 PJ	51000 XPD	51000 XPDJ	2800 PX	2800 PXJ	50 U	50 UJ	180 U	180 UJ
Aroclor-1254	ug/kg	670 U	670 UJ	530 U	530 UJ	520 U	520 UJ	290 U	290 UJ	50 U	50 UJ	180 U	180 UJ
Aroclor-1260	ug/kg	540 PJ	540 PJ	1400	1400 J	3,200 P	3,200 PJ	280 JPX	280 JPX	50 U	50 UJ	180 U	180 UJ
Total Metals Analyses													
Aluminum	mg/kg	5850	5854	8680	8682	21200	21176	28300	28288	5090	5086	2090	2087
Antimony	mg/kg	2.2 UN	2.2 UNJ	2 BN	2.0 BNJ	3.5 UN	3.5 UNJ	4.9 UN	4.9 UNJ	1.7 UN	1.7 UNJ	5.9 UN	5.9 UNJ
Arsenic	mg/kg	7.7	7.7	8.5	8.5	20.8	20.8	25.7	25.7	6.7	6.7	5.3 B	5.3 B
Barium	mg/kg	110	110.2	133	132.8	270	270.2	388	387.5	59.7	59.7	58.4 B	58.4 B
Beryllium	mg/kg	0.39 U	0.4 U	0.51 B	0.5 B	1.2 B	1.2 B	1.6 B	1.6 B	0.3 U	0.3 U	1.1 U	1.1 U
Cadmium	mg/kg	13.1	13.1	20.4	20.4	58.1	58.2	83.7	83.7	6.7	6.7	5.3	5.3
Calcium	mg/kg	60700 *	60718 *J	40800 *	40838 *J	101000 *	101368 *J	145000 *	144802 *J	45900 *	45895 *J	39700 *	39740 *J
Chromium	mg/kg	181 N*	181 N*J	931 N*	931 N*J	1220 N*	1216 N*J	1770 N*	1767 N*J	9.5 BN*	10 N*J	5.3 BN*	5 BN*J
Cobalt	mg/kg	7.5 B	7.5 B	7.3 B	7.3 B	17.9 B	18.0 B	31.1 B	31.1 B	5	5.0 N*J	1.7 B	1.7 B
Copper	mg/kg	132 N*	132 N*J	288 N*	288 N*J	343 N*	343 N*J	498 N*	498 N*J	12.7 N*	13	28.3 N*	28 N*J
Iron	mg/kg	16500	16498	20000	19954	41900	41915	57300	57252	10800	10841 N*R	7400	7400
Lead	mg/kg	167 N*	167.4 N*R	205 N*	205.4 N*R	538 N*	538.1 N*R	761 N*	761.5 N*R	8.1 N*	8.2 *J	6.7 N*	6.7 N*R
Magnesium	mg/kg	11400 *	11406 *J	10700 *	10652 *J	26200 *	26159.4 *J	37000 *	37003.86 *J	9170 *	9174.5009 NJ	3230 B*	3233 B*J
Manganese	mg/kg	334 N	346 NJ	328 N	333 NJ	871 N	889 NJ	1120 N	1133 NJ	283 N	283 N*J	178 N	181 NJ
Mercury	mg/kg	0.20	0.20	0.31	0.31	0.4	0.41	0.74	0.74	0.15 U	0.15 EJ	0.52 U	0.52 U
Nickel	mg/kg	61.1 N*	61.1 N*J	235 N*	235.0 N*J	250 N*	250.0 N*J	363 N*	363.0 N*J	11.4 BN*	11.4 U	11.4 BN*	11.4 BN*J
Potassium	mg/kg	906 E	906 EJ	1510 E	1505 EJ	3650 E	3652 EJ	4900 E	4896 EJ	997 BE	997 BEJ	218 BE	218 BEJ
Selenium	mg/kg	2 U	2.0 BNJ	1.6 U	1.6 U	3.2 U	3.2 U	4.4 U	4.4 U	1.5 U	1.5 U	5.3 U	5.3 U
Silver	mg/kg	1.7 BN	1.7 B	3.8 B	3.8 NJ	5.7 BN	5.7 BNJ	8.7 BN	8.7 BNJ	0.48 UN	0.5 UNJ	1.7 UN	1.7 UNJ
Sodium	mg/kg	1320 B	1319 UJ	1210 U	1208 B	3240	3239	4670	4666	1360 B	1360 B	3850 B	3852 B
Thallium	mg/kg	2.3 U	2.3 ENJ	1.9 EN	1.9 UJ	3.7 U	3.7 UJ	5.1 U	5.1 UJ	1.7 U	1.7 UJ	6.1 U	6.1 UJ
Vanadium	mg/kg	19.6 B	19.6 NJ	26.1 N	26.1	55.9	55.9	76.7	76.7	12 B	11.9 B	11.8 B	11.8 B
Zinc	mg/kg	262 EN	262	409 EN	409 ENJ	850 EN	850 ENJ	1190 EN	1185 ENJ	44.1 EN	44 ENJ	52 EN	52 ENJ
Cyanide	mg/kg	0.87 N	1 U	2.2 N	2 NJ	11.9 N	12 NJ	3.3 N	3 NJ	0.67 UN	1 UNJ	2.7 UN	3 UNJ
Other Parameters													
Total Organic Carbon	mg/kg	1470	1470	1180	1180	3850	3850	2430	2430	5070	5070	2290	2290
% Solids	%	49	49	60	60	31	31	22	22	66	66	18	18

APPENDIX C-5

Surface Soil Data

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-10		SS-11		SS-12		SS-13		SS-14		SS-15	
Lab Sample Number		A8343301		A8343302		A8343303		A8343304		A8343305		A8343306	
Sampling Date		08/19/98		08/19/98		08/19/98		08/19/98		08/19/98		08/19/98	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
TCL Volatile Organics													
1,1,1-Trichloroethane	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
1,1,2,2-Tetrachloroethane	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
1,1,2-Trichloroethane	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
1,1-Dichloroethane	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
1,1-Dichloroethene	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
1,2-Dichloroethane	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
1,2-Dichloroethene (total)	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
1,2-Dichloropropane	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
2-Butanone	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
2-Hexanone	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
4-Methyl-2-Pentanone	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
Acetone	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
Benzene	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
Bromodichloromethane	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
Bromoform	ug/kg	11 U	11 J	11 U	11 J	11 U	11 J	11 U	11 J	10 U	10 J	11 U	12 J
Bromomethane	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
Carbon Disulfide	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
Carbon Tetrachloride	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
Chlorobenzene	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
Chloroethane	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
Chloroform	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
Chloromethane	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
cis-1,3-Dichloropropene	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
Dibromochloromethane	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
Ethylbenzene	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
Methylene Chloride	ug/kg	1 J	1 J	11 U	11 U	11 U	11 U	11 U	11 U	1 J	1 J	11 U	12 U
Styrene	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
Tetrachloroethene	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
Toluene	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
trans-1,3-Dichloropropene	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
Trichloroethene	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
Vinyl Chloride	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U
Xylene (total)	ug/kg	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U	10 U	10 U	11 U	12 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-16		SS-20		SS-21		SS-22		SS-23		SS-24	
Lab Sample Number		A8343307		23799001		23799002		23799003		23799004		23799005	
Sampling Date		08/19/98		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
TCL Volatile Organics													
1,1,1-Trichloroethane	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene (total)	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	12 U	12 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl Chloride	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylene (total)	ug/kg	12 U	12 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-25		SS-26		SS-27		SS-28		SS-29		SS-30	
Lab Sample Number		23799006		23799007		23799008		23799009		23799010		23799011	
Sampling Date		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
TCL Volatile Organics													
1,1,1-Trichloroethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene (total)	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl Chloride	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylene (total)	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-31		SS-32		SS-33		SS-34		SS-35		SS-36	
Lab Sample Number		23799012		23799013		23799014		23799015		23799016		23799017	
Sampling Date		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
TCL Volatile Organics													
1,1,1-Trichloroethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene (total)	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl Chloride	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylene (total)	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-37		SS-38		SS-39		SS-40		SS-41		WORM COMPOSITE	
Lab Sample Number		23799018		23799019		23799020		23799021		23799022		23299139	
Sampling Date		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99		08/20/99	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
TCL Volatile Organics													
1,1,1-Trichloroethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene (total)	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl Chloride	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylene (total)	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-10		SS-11		SS-12		SS-13		SS-14		SS-15	
Lab Sample Number		A8343301		A8343302		A8343303		A8343304		A8343305		A8343306	
Sampling Date		08/19/98		08/19/98		08/19/98		08/19/98		08/19/98		08/19/98	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
TCL Semivolatile Organics													
1,2,4-Trichlorobenzene	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
1,2-Dichlorobenzene	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
1,3-Dichlorobenzene	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
1,4-Dichlorobenzene	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
2,2'-Oxybis(1-Chloropropane)		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	ug/kg	4400 U	4700 U	8800 U	9400 U	8700 U	9100 U	4300 U	4550 U	820 U	890 U	910 U	960 U
2,4,6-Trichlorophenol	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
2,4-Dichlorophenol	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
2,4-Dimethylphenol	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
2,4-Dinitrophenol	ug/kg	4400 U	4700 U	8800 U	9400 U	8700 U	9100 U	4300 U	4550 U	820 U	890 U	910 U	960 U
2,4-Dinitrotoluene	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
2,6-Dinitrotoluene	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
2-Chloronaphthalene	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
2-Chlorophenol	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
2-Methyl-4,6-dinitrophenol		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
2-Methylphenol	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
2-Nitroaniline	ug/kg	4400 U	4700 U	8800 U	9400 U	8700 U	9100 U	4300 U	4550 U	820 U	890 U	910 U	960 U
2-Nitrophenol	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
3,3'-Dichlorobenzidine	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
3-Nitroaniline	ug/kg	4400 U	4700 U	8800 U	9400 U	8700 U	9100 U	4300 U	4550 U	820 U	890 U	910 U	960 U
4,6-Dinitro-2-methylphenol	ug/kg	4400 U	4700 U	8800 U	9400 U	8700 U	9100 U	4300 U	4550 U	820 U	890 U	910 U	960 U
4-Bromophenyl-phenylether	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
4-Chloro-3-methylphenol	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
4-Chloroaniline	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
4-Chlorophenyl-phenylether	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
4-Methylphenol	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
4-Nitroaniline	ug/kg	4400 U	4700 U	8800 U	9400 U	8700 U	9100 U	4300 U	4550 U	820 U	890 U	910 U	960 U
4-Nitrophenol	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-16		SS-20		SS-21		SS-22		SS-23		SS-24	
Lab Sample Number		A8343307		23799001		23799002		23799003		23799004		23799005	
Sampling Date		08/19/98		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
TCL Semivolatile Organics													
1,2,4-Trichlorobenzene	ug/kg	400 U	430 U	370 U	350 U	350 U	350 U	350 U	350 U	360 U	360 U	340 U	340 U
1,2-Dichlorobenzene	ug/kg	400 U	430 U	370 U	350 U	350 U	350 U	350 U	350 U	360 U	360 U	340 U	340 U
1,3-Dichlorobenzene	ug/kg	400 U	430 U	370 U	350 U	350 U	350 U	350 U	350 U	360 U	360 U	340 U	340 U
1,4-Dichlorobenzene	ug/kg	400 U	430 U	370 U	350 UR	350 UR	350 UR	350 U	350 U	360 U	360 U	340 U	340 U
2,2'-Oxybis(1-Chloropropane)		NA	NA	370 U	350 U	350 U	350 U	350 U	350 U	360 U	360 U	340 U	340 U
2,4,5-Trichlorophenol	ug/kg	970 U	1070 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1700 U	1700 U
2,4,6-Trichlorophenol	ug/kg	400 U	430 U	370 U	350 U	350 U	350 U	350 U	350 U	360 U	360 U	340 U	340 U
2,4-Dichlorophenol	ug/kg	400 U	430 U	370 U	350 U	350 U	350 U	350 U	350 U	360 U	360 U	340 U	340 U
2,4-Dimethylphenol	ug/kg	400 U	430 U	370 U	350 U	350 U	350 U	350 U	350 U	360 U	360 U	340 U	340 U
2,4-Dinitrophenol	ug/kg	970 U	1070 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1700 U	1700 U
2,4-Dinitrotoluene	ug/kg	400 U	430 U	370 U	350 U	350 U	350 U	350 U	350 U	360 U	360 U	340 U	340 U
2,6-Dinitrotoluene	ug/kg	400 U	430 U	370 U	350 U	350 U	350 U	350 U	350 U	360 U	360 U	340 U	340 U
2-Chloronaphthalene	ug/kg	400 U	430 U	370 U	350 U	350 U	350 U	350 U	350 U	360 U	360 U	340 U	340 U
2-Chlorophenol	ug/kg	400 U	430 U	370 U	350 U	350 U	350 U	350 U	350 U	360 U	360 U	340 U	340 U
2-Methyl-4,6-dinitrophenol		NA	NA	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1700 U	1700 U
2-Methylnaphthalene	ug/kg	400 U	430 U	190 J	350 UR	350 UR	350 UR	350 U	350 U	170 J	170 J	130 J	130 J
2-Methylphenol	ug/kg	400 U	430 U	370 U	350 U	350 U	350 U	350 U	350 U	360 U	360 U	340 U	340 U
2-Nitroaniline	ug/kg	970 U	1070 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1700 U	1700 U
2-Nitrophenol	ug/kg	400 U	430 U	370 U	350 U	350 U	350 U	350 U	350 U	360 U	360 U	340 U	340 U
3,3'-Dichlorobenzidine	ug/kg	400 U	430 U	370 U	350 U	350 U	350 U	350 U	350 U	360 U	360 U	340 U	340 U
3-Nitroaniline	ug/kg	970 U	1070 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1700 U	1700 U
4,6-Dinitro-2-methylphenol	ug/kg	970 U	1070 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl-phenylether	ug/kg	400 U	430 U	370 U	370 U	350 U	350 U	350 U	350 U	360 U	360 U	340 U	340 U
4-Chloro-3-methylphenol	ug/kg	400 U	430 U	370 U	370 U	350 U	350 U	350 U	350 U	360 U	360 U	340 U	340 U
4-Chloroaniline	ug/kg	400 U	430 U	210 J	210 J	350 UR	350 UR	350 U	350 U	360 U	360 U	340 U	340 U
4-Chlorophenyl-phenylether	ug/kg	400 U	430 U	370 U	370 U	350 U	350 U	350 U	350 U	360 U	360 U	340 U	340 U
4-Methylphenol	ug/kg	400 U	430 U	370 U	370 U	350 U	350 U	350 U	350 U	360 U	360 U	340 U	340 U
4-Nitroaniline	ug/kg	970 U	1070 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1700 U	1700 U
4-Nitrophenol	ug/kg	400 U	430 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1700 U	1700 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-25		SS-26		SS-27		SS-28		SS-29		SS-30	
Lab Sample Number		23799006		23799007		23799008		23799009		23799010		23799011	
Sampling Date		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
TCL Semivolatile Organics													
1,2,4-Trichlorobenzene	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
1,2-Dichlorobenzene	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
1,3-Dichlorobenzene	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
1,4-Dichlorobenzene	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	46 J	46 J	350 U	350 U	360 U	360 U
2,2'-Oxybis(1-Chloropropane)		370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
2,4,5-Trichlorophenol	ug/kg	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U
2,4,6-Trichlorophenol	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
2,4-Dichlorophenol	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
2,4-Dimethylphenol	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
2,4-Dinitrophenol	ug/kg	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	350 U	350 U	1800 U	1800 U
2,4-Dinitrotoluene	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
2,6-Dinitrotoluene	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
2-Chloronaphthalene	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
2-Chlorophenol	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
2-Methyl-4,6-dinitrophenol		1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U
2-Methylnaphthalene	ug/kg	370 U	370 U	250 J	250 J	540	540	360	360	120 J	120 J	440	440
2-Methylphenol	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
2-Nitroaniline	ug/kg	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U
2-Nitrophenol	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
3,3'-Dichlorobenzidine	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
3-Nitroaniline	ug/kg	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U
4,6-Dinitro-2-methylphenol	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl-phenylether	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
4-Chloro-3-methylphenol	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
4-Chloroaniline	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	110 J	110 J	79 J	79 J	75 J	75 J
4-Chlorophenyl-phenylether	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
4-Methylphenol	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
4-Nitroaniline	ug/kg	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U
4-Nitrophenol	ug/kg	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-31		SS-32		SS-33		SS-34		SS-35		SS-36	
Lab Sample Number		23799012		23799013		23799014		23799015		23799016		23799017	
Sampling Date		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
TCL Semivolatile Organics													
1,2,4-Trichlorobenzene	ug/kg	360 U	340 U	360 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
1,2-Dichlorobenzene	ug/kg	360 U	340 U	360 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
1,3-Dichlorobenzene	ug/kg	360 U	340 U	360 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
1,4-Dichlorobenzene	ug/kg	360 U	340 U	360 U	350 U	47 J	47 J	350 UR	350 UR	350 U	350 U	350 U	350 U
2,2'-Oxybis(1-Chloropropane)		360 U	340 U	360 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
2,4,5-Trichlorophenol	ug/kg	1800 U	1700 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1700 U	1700 U	1800 U	1800 U
2,4,6-Trichlorophenol	ug/kg	360 U	340 U	360 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
2,4-Dichlorophenol	ug/kg	360 U	340 U	360 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
2,4-Dimethylphenol	ug/kg	360 U	340 U	360 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
2,4-Dinitrophenol	ug/kg	1800 U	1700 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1700 U	1700 U	1800 U	1800 U
2,4-Dinitrotoluene	ug/kg	360 U	340 U	360 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
2,6-Dinitrotoluene	ug/kg	360 U	340 U	360 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
2-Chloronaphthalene	ug/kg	360 U	340 U	360 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
2-Chlorophenol	ug/kg	360 U	340 U	360 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
2-Methyl-4,6-dinitrophenol		1800 U	1700 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1700 U	1700 U	1800 U	1800 U
2-Methylnaphthalene	ug/kg	46 J	46 J	440	380	430	430	350 UR	350 UR	350 U	350 U	95 J	95 J
2-Methylphenol	ug/kg	360 U	340 U	360 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
2-Nitroaniline	ug/kg	1800 U	1700 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1700 U	1700 U	1800 U	1800 U
2-Nitrophenol	ug/kg	360 U	340 U	360 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
3,3'-Dichlorobenzidine	ug/kg	360 U	340 U	360 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
3-Nitroaniline	ug/kg	1800 U	1700 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1700 U	1700 U	1800 U	1800 U
4,6-Dinitro-2-methylphenol	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl-phenylether	ug/kg	340 U	340 U	350 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
4-Chloro-3-methylphenol	ug/kg	340 U	340 U	350 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
4-Chloroaniline	ug/kg	340 U	340 U	350 U	350 U	86 J	86 J	350 UR	350 UR	350 U	350 U	350 U	350 U
4-Chlorophenyl-phenylether	ug/kg	340 U	340 U	350 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
4-Methylphenol	ug/kg	340 U	340 U	350 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
4-Nitroaniline	ug/kg	1700 U	1700 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1700 U	1700 U	1800 U	1800 U
4-Nitrophenol	ug/kg	1700 U	1700 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1700 U	1700 U	1800 U	1800 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-37		SS-38		SS-39		SS-40		SS-41		WORM COMPOSITE	
Lab Sample Number		23799018		23799019		23799020		23799021		23799022		23299139	
Sampling Date		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99		08/20/99	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
TCL Semivolatile Organics													
1,2,4-Trichlorobenzene	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
1,2-Dichlorobenzene	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
1,3-Dichlorobenzene	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
1,4-Dichlorobenzene	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
2,2'-Oxybis(1-Chloropropane)		360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
2,4,5-Trichlorophenol	ug/kg	1800 U	1800 U	1700 U	1700 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	330 U	330 U
2,4,6-Trichlorophenol	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	1700 U	1700 U
2,4-Dichlorophenol	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
2,4-Dimethylphenol	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
2,4-Dinitrophenol	ug/kg	1800 U	1800 U	1700 U	1700 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1700 U	1700 U
2,4-Dinitrotoluene	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
2,6-Dinitrotoluene	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
2-Chloronaphthalene	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
2-Chlorophenol	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
2-Methyl-4,6-dinitrophenol		1800 U	1800 U	1700 U	1700 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	330 U	330 U
2-Methylnaphthalene	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
2-Methylphenol	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
2-Nitroaniline	ug/kg	1800 U	1800 U	1700 U	1700 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1700 U	1700 U
2-Nitrophenol	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
3,3'-Dichlorobenzidine	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
3-Nitroaniline	ug/kg	1800 U	1800 U	1700 U	1700 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1700 U	1700 U
4,6-Dinitro-2-methylphenol	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	330 U	330 U
4-Bromophenyl-phenylether	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
4-Chloro-3-methylphenol	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
4-Chloroaniline	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
4-Chlorophenyl-phenylether	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
4-Methylphenol	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	1100	1100
4-Nitroaniline	ug/kg	1800 U	1800 U	1700 U	1700 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1700 U	1700 U
4-Nitrophenol	ug/kg	1800 U	1800 U	1700 U	1400 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1700 U	1700 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-10		SS-11		SS-12		SS-13		SS-14		SS-15	
Lab Sample Number		A8343301		A8343302		A8343303		A8343304		A8343305		A8343306	
Sampling Date		08/19/98		08/19/98		08/19/98		08/19/98		08/19/98		08/19/98	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Acenaphthene	ug/kg	1800 U	1900 U	470 J	500 J	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
Acenaphthylene	ug/kg	1800 U	1900 U	1700 J	1800 J	920 J	900 J	1800 U	1800 U	340 U	360 U	380 U	390 U
Anthracene	ug/kg	1800 U	1900 U	2400 J	2500 J	1000 J	1000 J	230 J	250 J	340 U	360 U	380 U	390 U
Benzo(a)anthracene	ug/kg	190 J	200 J	8100	8300	4000	4000	750 J	750 J	90 J	90 J	41 J	40 J
Benzo(a)pyrene	ug/kg	220 J	250 J	9300 U	9500 U	5100	5200	810 J	800 J	120 J	130 J	44 J	40 J
Benzo(b)fluoranthene	ug/kg	1800 U	1900 U	14000	13900	6700	6700	1200 J	1250 J	160 J	170 J	63 J	60 J
Benzo(g,h,i)perylene	ug/kg	1800 U	1900 J	2000 J	2000 J	1300 J	1300 J	200 J	200 J	43 J	40 J	380 U	390 U
Benzo(k)fluoranthene	ug/kg	1800 U	1900 J	3700	3700 J	2300 J	2200 J	430 J	450 J	66 J	70 J	380 U	390 J
bis(2-Chloroethoxy)methane	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
bis(2-Chloroethyl)Ether	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
bis(2-Chloroisopropyl)ether	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
Bis(2-Ethylhexyl)phthalate	ug/kg	1800 U	1900 U	770 J	800 J	610 J	600 J	1800 U	1800 U	53 J	60 J	42 J	40 J
Butylbenzylphthalate	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
Carbazole	ug/kg	1800 U	1900 U	630 J	700 J	420 J	400 J	1800 U	1800 U	340 U	360 U	380 U	390 U
Chrysene	ug/kg	200 J	200 J	8100	8300	4800	4800	900 J	900 J	110 J	120 J	52 J	50 J
Dibenz(a,h)anthracene	ug/kg	1800 U	1900 U	850 J	900 J	500 J	500 J	1800 U	1800 U	340 U	360 U	380 U	390 U
Dibenzofuran	ug/kg	1800 U	1900 U	370 J	3700 J	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
Diethylphthalate	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
Dimethylphthalate	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
Di-n-Butylphthalate	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
Di-n-octylphthalate	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
Fluoranthene	ug/kg	620 J	650 J	18000	18000	9900	9900	2300	2300	240 J	250 J	98 J	100 J
Fluorene	ug/kg	1800 U	1900 U	1100 J	1100 J	380 J	400 J	1800 U	1800 U	340 U	360 U	380 U	390 U
Hexachlorobenzene	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
Hexachlorobutadiene	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
Hexachlorocyclopentadiene	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
Hexachloroethane	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
Indeno(1,2,3-cd)pyrene	ug/kg	1800 U	1900 U	3600 J	3700 J	2200 J	2200 J	390 J	400 J	69 J	70 J	380 U	390 U
Isophorone	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
Naphthalene	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
Nitrobenzene	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
N-Nitroso-di-n-propylamine	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
N-Nitrosodiphenylamine (1)	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
Pentachlorophenol	ug/kg	4400 U	4700 U	8800 U	9400 U	8700 U	9100 U	4300 U	4550 U	820 U	890 U	910 U	960 U
Phenanthrene	ug/kg	440 J	450 J	9000	9200	4900	4900	1100 J	1150 J	83 J	90 J	50 J	50 J
Phenol	ug/kg	1800 U	1900 U	3600 U	3700 U	3600 U	3700 U	1800 U	1800 U	340 U	360 U	380 U	390 U
Pyrene	ug/kg	390 J	400 J	14000	13800	7000	7100	1400 J	1450 J	170 J	170 J	87 J	90 J

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-16				SS-20				SS-21				SS-22				SS-23				SS-24			
Lab Sample Number		A8343307				23799001				23799002				23799003				23799004				23799005			
Sampling Date		08/19/98				08/24/99				08/24/99				08/24/99				08/24/99				08/24/99			
	Units	Lab		Validated		Lab		Validated		Lab		Validated		Lab		Validated		Lab		Validated		Lab		Validated	
Acenaphthene	ug/kg	400	U	430	U	240	J	240	J	350	UR	350	UR	350	U	350	U	230	J	230	J	320	J	320	J
Acenaphthylene	ug/kg	45	J	50	J	290	J	290	J	350	UR	350	UR	350	U	350	U	260	J	260	J	310	J	310	J
Anthracene	ug/kg	43	J	50	J	520		520		76	J	76	J	350	U	350	U	580	G	580	G	1000		1000	
Benzo(a)anthracene	ug/kg	190	J	200	J	2000		2000		390	G	390	G	350	U	350	U	1900	G	1900	G	2400		2400	
Benzo(a)pyrene	ug/kg	260	J	270	J	2000		2000		360	G	360	G	350	U	350	U	1600	G	1600	G	1700		1700	
Benzo(b)fluoranthene	ug/kg	370	J	400	J	2700		2700		450	G	450	G	350	U	350	U	1700	G	1700	G	2100		2100	
Benzo(g,h,i)perylene	ug/kg	63	J	70	J	2500		2500		160	J	160	J	350	U	350	U	1500	G	1500	G	1300		1300	
Benzo(k)fluoranthene	ug/kg	140	J	150	J	720		720		190	J	190	J	350	U	350	U	730	G	730	G	740		740	
bis(2-Chloroethoxy)methane	ug/kg	400	U	430	U	370	U	370	U	350	U	350	U	350	U	350	U	360	U	360	U	340	U	340	U
bis(2-Chloroethyl)Ether	ug/kg	400	U	430	U	370	U	370	U	350	U	350	U	350	U	350	U	360	U	360	U	340	U	340	U
bis(2-Chloroisopropyl)ether	ug/kg	400	U	430	U		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
Bis(2-Ethylhexyl)phthalate	ug/kg	1300		1360		1300	B	1300	B	350	U	350	U	40	JB	40	JB	440	B	440	B	140	JB	140	JB
Butylbenzylphthalate	ug/kg	400	U	430	U	370	U	370	U	350	U	350	U	350	U	350	U	360	U	360	U	340	U	340	U
Carbazole	ug/kg	400	U	430	U	210	J	210	J	350	UR	350	UR	350	U	350	U	190	J	190	J	220	J	220	J
Chrysene	ug/kg	270	J	290	J	2200		2200		460	G	460	G	350	U	350	U	2100	G	2100	G	2200		2200	
Dibenz(a,h)anthracene	ug/kg	400	U	430	U	840		840		350	UR	350	UR	350	U	350	U	350	J	350	J	340	J	340	J
Dibenzofuran	ug/kg	400	U	430	U	100	J	100	J	350	UR	350	UR	350	U	350	U	150	J	150	J	240	J	240	J
Diethylphthalate	ug/kg	400	U	430	U	370	U	370	U	350	U	350	U	350	U	350	U	360	U	360	U	340	U	340	U
Dimethylphthalate	ug/kg	400	U	430	U	370	U	370	U	350	U	350	U	350	U	350	U	360	U	360	U	340	U	340	U
Di-n-Butylphthalate	ug/kg	400	U	430	U	80	JB	80	JB	350	U	350	U	350	U	350	U	360	U	360	U	70	JB	70	JB
Di-n-octylphthalate	ug/kg	400	U	430	U	370	U	370	U	350	U	350	U	350	U	350	U	360	U	360	U	340	U	340	U
Fluoranthene	ug/kg	490		520		2900		2900		690	G	690	G	41	J	41	J	2600	G	2600	G	6500	D	6500	D
Fluorene	ug/kg	400	U	430	U	210	J	210	J	350	UR	350	UR	350	U	350	U	270	J	270	J	570		570	
Hexachlorobenzene	ug/kg	400	U	430	U	130	J	130	J	350	UR	350	UR	350	U	350	U	360	U	360	U	340	U	340	U
Hexachlorobutadiene	ug/kg	400	U	430	U	370	U	370	U	350	U	350	U	350	U	350	U	360	U	360	U	340	U	340	U
Hexachlorocyclopentadiene	ug/kg	400	U	430	U	370	U	370	U	350	U	350	U	350	U	350	U	360	U	360	U	340	U	340	U
Hexachloroethane	ug/kg	400	U	430	U	370	U	370	U	350	U	350	U	350	U	350	U	360	U	360	U	340	U	340	U
Indeno(1,2,3-cd)pyrene	ug/kg	120	J	130	J	2600		2600		200	J	200	J	350	U	350	U	1700	G	1700	G	1500		1500	
Isophorone	ug/kg	400	U	430	U	370	U	370	U	350	U	350	U	350	U	350	U	360	U	360	U	340	U	340	U
Naphthalene	ug/kg	400	U	430	U	190	J	190	J	350	UR	350	UR	350	U	350	U	230	J	230	J	110	J	110	J
Nitrobenzene	ug/kg	400	U	430	U	370	U	370	U	350	U	350	U	350	U	350	U	360	U	360	U	340	U	340	U
N-Nitroso-di-n-propylamine	ug/kg	400	U	430	U	370	U	370	U	350	U	350	U	350	U	350	U	360	U	360	U	340	U	340	U
N-Nitrosodiphenylamine (1)	ug/kg	400	U	430	U	370	U	370	U	350	U	350	U	350	U	350	U	360	U	360	U	340	U	340	U
Pentachlorophenol	ug/kg	970	U	1070	U	1800	U	1800	U	1800	U	1800	U	1800	U	1800	U	1800	U	1800	U	1700	U	1700	U
Phenanthrene	ug/kg	200	J	210	J	2300		2300		350	J	350	J	350	U	350	U	2500	G	2500	G	4800	D	4800	D
Phenol	ug/kg	400	U	430	U	370	U	370	U	350	U	350	U	350	U	350	U	360	U	360	U	340	U	340	U
Pyrene	ug/kg	380	J	410	J	5600	D	5600	D	1100	G	1100	G	44	J	44	J	3900	D	3900	D	4800	D	4800	D

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-25		SS-26		SS-27		SS-28		SS-29		SS-30	
Lab Sample Number		23799006		23799007		23799008		23799009		23799010		23799011	
Sampling Date		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Acenaphthene	ug/kg	370 U	370 U	430	430	490	490	370	370	220 J	220 J	590	590
Acenaphthylene	ug/kg	370 U	370 U	670	670	990	990	890	890	220 J	220 J	870	870
Anthracene	ug/kg	370 U	370 U	1400	1400	1200	1200	1100	1100	470 G	470 G	1300	1300
Benzo(a)anthracene	ug/kg	370 U	370 U	4900 D	4900 D	4000 D	4000 D	2500	2500	1600 G	1600 G	2800	2800
Benzo(a)pyrene	ug/kg	48 J	48 J	2700	2700	2700	2700	3600 D	3600 D	1700 G	1700 G	5000 D	5000 D
Benzo(b)fluoranthene	ug/kg	370 U	370 U	6800 D	6800 D	6600 D	6600 D	4900 D	4900 D	2000 G	2000 G	7100 D	7100 D
Benzo(g,h,i)perylene	ug/kg	370 U	370 U	2800	2800	2700	2700	4100 D	4100 D	2000 G	2000 G	3900 D	3900 D
Benzo(k)fluoranthene	ug/kg	370 U	370 U	1100	1100	1100	1100	1300	1300	680 G	680 G	1200	1200
bis(2-Chloroethoxy)methane	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
bis(2-Chloroethyl)Ether	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
bis(2-Chloroisopropyl)ether	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-Ethylhexyl)phthalate	ug/kg	56 JB	56 JB	530 B	530 B	900 B	900 B	1900 B	1900 B	890 B	890 B	940 B	940 B
Butylbenzylphthalate	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
Carbazole	ug/kg	370 U	370 U	350 J	350 J	400	400	390	390	160 J	160 J	350 J	350 J
Chrysene	ug/kg	68 J	68 J	5100 D	5100 D	4900 D	4900 D	4000 D	4000 D	1600 G	1600 G	5300 D	5300 D
Dibenz(a,h)anthracene	ug/kg	370 U	370 U	700	700	680	680	960	960	360 G	360 G	810	810
Dibenzofuran	ug/kg	370 U	370 U	280 J	280 J	270	270	220 J	220 J	130 J	130 J	310 J	310 J
Diethylphthalate	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
Dimethylphthalate	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
Di-n-Butylphthalate	ug/kg	47 JB	47 JB	120 JB	120 JB	120 JB	120 JB	100 JB	100 JB	130 JB	130 JB	130 JB	130 JB
Di-n-octylphthalate	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
Fluoranthene	ug/kg	98 J	98 J	8800 D	8800 D	7800 D	7800 D	5700 D	5700 D	2000 G	2000 G	8100 D	8100 D
Fluorene	ug/kg	370 U	370 U	650	360	580	580	470	470	240 J	240 J	640	640
Hexachlorobenzene	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	110 J	110 J	360 U	360 U
Hexachlorobutadiene	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
Hexachlorocyclopentadiene	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
Hexachloroethane	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
Indeno(1,2,3-cd)pyrene	ug/kg	370 U	370 U	2800	2800	2800	2800	3900 D	3900 D	1500 G	1500 G	3400 JD	3400 JD
Isophorone	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
Naphthalene	ug/kg	370 U	370 U	330 J	330 J	640	640	320 J	320 J	150 J	150 J	490	490
Nitrobenzene	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
N-Nitroso-di-n-propylamine	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
N-Nitrosodiphenylamine (1)	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
Pentachlorophenol	ug/kg	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U
Phenanthrene	ug/kg	57 J	57 J	7800 D	7800 D	6400 D	6400 D	4800 D	4800 D	2100 G	2100 G	6600 D	6600 D
Phenol	ug/kg	370 U	370 U	360 U	360 U	350 U	350 U	360 U	360 U	350 U	350 U	360 U	360 U
Pyrene	ug/kg	100 J	100 J	9000 D	9000 D	8100 D	8100 D	11000 ED	11000 ED	5400 EG	5400 EG	9400 D	9400 D

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-31		SS-32		SS-33		SS-34		SS-35		SS-36	
Lab Sample Number		23799012		23799013		23799014		23799015		23799016		23799017	
Sampling Date		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Acenaphthene	ug/kg	74 J	74 J	1000	1000	550	550	350 UR	350 UR	75 J	75 J	200 J	200 J
Acenaphthylene	ug/kg	170 J	170 J	450	450	740	740	350 UR	350 UR	43 J	43 J	220 J	220 J
Anthracene	ug/kg	200 J	200 J	2500	2500	1000	1000	67 J	67 J	200 J	200 J	510	510
Benzo(a)anthracene	ug/kg	600 G	600 G	8800 D	8800 D	2400	2400	340 J	340 J	730	730	1700	1700
Benzo(a)pyrene	ug/kg	730 G	730 G	8700 D	8700 D	2700	2700	370 G	370 G	630	630	1400	1400
Benzo(b)fluoranthene	ug/kg	1000 G	1000 G	12000 D	12000 D	5100 D	5100 D	500 G	500 G	820	820	1900	1900
Benzo(g,h,i)perylene	ug/kg	770 G	770 G	5200 D	5200 D	4100 D	4100 D	260 J	260 J	390	390	1600	1600
Benzo(k)fluoranthene	ug/kg	370 G	370 G	1600	1600	1000	1000	200 J	200 J	360	360	610	610
bis(2-Chloroethoxy)methane	ug/kg	340 U	340 U	350 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
bis(2-Chloroethyl)Ether	ug/kg	340 U	340 U	350 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
bis(2-Chloroisopropyl)ether	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-Ethylhexyl)phthalate	ug/kg	280 JB	280 JB	600 B	600 B	1000 B	1000 B	64 JB	64 JB	200 JB	200 JB	420 B	420 B
Butylbenzylphthalate	ug/kg	340 U	340 U	350 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
Carbazole	ug/kg	47 J	47 J	700	700	360	360	350 UR	350 UR	63 J	63 J	150 J	150 J
Chrysene	ug/kg	680 G	680 G	9100 D	9100 D	2700	2700	500 G	500 G	710	710	1700	1700
Dibenz(a,h)anthracene	ug/kg	170 J	170 J	950	950	720	720	350 UR	350 UR	120 J	120 J	340 J	340 J
Dibenzofuran	ug/kg	47 J	47 J	510	510	300 J	300 J	350 UR	350 UR	350 U	350 U	110 J	110 J
Diethylphthalate	ug/kg	340 U	340 U	350 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
Dimethylphthalate	ug/kg	340 U	340 U	350 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
Di-n-Butylphthalate	ug/kg	53 JB	53 JB	54 JB	54 JB	95 JB	95 JB	350 U	350 U	350 U	350 U	350 U	350 U
Di-n-octylphthalate	ug/kg	340 U	340 U	350 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
Fluoranthene	ug/kg	1100 G	1100 G	17000 D	17000 D	5700 D	5700 D	680 G	680 G	1800	1800	2100	2100
Fluorene	ug/kg	110 J	110 J	1000	1000	530	530	36 J	36 J	91 J	91 J	230 J	230 J
Hexachlorobenzene	ug/kg	340 U	340 U	350 U	350 U	360 U	360 U	350 UR	350 UR	350 U	350 U	350 U	350 U
Hexachlorobutadiene	ug/kg	340 U	340 U	350 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
Hexachlorocyclopentadiene	ug/kg	340 U	340 U	350 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
Hexachloroethane	ug/kg	340 U	340 U	350 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
Indeno(1,2,3-cd)pyrene	ug/kg	570 G	570 G	5000 D	5000 D	2900	2900	260 J	260 J	440	440	1300	1300
Isophorone	ug/kg	340 U	340 U	350 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
Naphthalene	ug/kg	51 J	51 J	670	670	460	460	350 UR	350 UR	350 U	350 U	130 J	130 J
Nitrobenzene	ug/kg	340 U	340 U	350 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
N-Nitroso-di-n-propylamine	ug/kg	340 U	340 U	350 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
N-Nitrosodiphenylamine (1)	ug/kg	340 U	340 U	350 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
Pentachlorophenol	ug/kg	1700 U	1700 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1700 U	1700 U	1800 U	1800 U
Phenanthrene	ug/kg	790 G	790 G	14000 D	14000 D	5500 D	5500 D	440 G	440 G	850	850	2200	2200
Phenol	ug/kg	340 U	340 U	350 U	350 U	360 U	360 U	350 U	350 U	350 U	350 U	350 U	350 U
Pyrene	ug/kg	2600 G	2600 G	16000 D	16000 D	9000 ED	9000 ED	1300 G	1300 G	2500	2500	5100 D	5100 D

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-37		SS-38		SS-39		SS-40		SS-41		WORM COMPOSITE	
Lab Sample Number		23799018		23799019		23799020		23799021		23799022		23299139	
Sampling Date		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99		08/20/99	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Acenaphthene	ug/kg	120 J	120 J	61 J	61 J	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
Acenaphthylene	ug/kg	360 U	360 U	220 J	220 J	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
Anthracene	ug/kg	220 J	220 J	280 J	280 J	60 J	60 J	360 U	360 U	360 U	360 U	330 U	330 U
Benzo(a)anthracene	ug/kg	610	610	1900 G	1900 G	170 J	170 J	44 J	44 J	50 J	50 J	330 U	330 U
Benzo(a)pyrene	ug/kg	440	440	2600 G	2600 G	150 J	150 J	360 U	360 U	360 U	360 U	330 U	330 U
Benzo(b)fluoranthene	ug/kg	770	770	4100 D	4100 D	220 J	220 J	360 U	360 U	360 U	360 U	330 U	330 U
Benzo(g,h,i)perylene	ug/kg	410	410	2400 D	2400 D	95 J	95 J	360 U	360 U	360 U	360 U	330 U	330 U
Benzo(k)fluoranthene	ug/kg	230 J	230 J	1000 G	1000 G	84 J	84 J	360 U	360 U	360 U	360 U	330 U	330 U
bis(2-Chloroethoxy)methane	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
bis(2-Chloroethyl)Ether	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
bis(2-Chloroisopropyl)ether	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	330 U	330 U
Bis(2-Ethylhexyl)phthalate	ug/kg	230 JB	230 JB	260 JB	260 JB	54 JB	54 JB	55 JB	55 JB	66 JB	66 JB	330 U	330 U
Butylbenzylphthalate	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
Carbazole	ug/kg	84 J	84 J	59 J	59 J	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
Chrysene	ug/kg	680	680	2000 G	2000 G	160 J	160 J	49 J	49 J	58 J	58 J	330 U	330 U
Dibenz(a,h)anthracene	ug/kg	99 J	99 J	530 G	530 G	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
Dibenzofuran	ug/kg	65 J	65 J	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
Diethylphthalate	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
Dimethylphthalate	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
Di-n-Butylphthalate	ug/kg	58 JB	58 JB	77 JB	77 JB	58 JB	58 JB	75 JB	75 JB	52 JB	52 JB	170	170
Di-n-octylphthalate	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
Fluoranthene	ug/kg	1400	1400	1600 G	1600 G	240 J	240 J	66 J	66 J	75 J	75 J	330 U	330 U
Fluorene	ug/kg	160 J	160 J	85 J	85 J	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
Hexachlorobenzene	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
Hexachlorobutadiene	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
Hexachlorocyclopentadiene	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
Hexachloroethane	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
Indeno(1,2,3-cd)pyrene	ug/kg	450	450	2400 G	2400 G	91 J	91 J	360 U	360 U	360 U	360 U	330 U	330 U
Isophorone	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
Naphthalene	ug/kg	360 U	360 U	50 J	50 J	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
Nitrobenzene	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
N-Nitroso-di-n-propylamine	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
N-Nitrosodiphenylamine (1)	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
Pentachlorophenol	ug/kg	1800 U	1800 U	1700 U	1700 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1700 U	1700 U
Phenanthrene	ug/kg	1300	1300	940 G	940 G	220 J	220 J	45 J	45 J	51 J	51 J	330 U	330 U
Phenol	ug/kg	360 U	360 U	350 U	350 U	370 U	370 U	360 U	360 U	360 U	360 U	330 U	330 U
Pyrene	ug/kg	2700	2700	3700 D	3700 D	450	450	84 J	84 J	87 J	87 J	330 U	330 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-10		SS-11		SS-12		SS-13		SS-14		SS-15	
Lab Sample Number		A8343301		A8343302		A8343303		A8343304		A8343305		A8343306	
Sampling Date		08/19/98		08/19/98		08/19/98		08/19/98		08/19/98		08/19/98	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Pesticides & PCBs													
4,4' - DDD	ug/kg	3.7 U	3.7 U	27	27	19	19	6.9	6.9	3.4 U	3.4 U	3.8 U	3.7 U
4,4'- DDE	ug/kg	3.7 U	3.7 U	1.7 JP	1.7 JP	1.7 JP	1.7 JP	15	15	3.4 U	3.4 U	3.8 U	3.7 U
4,4'-DDT	ug/kg	0.61 JP	0.61 JP	18 P	1.8 P	20 P	20 P	16	16	3.4 U	3.4 U	3.8 U	3.7 U
Aldrin	ug/kg	1.9 U	1.9 U	1.8 JP	1.8 JP	1.4 J	1.4 J	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U	2.0 U
alpha-Chlordane	ug/kg	1.9 U	1.9 U	6.9 JP	6.9 JP	4.4 JP	4.4 JP	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U	2.0 U
BHC (alpha isomer)	ug/kg	1.9 U	1.9 U	7.4 U	7.4 U	7.4 U	7.4 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U	2.0 U
BHC (beta isomer)	ug/kg	1.9 U	1.9 U	2.7 JP	2.7 JP	2.4 JP	2.4 JP	2.1 P	2.1 P	1.8 U	1.8 U	1.9 U	2.0 U
BHC (delta isomer)	ug/kg	1.9 U	1.9 U	0.9 J	0.9 J	0.31 JP	0.31 JP	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U	2.0 U
BHC (gamma isomer) (Lindane)	ug/kg	1.9 U	1.9 U	0.71 JP	0.71 JP	0.66 JP	0.66 JP	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U	2.0 U
Dieldrin	ug/kg	3.7 U	3.7 U	6.8 JP	6.8 JP	5.6 JP	5.6 JP	0.81 JP	0.81 JP	0.45 JP	0.45 JP	3.8 U	3.7 U
Endosulfan I	ug/kg	1.9 U	1.9 U	7.4 U	7.4 U	7.4 U	7.4 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U	2.0 U
Endosulfan II	ug/kg	3.7 U	3.7 U	14 U	14 U	14 U	14 U	3.5 U	3.5 U	3.4 U	3.4 U	3.8 U	3.7 U
Endosulfan Sulfate	ug/kg	3.7 U	3.7 U	14 U	14 U	14 U	14 U	3.5 U	3.5 U	3.4 U	3.4 U	3.8 U	3.7 U
Endrin	ug/kg	3.7 U	3.7 U	14 U	14 U	14 U	14 U	3.5 U	3.5 U	3.4 U	3.4 U	3.8 U	3.7 U
Endrin Aldehyde	ug/kg	3.7 U	3.7 U	14 JP	14 JP	12 JP	12 JP	0.62 JP	0.62 JP	3.4 U	3.4 U	3.8 U	3.7 U
Endrin Ketone	ug/kg	3.7 U	3.7 U	35 P	35 P	21 P	21 P	3.5 JP	3.5 JP	3.4 U	3.4 U	3.8 U	3.7 U
gamma-Chlordane	ug/kg	1.9 U	1.9 U	7.9 P	7.9 P	6.9 P	6.9 P	0.72 J	0.72 J	1.8 U	1.8 U	1.9 U	2.0 U
Heptachlor	ug/kg	1.9 U	1.9 U	7.4 U	7.4 U	7.4 U	7.4 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U	2.0 U
Heptachlor Epoxide	ug/kg	1.9 U	1.9 U	7.4 U	7.4 U	7.4 U	7.4 U	1.8 U	1.8 U	1.8 U	1.8 U	1.9 U	2.0 U
Methoxychlor	ug/kg	19 U	19 U	17 JP	17 JP	4.8 JP	4.8 JP	2.7 JP	2.7 JP	17.9 U	17.9 U	19.3 U	19.5 U
Toxaphene	ug/kg	190 U	190 U	740 U	740 U	740 U	740 U	185 U	185 U	179 U	179 U	190 U	195 U
Aroclor-1016	ug/kg	37 U	37 U	140 U	140 U	140 U	140 U	35 U	35 U	34 U	34 U	38 U	37 U
Aroclor-1221	ug/kg	75 U	75 U	290 U	290 U	290 U	290 U	71 U	71 U	68 U	68 U	77 U	75 U
Aroclor-1232	ug/kg	37 U	37 U	140 U	140 U	140 U	140 U	35 U	35 U	34 U	34 U	38 U	37 U
Aroclor-1242	ug/kg	37 U	37 U	140 U	140 U	140 U	140 U	35 U	35 U	34 U	34 U	38 U	37 U
Aroclor-1248	ug/kg	37 U	37 U	140 U	140 U	140 U	140 U	35 U	35 U	34 U	34 U	220	220
Aroclor-1254	ug/kg	37 U	37 U	140 U	140 U	140 U	140 U	35 U	35 U	34 U	34 U	38 U	37 U
Aroclor-1260	ug/kg	37 U	37 U	140 U	140 U	140 U	140 U	35 U	35 U	34 U	34 U	38 U	37 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-16		SS-20		SS-21		SS-22		SS-23		SS-24	
Lab Sample Number		A8343307		23799001		23799002		23799003		23799004		23799005	
Sampling Date		08/19/98		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Pesticides & PCBs													
4,4' - DDD	ug/kg	19.5 U	19.5 U	37 U	37 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U
4,4'- DDE	ug/kg	19.5 U	19.5 U	37 U	37 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U
4,4'-DDT	ug/kg	19.5 U	19.5 U	37 U	37 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U
Aldrin	ug/kg	10.3 U	10.3 U	19 U	19 U	18 U	18 U	18 U	18 U	18 U	18 U	18 U	18 U
alpha-Chlordane	ug/kg	10.3 U	10.3 U	19 U	19 U	18 U	18 U	18 U	18 U	18 U	18 U	18 U	18 U
BHC (alpha isomer)	ug/kg	10.3 U	10.3 U	19 U	19 U	18 U	18 U	18 U	18 U	18 U	18 U	18 U	18 U
BHC (beta isomer)	ug/kg	10.3 U	10.3 U	19 U	19 U	18 U	18 U	18 U	18 U	18 U	18 U	18 U	18 U
BHC (delta isomer)	ug/kg	10.3 U	10.3 U	19 U	19 U	18 U	18 U	18 U	18 U	18 U	18 U	18 U	18 U
BHC (gamma isomer) (Lindane)	ug/kg	10.3 U	10.3 U	19 U	19 U	18 U	18 U	18 U	18 U	18 U	18 U	18 U	18 U
Dieldrin	ug/kg	19.5 U	19.5 U	37 U	37 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U
Endosulfan I	ug/kg	10.3 U	10.3 U	19 U	19 U	18 U	18 U	18 U	18 U	18 U	18 U	18 U	18 U
Endosulfan II	ug/kg	19.5 U	19.5 U	37 U	37 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U
Endosulfan Sulfate	ug/kg	19.5 U	19.5 U	37 U	37 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U
Endrin	ug/kg	19.5 U	19.5 U	37 U	37 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U
Endrin Aldehyde	ug/kg	19.5 U	19.5 U	37 U	37 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U
Endrin Ketone	ug/kg	19.5 U	19.5 U	37 U	37 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U
gamma-Chlordane	ug/kg	10.3 U	10.3 U	19 U	19 U	18 U	18 U	18 U	18 U	18 U	18 U	18 U	18 U
Heptachlor	ug/kg	10.3 U	10.3 U	19 U	19 U	18 U	18 U	18 U	18 U	18 U	18 U	18 U	18 U
Heptachlor Epoxide	ug/kg	10.3 U	10.3 U	19 U	19 U	18 U	18 U	18 U	18 U	18 U	18 U	18 U	18 U
Methoxychlor	ug/kg	100.0 U	100.0 U	190 U	190 U	180 U	180 U	180 U	180 U	180 U	180 U	180 U	180 U
Toxaphene	ug/kg	1000 U	1000 U	1900 U	1900 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U	1800 U
Aroclor-1016	ug/kg	200 U	200 U	370 U	370 U	350 U	350 U	350 U	350 U	350 U	350 U	350 U	350 U
Aroclor-1221	ug/kg	140 U	140 U	740 U	740 U	710 U	710 U	710 U	710 U	710 U	710 U	710 U	710 U
Aroclor-1232	ug/kg	200 U	200 U	370 U	370 U	350 U	350 U	350 U	350 U	350 U	350 U	350 U	350 U
Aroclor-1242	ug/kg	200 U	200 U	370 U	370 U	350 U	350 U	350 U	350 U	350 U	350 U	350 U	350 U
Aroclor-1248	ug/kg	8400 E	8400 J	370 U	370 U	350 U	350 U	350 U	350 U	350 U	350 U	350 U	350 U
Aroclor-1254	ug/kg	200 U	200 U	370 U	370 U	350 U	350 U	350 U	350 U	350 U	350 U	350 U	350 U
Aroclor-1260	ug/kg	200 U	200 U	370 U	370 U	350 U	350 U	350 U	350 U	350 U	350 U	350 U	350 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-25		SS-26		SS-27		SS-28		SS-29		SS-30	
Lab Sample Number		23799006		23799007		23799008		23799009		23799010		23799011	
Sampling Date		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Pesticides & PCBs													
4,4' - DDD	ug/kg	36 U	36 U	3.5 U	3.5 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U
4,4'- DDE	ug/kg	36 U	36 U	3.5 U	3.5 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U
4,4'-DDT	ug/kg	36 U	36 U	3.5 U	3.5 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U
Aldrin	ug/kg	19 U	19 U	1.9 U	1.9 U	18 U	18 U	19 U	19 U	18 U	18 U	19 U	19 U
alpha-Chlordane	ug/kg	19 U	19 U	1.9 U	1.9 U	18 U	18 U	19 U	19 U	18 U	18 U	19 U	19 U
BHC (alpha isomer)	ug/kg	19 U	19 U	1.9 U	1.9 U	18 U	18 U	19 U	19 U	18 U	18 U	19 U	19 U
BHC (beta isomer)	ug/kg	19 U	19 U	1.9 U	1.9 U	18 U	18 U	19 U	19 U	18 U	18 U	19 U	19 U
BHC (delta isomer)	ug/kg	19 U	19 U	1.9 U	1.9 U	18 U	18 U	19 U	19 U	18 U	18 U	19 U	19 U
BHC (gamma isomer) (Lindane)	ug/kg	19 U	19 U	1.9 U	1.9 U	18 U	18 U	19 U	19 U	18 U	18 U	19 U	19 U
Dieldrin	ug/kg	36 U	36 U	3.5 U	3.5 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U
Endosulfan I	ug/kg	19 U	19 U	1.9 U	1.9 U	18 U	18 U	19 U	19 U	18 U	18 U	19 U	19 U
Endosulfan II	ug/kg	36 U	36 U	3.5 U	3.5 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U
Endosulfan Sulfate	ug/kg	36 U	36 U	3.5 U	3.5 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U
Endrin	ug/kg	36 U	36 U	3.5 U	3.5 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U
Endrin Aldehyde	ug/kg	36 U	36 U	3.5 U	3.5 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U
Endrin Ketone	ug/kg	36 U	36 U	3.5 U	3.5 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U
gamma-Chlordane	ug/kg	19 U	19 U	1.9 U	1.9 U	18 U	18 U	19 U	19 U	18 U	18 U	19 U	19 U
Heptachlor	ug/kg	19 U	19 U	1.9 U	1.9 U	18 U	18 U	19 U	19 U	18 U	18 U	19 U	19 U
Heptachlor Epoxide	ug/kg	19 U	19 U	1.9 U	1.9 U	18 U	18 U	19 U	19 U	18 U	18 U	19 U	19 U
Methoxychlor	ug/kg	190 U	190 U	18 U	18 U	180 U	180 U	190 U	190 U	180 U	180 U	190 U	190 U
Toxaphene	ug/kg	1900 U	1900 U	180 U	180 U	1800 U	1800 U	1900 U	1900 U	1800 U	1800 U	1900 U	1900 U
Aroclor-1016	ug/kg	360 U	360 U	35 U	35 U	350 U	350 U	350 U	350 U	350 U	350 U	350 U	350 U
Aroclor-1221	ug/kg	740 U	740 U	73 U	73 U	710 U	710 U	730 U	730 U	710 U	710 U	730 U	730 U
Aroclor-1232	ug/kg	360 U	360 U	35 U	35 U	350 U	350 U	350 U	350 U	350 U	350 U	350 U	350 U
Aroclor-1242	ug/kg	360 U	360 U	35 U	35 U	350 U	350 U	350 U	350 U	350 U	350 U	350 U	350 U
Aroclor-1248	ug/kg	360 U	360 U	35 U	35 U	350 U	350 U	350 U	350 U	350 U	350 U	350 U	350 U
Aroclor-1254	ug/kg	360 U	360 U	35 U	35 U	350 U	350 U	350 U	350 U	350 U	350 U	350 U	350 U
Aroclor-1260	ug/kg	360 U	360 U	35 U	35 U	350 U	350 U	350 U	350 U	350 U	350 U	350 U	350 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-31		SS-32		SS-33		SS-34		SS-35		SS-36	
Lab Sample Number		23799012		23799013		23799014		23799015		23799016		23799017	
Sampling Date		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Pesticides & PCBs													
4,4' - DDD	ug/kg	3.5 U	3.5 U	35 U	35 U	35 U	35 U	350 U	350 U	3.4 U	3.4 U	3.5 U	3.5 U
4,4'- DDE	ug/kg	3.5 U	3.5 U	35 U	35 U	35 U	35 U	350 U	350 U	3.4 U	3.4 U	3.5 U	3.5 U
4,4'-DDT	ug/kg	3.5 U	3.5 U	35 U	35 U	35 U	35 U	350 U	350 U	3.4 U	3.4 U	3.5 U	3.5 U
Aldrin	ug/kg	1.8 U	1.8 U	19 U	19 U	19 U	19 U	180 U	180 U	1.8 U	1.8 U	1.8 U	1.8 U
alpha-Chlordane	ug/kg	1.8 U	1.8 U	19 U	19 U	19 U	19 U	180 U	180 U	1.8 U	1.8 U	1.8 U	1.8 U
BHC (alpha isomer)	ug/kg	1.8 U	1.8 U	19 U	19 U	19 U	19 U	180 U	180 U	1.8 U	1.8 U	1.8 U	1.8 U
BHC (beta isomer)	ug/kg	1.8 U	1.8 U	19 U	19 U	19 U	19 U	180 U	180 U	1.8 U	1.8 U	1.8 U	1.8 U
BHC (delta isomer)	ug/kg	1.8 U	1.8 U	19 U	19 U	19 U	19 U	180 U	180 U	1.8 U	1.8 U	1.8 U	1.8 U
BHC (gamma isomer) (Lindane)	ug/kg	1.8 U	1.8 U	19 U	19 U	19 U	19 U	180 U	180 U	1.8 U	1.8 U	1.8 U	1.8 U
Dieldrin	ug/kg	3.5 U	3.5 U	35 U	35 U	35 U	35 U	350 U	350 U	3.4 U	3.4 U	3.5 U	3.5 U
Endosulfan I	ug/kg	1.8 U	1.8 U	19 U	19 U	19 U	19 U	180 U	180 U	1.8 U	1.8 U	1.8 U	1.8 U
Endosulfan II	ug/kg	3.5 U	3.5 U	35 U	35 U	35 U	35 U	350 U	350 U	3.4 U	3.4 U	3.5 U	3.5 U
Endosulfan Sulfate	ug/kg	3.5 U	3.5 U	35 U	35 U	35 U	35 U	350 U	350 U	3.4 U	3.4 U	3.5 U	3.5 U
Endrin	ug/kg	3.5 U	3.5 U	35 U	35 U	35 U	35 U	350 U	350 U	3.4 U	3.4 U	3.5 U	3.5 U
Endrin Aldehyde	ug/kg	3.5 U	3.5 U	35 U	35 U	35 U	35 U	350 U	350 U	3.4 U	3.4 U	3.5 U	3.5 U
Endrin Ketone	ug/kg	3.5 U	3.5 U	35 U	35 U	35 U	35 U	350 U	350 U	3.4 U	3.4 U	3.5 U	3.5 U
gamma-Chlordane	ug/kg	1.8 U	1.8 U	19 U	19 U	19 U	19 U	180 U	180 U	1.8 U	1.8 U	1.8 U	1.8 U
Heptachlor	ug/kg	1.8 U	1.8 U	19 U	19 U	19 U	19 U	180 U	180 U	1.8 U	1.8 U	1.8 U	1.8 U
Heptachlor Epoxide	ug/kg	1.8 U	1.8 U	19 U	19 U	19 U	19 U	180 U	180 U	1.8 U	1.8 U	1.8 U	1.8 U
Methoxychlor	ug/kg	18 U	18 U	190 U	190 U	190 U	190 U	1800 U	1800 U	18 U	18 U	18 U	18 U
Toxaphene	ug/kg	180 U	180 U	1900 U	1900 U	1900 U	1900 U	18000 U	18000 U	180 U	180 U	180 U	180 U
Aroclor-1016	ug/kg	35 U	35 U	350 U	350 U	350 U	350 U	3500 U	3500 U	34 U	34 U	35 U	35 U
Aroclor-1221	ug/kg	70 U	70 U	720 U	720 U	730 U	730 U	7130 U	7130 U	70 U	70 U	71 U	71 U
Aroclor-1232	ug/kg	35 U	35 U	350 U	350 U	350 U	350 U	3500 U	3500 U	34 U	34 U	35 U	35 U
Aroclor-1242	ug/kg	35 U	35 U	350 U	350 U	350 U	350 U	3500 U	3500 U	34 U	34 U	35 U	35 U
Aroclor-1248	ug/kg	35 U	35 U	350 U	350 U	350 U	350 U	3500 U	3500 U	34 U	34 U	35 U	35 U
Aroclor-1254	ug/kg	35 U	35 U	350 U	350 U	350 U	350 U	3500 U	3500 U	34 U	34 U	35 U	35 U
Aroclor-1260	ug/kg	35 U	35 U	350 U	350 U	350 U	350 U	3500 U	3500 U	34 U	34 U	35 U	35 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-37		SS-38		SS-39		SS-40		SS-41		WORM COMPOSITE	
Lab Sample Number		23799018		23799019		23799020		23799021		23799022		23299139	
Sampling Date		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99		08/20/99	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Pesticides & PCBs													
4,4' - DDD	ug/kg	35 U	35 U	35 U	35 U	36 U	36 U	3.6 U	3.6 U	36 U	36 U	NA	NA
4,4'- DDE	ug/kg	35 U	35 U	35 U	35 U	36 U	36 U	3.6 U	3.6 U	36 U	36 U	NA	NA
4,4'-DDT	ug/kg	35 U	35 U	35 U	35 U	36 U	36 U	3.6 U	3.6 U	36 U	36 U	NA	NA
Aldrin	ug/kg	19 U	19 U	18 U	18 U	19 U	19 U	1.8 U	1.8 U	18 U	18 U	NA	NA
alpha-Chlordane	ug/kg	19 U	19 U	18 U	18 U	19 U	19 U	1.8 U	1.8 U	18 U	18 U	NA	NA
BHC (alpha isomer)	ug/kg	19 U	19 U	18 U	18 U	19 U	19 U	1.8 U	1.8 U	18 U	18 U	NA	NA
BHC (beta isomer)	ug/kg	19 U	19 U	18 U	18 U	19 U	19 U	1.8 U	1.8 U	18 U	18 U	NA	NA
BHC (delta isomer)	ug/kg	19 U	19 U	18 U	18 U	19 U	19 U	1.8 U	1.8 U	18 U	18 U	NA	NA
BHC (gamma isomer) (Lindane)	ug/kg	19 U	19 U	18 U	18 U	19 U	19 U	1.8 U	1.8 U	18 U	18 U	NA	NA
Dieldrin	ug/kg	35 U	35 U	35 U	35 U	36 U	36 U	3.6 U	3.6 U	36 U	36 U	NA	NA
Endosulfan I	ug/kg	19 U	19 U	18 U	18 U	19 U	19 U	1.8 U	1.8 U	18 U	18 U	NA	NA
Endosulfan II	ug/kg	35 U	35 U	35 U	35 U	36 U	36 U	3.6 U	3.6 U	36 U	36 U	NA	NA
Endosulfan Sulfate	ug/kg	35 U	35 U	35 U	35 U	36 U	36 U	3.6 U	3.6 U	36 U	36 U	NA	NA
Endrin	ug/kg	35 U	35 U	35 U	35 U	36 U	36 U	3.6 U	3.6 U	36 U	36 U	NA	NA
Endrin Aldehyde	ug/kg	35 U	35 U	35 U	35 U	36 U	36 U	3.6 U	3.6 U	36 U	36 U	NA	NA
Endrin Ketone	ug/kg	35 U	35 U	35 U	35 U	36 U	36 U	3.6 U	3.6 U	36 U	36 U	NA	NA
gamma-Chlordane	ug/kg	19 U	19 U	18 U	18 U	19 U	19 U	1.8 U	1.8 U	18 U	18 U	NA	NA
Heptachlor	ug/kg	19 U	19 U	18 U	18 U	19 U	19 U	1.8 U	1.8 U	18 U	18 U	NA	NA
Heptachlor Epoxide	ug/kg	19 U	19 U	18 U	18 U	19 U	19 U	1.8 U	1.8 U	18 U	18 U	NA	NA
Methoxychlor	ug/kg	190 U	190 U	180 U	180 U	190 U	190 U	18 U	18 U	180 U	180 U	NA	NA
Toxaphene	ug/kg	1900 U	1900 U	1800 U	1800 U	1900 U	1900 U	180 U	180 U	1800 U	1800 U	NA	NA
Aroclor-1016	ug/kg	350 U	350 U	18 U	18 U	360 U	360 U	36 U	36 U	360 U	360 U	0.05 U	0.05 U
Aroclor-1221	ug/kg	720 U	720 U	350 U	350 U	740 U	740 U	73 U	73 U	730 U	730 U	0.05 U	0.05 U
Aroclor-1232	ug/kg	350 U	350 U	710 U	710 U	360 U	360 U	36 U	36 U	360 U	360 U	0.05 U	0.05 U
Aroclor-1242	ug/kg	350 U	350 U	350 U	350 U	360 U	360 U	36 U	36 U	360 U	360 U	0.05 U	0.05 U
Aroclor-1248	ug/kg	350 U	350 U	350 U	350 U	360 U	360 U	36 U	36 U	360 U	360 U	0.05 U	0.05 U
Aroclor-1254	ug/kg	350 U	350 U	350 U	350 U	360 U	360 U	36 U	36 U	360 U	360 U	0.05 U	0.05 U
Aroclor-1260	ug/kg	350 U	350 U	350 U	350 U	360 U	360 U	36 U	36 U	360 U	360 U	0.05 U	0.05 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-10		SS-11		SS-12		SS-13		SS-14		SS-15	
Lab Sample Number		A8343301		A8343302		A8343303		A8343304		A8343305		A8343306	
Sampling Date		08/19/98		08/19/98		08/19/98		08/19/98		08/19/98		08/19/98	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Total Metals Analyses													
Aluminum	mg/kg	6850	6854	8180	8185	7900	8061	7390	7385	8800	8713	11900	11776
Antimony	mg/kg	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.3 U	1.3 U
Arsenic	mg/kg	5	5	7.5	7	6.1	6	3.7	4	4	4	4	4
Barium	mg/kg	55.7	55.7	140	140.0	134	136.5	50	50.0	61.7	61.1	59.4	58.8
Beryllium	mg/kg	0.38 B	0.38 B	0.48 B	0.48 B	0.46 B	0.47 B	0.36 B	0.36 B	0.41 B	0.41 B	0.48 B	0.47 B
Cadmium	mg/kg	7.7	7.7	17.3	17.3	14.7	15.0	8.7	8.7	9.6	9.5	11.8	11.7
Calcium	mg/kg	55400	55353	119000	119000	47000	47914	8730	8726	50200	49698	53700	53145
Chromium	mg/kg	16.9 N	16.9 J	60.7 N	60.7 J	43.1 N	43.9 J	28.8 N	28.8 J	58.4 N	57.8 J	36.6 N	36.2 J
Cobalt	mg/kg	5.7 B	5.7 B	8.1 B	8.1 B	7.7 U	7.9 U	5.1	5.1	11.6	11.5	16.7	16.5
Copper	mg/kg	18.3	18.3	99.8	99.8	67.2	68.5	25.4	25.4	24	23.8	46.2	45.8
Iron	mg/kg	12200	12172	17400	17433	18300	18681	12900	12906	15700	15579	19000	18777
Lead	mg/kg	15.2	15.2	187	187.3	174	177.7	35	35.0	53.8	53.3	1170	1163.2
Magnesium	mg/kg	13900	13885	20000	20049	12500	12500	4090	4089	13700	13559	23100	22883
Manganese	mg/kg	327 N	327 J	471 N	471 J	364 N	371 J	347 N	347 J	485 N	481 J	449 N	449 J
Mercury	mg/kg	0.11 U	0.11 U	10.3	2.6	0.44	0.4	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U
Nickel	mg/kg	19.3	19.3	40.4	40.4	34.3	35.0	17.3	17.3	17	16.9	26.4	26.1
Potassium	mg/kg	1350 E	1347 J	1470 E	1472 J	864 BE	881 J	1130 E	1132 J	2060 E	2039 J	2900 E	2872 J
Selenium	mg/kg	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.0 U	1.1 U	1.1 U
Silver	mg/kg	0.35 U	0.35 U	3.9	3.9	2.9	2.94	0.39 U	0.39 U	0.34 U	0.33 U	0.37 U	0.36 U
Sodium	mg/kg	737 B	737 B	786 B	786 B	680 B	693 B	663 B	663 B	868 B	859 B	884 B	875 B
Thallium	mg/kg	1.3 U	1.3 U	1.3 U	1.3 U	1.2 U	1.3 U	1.3 U	1.3 U	1.2 U	1.2 U	1.3 U	1.3 U
Vanadium	mg/kg	20.8	20.8	20	20.0	19.2	19.6	16.3	16.3	17	16.9	17.1	16.9
Zinc	mg/kg	48.3	48.3	192	192.3	190	193.8	73.9	73.9	172	170.7	739	732.2
Other Parameters													
% Solids	%	91.20	91.20	90.70	90.70	91.80	91.80	91.00	91.00	95.80	95.80	86.80	86.80
Cyanide	mg/kg	0.5 U	0.5 U	0.64	0.7	0.74	1.7	0.51 U	0.5 U	0.84	0.9	0.75	0.8
Total Organic Carbon	ug/g	1160	1160	1070	1070	896	896	604	604	1140	1140	1150	1150

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-16		SS-20		SS-21		SS-22		SS-23		SS-24	
Lab Sample Number		A8343307		23799001		23799002		23799003		23799004		23799005	
Sampling Date		08/19/98		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Total Metals Analyses													
Aluminum	mg/kg	8910	8826	9380	9380	8560	8560	8490	8490	6330	6330	6280	6280
Antimony	mg/kg	1.4 U	1.4 U	3.3 UN	3.3 UN	3.2 UN	3.2 UN	3.2 UN	3.2 UN	3.2 UN	3.2 UN	3.1 UN	3.1 UN
Arsenic	mg/kg	5.6	6	2.2 UN	2.2 UN	2.1 UN	2.1 UN	2.1 UN	2.1 UN	2.1 UN	2.1 UN	2.1 UN	2.1 UN
Barium	mg/kg	109	107.6	169	169	176	176	52.3	52.3	68.5	68.5	68.1	68.1
Beryllium	mg/kg	0.42 B	0.42 B	0.66 U	0.66 U	0.63 U	0.63 U	0.64 U	0.64 U	0.64 U	0.64 U	0.62 U	0.62 U
Cadmium	mg/kg	10.1	10.0	11.2	11.2	5.9	5.9	1.1	1.1	2.5	2.5	2.3	2.3
Calcium	mg/kg	32700	32423	61600 G	61600 G	48200 G	48200 G	42100 G	42100 G	77800 G	77800 G	25900 G	25900 G
Chromium	mg/kg	128 N	127.1 J	90.2	90.2	68.4	68.4	14.9	14.9	35.9	35.9	21.4	21.4
Cobalt	mg/kg	6.5 B	6.2 B	8.4 B	8.4 B	8.8 B	8.8 B	9.3 B	9.3 B	6.3 B	6.3 B	5.8 B	5.8 B
Copper	mg/kg	868	859.6	113	113	109	109	46.9	46.9	54.7	54.7	36.1	36.1
Iron	mg/kg	15500	15396	18800	18800	17600	17600	14800	14800	16000	16000	12600	12600
Lead	mg/kg	49.1	48.6	216	216	225	225	9.6	9.6	53.3	53.3	37.4	37.4
Magnesium	mg/kg	9830	9729	15500	15500	15100	15100	27000	27000	18000	18000	9460	9460
Manganese	mg/kg	337 N	334 J	390	390	338	338	369	369	423	423	386	386
Mercury	mg/kg	0.12 U	0.1 U	1.4	1.4	0.38	0.38	0.11 U	0.11 U	1.2	1.2	0.32	0.32
Nickel	mg/kg	82.3	82.3	45.7	45.7	52.7	52.7	22.1	22.1	43.2	43.2	17.1	17.1
Potassium	mg/kg	1510 E	1499 J	1230	1230	1140	1140	1460	1460	1240	1240	847	847
Selenium	mg/kg	1.2 U	1.2 U	16.9 N	16.9 N	19.1 N	19.1 N	22.8 N	22.8 N	21.3 N	21.3 N	10.5 N	10.5 N
Silver	mg/kg	0.8 B	0.79 B	7.5	7.5	7.6	7.6	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
Sodium	mg/kg	824 B	816 B	221 U	221 U	211 U	211 U	212 U	212 U	214 U	214 U	208 U	208 U
Thallium	mg/kg	1.4 U	1.4 U	2.9 N	2.9 N	2.1 UN	2.1 UN	2.1 UN	2.1 UN	2.4 N	2.4 N	2.1 UN	2.1 UN
Vanadium	mg/kg	20.7	20.5	21.3	21.3	19.1	19.1	13	13	16	16	13.3	13.3
Zinc	mg/kg	1750	1732.6	256 E	256 E	228 E	228 E	44.8 E	44.8 E	93.2 E	93.2 E	64.5 E	64.5 E
Other Perameters													
% Solids	%	80.80	80.80	90	90	94	94	94	94	93	93	96	96
Cyanide	mg/kg	0.65	0.7	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Total Organic Carbon	ug/g	2060	2060	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-25		SS-26		SS-27		SS-28		SS-29		SS-30	
Lab Sample Number		23799006		23799007		23799008		23799009		23799010		23799011	
Sampling Date		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Total Metals Analyses													
Aluminum	mg/kg	13200	12300	7940	7940	5350	5350	9280	9280	5770	5770	7580	7580
Antimony	mg/kg	3.3 UN	3.3 UN	3.3 UN	3.3 UN	3.2 UN	3.2 UN	3.3 UN	3.3 UN	3.2 UN	3.2 UN	3.3 UN	3.3 UN
Arsenic	mg/kg	2.2 UN	2.2 UN	2.6	2.6	2.1 UN	2.1 UN	2.2 UN	2.2 UN	2.1 UN	2.1 UN	2.2 UN	2.2 UN
Barium	mg/kg	52.9	52.9	530	530	136	136	189	189	93.4	93.4	164	164
Beryllium	mg/kg	0.66 U	0.66 U	0.65 U	0.65 U	0.64 U	0.64 U	0.65 U	0.65 U	0.63 U	0.63 U	0.65 U	0.65 U
Cadmium	mg/kg	1.4	1.4	8.4	8.4	8.1	8.1	11.7	11.7	2.5	2.5	8.7	8.7
Calcium	mg/kg	12000 G	12000 G	44900 G	44900 G	44900 G	44900 G	56300 G	56300 G	53900 G	53900 G	44500 G	44500 G
Chromium	mg/kg	19.2	19.2	64.8	64.8	62.2	62.2	81.7	81.7	21.9	21.9	41.5	41.5
Cobalt	mg/kg	8.3 B	8.3 B	8.3 B	8.3 B	6.2 B	6.2 B	9.0 B	9.0 B	6.4 B	6.4 B	8 B	8 B
Copper	mg/kg	20.2	20.2	85.8	85.8	101	101	104	104	55.1	55.1	95.1	95.1
Iron	mg/kg	19500	19500	16500	16500	14300	14300	19800	19800	7150	7150	4800	4800
Lead	mg/kg	8.7	8.7	164	164	133	133	251	251	105	105	181	181
Magnesium	mg/kg	11200	11200	15200	15200	11700	11700	17500	17500	14500	14500	13900	13900
Manganese	mg/kg	557	557	373	373	285	285	383	383	354	354	384	384
Mercury	mg/kg	0.11 U	0.11 U	0.91	0.91	0.94	0.94	1.9	1.9	0.88	0.88	1.2	1.2
Nickel	mg/kg	22.7	22.7	38.2	38.2	32.2	32.2	46.7	46.7	29.0	29	44.0	44
Potassium	mg/kg	1930	1930	1300	1300	728 B	728 B	1490	1490	981 B	981 B	966 B	966 B
Selenium	mg/kg	9.1 N	9.1 N	19.1 N	19.1 N	13.7 N	13.7 N	16.9 N	16.9 N	18.8 N	18.8 N	17.5 N	17.5 N
Silver	mg/kg	2.2 U	2.2 U	3.6	3.6	4.2	4.2	8.0	8	3.2	3.2	4.9	4.9
Sodium	mg/kg	220 U	220 U	217 U	217 U	212 U	212 U	217 U	217 U	211 U	211 U	217 U	217 U
Thallium	mg/kg	2.2 UN	2.2 UN	2.2 UN	2.2 UN	2.6 N	2.6 N	2.2 UN	2.2 UN	3.6 N	3.6 N	2.7 N	2.7 N
Vanadium	mg/kg	19.9	19.9	16.5	16.5	11.9	11.9	22.4	22.4	6.3 U	6.3 U	6.5 U	6.5 U
Zinc	mg/kg	43.7 E	43.7 E	177 E	177 E	180 E	180 E	277 E	277 E	121 E	121 E	223 E	223 E
Other Parameters													
% Solids	%	91	91	92	92	94	94	92	92	95	95	92	92
Cyanide	mg/kg	2.2 U	2.2 U	2.1 U	2.1 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.1 U	2.1 U
Total Organic Carbon	ug/g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-31		SS-32		SS-33		SS-34		SS-35		SS-36	
Lab Sample Number		23799012		23799013		23799014		23799015		23799016		23799017	
Sampling Date		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Total Metals Analyses													
Aluminum	mg/kg	5940	5940	6410	6410	7460	7460	6800	6800	5700	5700	8170	8170
Antimony	mg/kg	3.1 UN	3.1 UN	3.2 UN	3.2 UN	3.2 UN	3.2 UN	3.2 UN	3.2 UN	3.1 UN	3.1 UN	3.1 UN	3.1 UN
Arsenic	mg/kg	2.1 UN	2.1 UN	2.1 UN	2.1 UN	2.2 UN	2.2 UN	2.1 UN	2.1 UN	2.1 UN	2.1 UN	2.1 UN	2.1 UN
Barium	mg/kg	51.2	51.2	147	147	171	171	79.5	79.5	32.1	32.1	159	159
Beryllium	mg/kg	0.62 U	0.62 U	0.64 U	0.64 U	0.65 U	0.65 U	0.64 U	0.64 U	0.62 U	0.62 U	0.63 U	0.63 U
Cadmium	mg/kg	2	2	6.7	6.7	9.1	9.1	2.2	2.2	1.2	1.2	4.3	4.3
Calcium	mg/kg	30600 G	30600 G	60100 G	60100 G	59600 G	59600 G	39700 G	39700 G	6860 G	6860 G	51900 G	51900 G
Chromium	mg/kg	18.1	18.1	59.6	59.6	68.5	68.5	116	116	10.7	10.7	47.1	47.1
Cobalt	mg/kg	5.2 B	5.2 B	6.4 B	6.4 B	8.3 B	8.3 B	5.9 B	5.9 B	5.2 B	5.2 B	8.0 B	8 B
Copper	mg/kg	31.3	31.3	84.6	84.6	94.1	94.1	103	103	18.3	18.3	75.2	75.2
Iron	mg/kg	11600	11600	14700	14700	17800	17800	13600	13600	9960	9960	16300	16300
Lead	mg/kg	43.5	43.5	210	210	213	213	53.1	53.1	20.3	20.3	148	148
Magnesium	mg/kg	13900	13900	13800	13800	15600	15600	8730	8730	3580	3580	20200	20200
Manganese	mg/kg	340	340	297	297	459	459	273	273	321	321	374	374
Mercury	mg/kg	0.35	0.35	1.3	1.3	1.5	1.5	0.28	0.28	0.1 U	0.1 U	0.61	0.61
Nickel	mg/kg	16.1	16.1	34.8	34.8	40.8	40.8	70.4	70.4	10.9	10.9	36.9	36.9
Potassium	mg/kg	842 B	842 B	737 B	737 B	959 B	959 B	1170	1170	749 B	749 B	1200	1200
Selenium	mg/kg	14.5 N	14.5 N	15.8 N	15.8 N	16.4 N	16.4 N	12.0 N	12 N	4.6 N	4.6 N	19.5 N	19.5 N
Silver	mg/kg	2.1 U	2.1 U	5.5	5.5	5.9	5.9	2.1 U	2.1 U	2.1 U	2.1 U	3.5	3.5
Sodium	mg/kg	208 U	208 U	214 U	214 U	216 U	216 U	213 U	213 U	208 U	208 U	210 U	210 U
Thallium	mg/kg	2.1 UN	2.1 UN	3.6 N	3.6 N	2.2 UN	2.2 UN	3.2 N	3.2 N	2.1 UN	2.1 UN	2.6 N	2.6 N
Vanadium	mg/kg	12.6	12.6	15.7	15.7	18.1	18.1	15.5	15.5	11.9	11.9	16.5	16.5
Zinc	mg/kg	63.6 E	63.6 E	210 E	210 E	230 E	230 E	120 E	120 E	39.4 E	39.4 E	152 E	152 E
Other Parameters													
% Solids	%	96	96	93	93	92	92	94	94	96	96	95	95
Cyanide	mg/kg	1.9 U	1.9 U	2.1 U	2.1 U	2.2 U	2.2 U	3.3	3.3	2.0 U	2.0 U	2.1 U	2.1 U
Total Organic Carbon	ug/g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID		SS-37		SS-38		SS-39		SS-40		SS-41		WORM COMPOSITE	
Lab Sample Number		23799018		23799019		23799020		23799021		23799022		23299139	
Sampling Date		08/24/99		08/24/99		08/24/99		08/24/99		08/24/99		08/20/99	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Total Metals Analyses													
Aluminum	mg/kg	5160	5160	5820	5820	13000	13000	9850	9850	11100	11100	26.4	26.4
Antimony	mg/kg	3.2 UN	3.2 UN	3.1 UN	3.1 UN	3.3 UN	3.3 UN	3.3 UN	3.3 UN	3.2 UN	3.2 UN	2.9 U	2.9 U
Arsenic	mg/kg	2.1 UN	2.1 UN	2.1 UN	2.1 UN	2.2 UN	2.2 UN	2.2 UN	2.2 UN	2.2 UN	2.2 UN	2.2	2.2
Barium	mg/kg	58.2	58.2	49.7	49.7	43.8	43.8	59.5	59.5	64.2	64.2	9.8 U	9.8 U
Beryllium	mg/kg	0.64 U	0.64 U	0.63 U	0.63 U	0.66 U	0.66 U	0.65 U	0.65 U	0.65 U	0.65 U	0.59 U	0.59 U
Cadmium	mg/kg	1.5	1.5	1.4	1.4	1.4	1.4	1.3	1.3	1.4	1.4	6.7	6.7
Calcium	mg/kg	45800 G	45800 G	45600 G	45600 G	23000 G	23000 G	12800 G	12800 G	8890 G	8890 G	734	734
Chromium	mg/kg	14.0	14	12.6	12.6	34.0	34	16.7	16.7	20.2	20.2	0.98 U	0.98 U
Cobalt	mg/kg	4.8 B	4.8 B	5.8 B	5.8 B	7.3 B	7.3 B	9.0 B	9 B	8.1 B	8.1 B	3.9 U	3.9 U
Copper	mg/kg	35.9	35.9	25.8	25.8	24.9	24.9	22.6	22.6	14.3	14.3	4.9	4.9
Iron	mg/kg	10900	10900	11500	11500	17700	17700	16000	16000	16400	16400	144	144
Lead	mg/kg	69.8	69.8	65.3	65.3	41.5	41.5	19.7	19.7	17.8	17.8	4.3	4.3
Magnesium	mg/kg	9860	9860	7700	7700	19900	19900	7410	7410	5750	5750	197 U	197 U
Manganese	mg/kg	331	331	334	334	376	376	509	509	475	475	7.2	7.2
Mercury	mg/kg	0.23	0.23	0.22	0.22	0.1 U	0.1 U	0.11 U	0.11 U	0.11 U	0.11 U	0.28	0.28 G
Nickel	mg/kg	14.0	14	14.4	14.4	34.4	34.4	15.9	15.9	15.5	15.5	5.9 U	5.9 U
Potassium	mg/kg	557 B	557 B	588 B	588 B	2180	2180	825 B	825 B	982 B	982 B	843	843
Selenium	mg/kg	14.8 N	14.8 N	10.2 N	10.2 N	18.0 N	18 N	9.0 N	9 N	2.9 N	2.9 N	4.0	4.0
Silver	mg/kg	2.1 U	2.1 U	2.1 U	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.0 U	2.0 U
Sodium	mg/kg	214 U	214 U	210 U	210 U	220 U	220 U	217 U	217 U	216 U	216 U	618	618
Thallium	mg/kg	3.4 N	3.4 N	2.8 N	2.8 N	2.2 UN	2.2 UN	2.2 UN	2.2 UN	2.2 UN	2.2 UN	2.0 U	2.0 U
Vanadium	mg/kg	12.6	12.6	12.8	12.8	18.0	18	20.4	20.4	21.9	21.9	5.9 U	5.9 U
Zinc	mg/kg	95.2 E	95.2 E	72.6 E	72.6 E	85.5 E	85.5 E	52.2 E	52.2 E	62.3 E	62.3 E	50.8	50.8
Other Parameters													
% Solids	%	93	93	95	95	91	91	92	92	92	92	NA	NA
Cyanide	mg/kg	2.0 U	2.0 U	2.1 U	2.1 U	2.1 U	2.1 U	2.0 U	2.0 U	2.1 U	2 U	NA	NA
Total Organic Carbon	ug/g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

APPENDIX C-6
Subsurface Soil Data

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SUBSURFACE SOIL FROM TEST PITS

Sample ID		TP-8		TP-14		TP-31		TP-33		TP-34		TP-45		TP-46		TP-47	
Sample Depth		7-8 ft.		2-3 ft.		8-10 ft.		3-4 ft.		10-11 ft.		7-9 ft		6-8 ft		8-10 ft	
Lab Sample Number		A8317201		A8321101		A8325301		A8325302		A8328601		23199070		23199071		23199072	
Sampling Date		08/05/98		08/06/98		08/10/98		08/10/98		08/11/98		08/18/99		08/18/99		08/18/99	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
TCL Volatile Organics																	
1,1,1-Trichloroethane	ug/kg	20 U	20 U	11 U	11 U	30 U	30 U	12 U	12 U	58	59 J	16 U	16 U	18 U	18 U	16 U	16 U
1,1,2,2-Tetrachloroethane	ug/kg	20 U	20 U	11 U	11 U	30 U	30 U	12 U	12 U	14 U	14 UJ	16 U	16 U	18 U	18 U	16 U	16 U
1,1,2-Trichloroethane	ug/kg	20 U	20 U	11 U	11 U	30 U	30 U	12 U	12 U	14 U	14 UJ	16 U	16 U	18 U	18 U	16 U	16 U
1,1-Dichloroethane	ug/kg	20 U	20 U	11 U	11 U	30 U	30 U	12 U	12 U	370 E	377 EJ	16 U	16 U	18 U	18 U	16 U	16 U
1,1-Dichloroethene	ug/kg	20 U	20 U	11 U	11 U	30 U	30 U	12 U	12 U	5 J	5 J	16 U	16 U	18 U	18 U	16 U	16 U
1,2-Dichloroethane	ug/kg	20 U	20 U	11 U	11 U	30 U	30 U	12 U	12 U	14 U	14 UJ	16 U	16 U	18 U	18 U	16 U	16 U
1,2-Dichloroethene (total)	ug/kg	20 U	20 U	11 U	11 U	30 U	30 U	12 U	12 U	750 E	766 EJ	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	ug/kg	20 U	20 U	11 U	11 U	30 U	30 U	12 U	12 U	14 U	14 UJ	16 U	16 U	18 U	18 U	16 U	16 U
2-Butanone	ug/kg	50	50	5 J	5 J	45	45	9 J	9 J	14 U	14 UJ	420 E	420 E	360 G	360 G	130 G	130 G
2-Hexanone	ug/kg	20 U	20 U	11 U	11 U	30 U	30 U	12 U	12 U	14 U	14 UJ	16 U	16 U	18 U	18 U	16 U	16 U
4-Methyl-2-Pentanone	ug/kg	20 U	20 U	11 U	11 U	30 U	30 U	12 U	12 U	14 U	14 UJ	16 U	16 U	18 U	18 U	16 U	16 U
Acetone	ug/kg	140	137	26	26	140	137	43	43	100	106 J	1600 EG	1600 EG	1400 EG	1400 EG	590 EG	590 EG
Benzene	ug/kg	20 U	20 U	2 J	2 J	5 J	5 J	12 U	12 U	27	27 J	8 J	8 J	10 J	10 J	9 J	9 J
Bromodichloromethane	ug/kg	20 U	20 U	11 U	11 U	30 U	30 U	12 U	12 U	14 U	14 UJ	16 U	16 U	18 U	18 U	16 U	16 U
Bromoform	ug/kg	20 U	20 UJ	11 U	11 UJ	30 U	30 UJ	12 U	12 UJ	14 U	14 UJ	16 U	16 U	18 U	18 U	16 U	16 U
Bromomethane	ug/kg	20 U	20 U	11 U	11 U	30 U	30 U	12 U	12 U	14 U	14 UJ	16 U	16 U	18 U	18 U	16 U	16 U
Carbon Disulfide	ug/kg	28	28	11 U	11 U	30 U	30 U	12 U	12 U	14 U	14 UJ	130 G	130 G	120 G	120 G	10 J	10 J
Carbon Tetrachloride	ug/kg	20 U	20 U	11 U	11 U	30 U	30 U	12 U	12 U	14 U	14 UJ	16 U	16 U	18 U	18 U	16 U	16 U
Chlorobenzene	ug/kg	20 U	20 U	11 U	11 U	10 J	10 J	12 U	12 U	20	21 J	23 G	23 G	15 J	15 J	16 U	16 U
Chloroethane	ug/kg	20 U	20 U	11 U	11 U	30 U	30 U	12 U	12 U	280 E	283 EJ	16 U	16 U	18 U	18 U	16 U	16 U
Chloroform	ug/kg	20 U	20 U	11 U	11 U	30 U	30 U	12 U	12 U	14 U	14 UJ	6 J	6 J	7 J	7 J	11 J	11 J
Chloromethane	ug/kg	20 U	20 U	11 U	11 U	30 U	30 U	12 U	12 U	14 U	14 UJ	16 U	16 U	18 U	18 U	16 U	16 U
cis-1,2-Dichloroethene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	16 U	16 U	18 U	18 U	16 U	16 U
cis-1,3-Dichloropropene	ug/kg	20 U	20 U	11 U	11 U	30 U	30 U	12 U	12 U	14 U	14 UJ	16 U	16 U	18 U	18 U	16 U	16 U
Dibromochloromethane	ug/kg	20 U	20 U	11 U	11 U	30 U	30 U	12 U	12 U	14 U	14 UJ	16 U	16 U	18 U	18 U	16 U	16 U
Ethylbenzene	ug/kg	20 U	20 U	8 J	8 J	30 U	30 U	12 U	12 U	4600 DJ	4562 DJ	20 G	20 G	18 U	18 U	9700 G	9700 G
Methylene Chloride	ug/kg	2 J	2 J	11 U	11 U	4 J	4 J	2 J	2 J	15	15 J	68 B	68 UB	70 B	70 UB	71 B	71 UB
Styrene	ug/kg	20 U	20 U	11 U	11 U	30 U	30 U	12 U	12 U	14 U	14 UJ	16 U	16 U	18 U	18 U	25 G	25 G
Tetrachloroethene	ug/kg	20 U	20 U	11 U	11 U	30 U	30 U	12 U	12 U	6 J	6 J	16 U	16 U	18 U	18 U	16 U	16 U
Toluene	ug/kg	20 U	20 U	1 J	1 J	30 U	30 U	12 U	12 U	150000 BD	147949 BDJ	8 J	8 J	6 J	6 J	16 J	16 J
trans-1,2-Dichloroethene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	16 U	16 U	18 U	18 U	16 U	16 U
trans-1,3-Dichloropropene	ug/kg	20 U	20 U	11 U	11 U	30 U	30 U	12 U	12 U	14 U	14 UJ	16 U	16 U	18 U	18 U	16 U	16 U
Trichloroethene	ug/kg	20 U	20 U	11 U	11 U	30 U	30 U	12 U	12 U	3 J	3 J	16 U	16 U	18 U	18 U	16 U	16 U
Vinyl Chloride	ug/kg	20 U	20 U	11 U	11 U	30 U	30 U	12 U	12 U	120	127 J	16 U	16 U	18 U	18 U	16 U	16 U
Xylene (total)	ug/kg	10 J	10 J	11 U	11 U	30 U	30 U	12 U	12 U	44000 D	45362 D	0.74 G	0.74 G	55	55	16 U	16 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SUBSURFACE SOIL FROM TEST PITS

Sample ID		TP-8		TP-14		TP-31		TP-33		TP-34		TP-45		TP-46		TP-47	
Sample Depth		7-8 ft.		2-3 ft.		8-10 ft.		3-4 ft.		10-11 ft.		7-9 ft		6-8 ft		8-10 ft	
Lab Sample Number		A8317201		A8321101		A8325301		A8325302		A8328601		23199070		23199071		23199072	
Sampling Date		08/05/98		08/06/98		08/10/98		08/10/98		08/11/98		08/18/99		08/18/99		08/18/99	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
TCL Semi-Volatile Organics																	
1,2,4-Trichlorobenzene	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
1,2-Dichlorobenzene	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4400 J	4400 J	540 U	540 U	600 U	600 U	530 U	530 U
1,3-Dichlorobenzene	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
1,4-Dichlorobenzene	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
2,2'-Oxybis(1-Chloropropane)	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	540 U	540 U	600 U	600 U	530 U	530 U
2,4,5-Trichlorophenol	ug/kg	20000 U	21400 U	4500 U	4700 U	5800 U	6150 U	4900 U	5150 U	12000 U	12100 U	2700 U	2700 U	3000 U	3000 U	2600 U	2600 U
2,4,6-Trichlorophenol	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
2,4-Dichlorophenol	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
2,4-Dimethylphenol	ug/kg	8400 U	8600 U	360 J	350 J	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	92 J	92 J
2,4-Dinitrophenol	ug/kg	20000 U	21400 U	4500 U	4700 U	5800 U	6150 U	4900 U	5150 U	12000 U	12100 U	2700 U	2700 U	3000 U	3000 U	2600 U	2600 U
2,4-Dinitrotoluene	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
2,6-Dinitrotoluene	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
2-Chloronaphthalene	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
2-Chlorophenol	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
2-Methyl-4,6-dinitrophenol	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2700 U	2700 U	3000 U	3000 U	2600 U	2600 U
2-Methylnaphthalene	ug/kg	8400 U	8600 U	940 J	950 J	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	120 J	120 J
2-Methylphenol	ug/kg	8400 U	8600 U	230 J	250 J	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
2-Nitroaniline	ug/kg	20000 U	21400 U	4500 U	4700 U	5800 U	6150 U	4900 U	5150 U	12000 U	12100 U	2700 U	2700 U	3000 U	3000 U	2600 U	2600 U
2-Nitrophenol	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
3,3'-Dichlorobenzidine	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
3-Nitroaniline	ug/kg	20000 U	21400 U	4500 U	4700 U	5800 U	6150 U	4900 U	5150 U	12000 U	12100 U	2700 U	2700 U	3000 U	3000 U	2600 U	2600 U
4,6-Dinitro-2-methylphenol	ug/kg	20000 U	21400 U	4500 U	4700 U	5800 U	6150 U	4900 U	5150 U	12000 U	12100 U	NA	NA	NA	NA	NA	NA
4-Bromophenyl-phenylether	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
4-Chloro-3-methylphenol	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
4-Chloroaniline	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
4-Chlorophenyl-phenylether	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
4-Methylphenol	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	1500 J	1500 J	540 U	540 U	600 U	600 U	160 J	160 J
4-Nitroaniline	ug/kg	20000 U	21400 U	4500 U	4700 U	5800 U	6150 U	4900 U	5150 U	12000 U	12100 U	2700 U	2700 U	3000 U	3000 U	2600 U	2600 U
4-Nitrophenol	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	2700 U	2700 U	3000 U	3000 U	2600 U	2600 U
Acenaphthene	ug/kg	3300 J	3300 J	1900 U	1900 U	340 J	350 J	2000 U	2050 U	4800 U	4800 U	540 U	540 U	420 J	420 J	530 U	530 U
Acenaphthylene	ug/kg	2200 J	2200 J	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	170 J	170 J	530 U	530 U
Anthracene	ug/kg	8400	8400	1900 U	1900 U	790 J	800 J	2000 U	2050 U	4800 U	4800 U	1000	1000	710	710	530 U	530 U
Benzo(a)anthracene	ug/kg	16000	16000	1900 U	1900 U	1600 J	1550 J	1000 J	1050 J	1800 J	1800 J	1600	1600	1400	1400	530 U	530 U
Benzo(a)pyrene	ug/kg	12000	11700	410 J	400 J	1200 J	1250 J	1000 J	1000 J	1100 J	1100 J	1700	1700	1400	1400	530 U	530 U
Benzo(b)fluoranthene	ug/kg	22000	22200	730 J	750 J	1300 J	1350 J	1400 J	1400 J	2300 J	2300 J	2100	2100	1900	1900	530 U	530 U
Benzo(g,h,i)perylene	ug/kg	4400 J	4400 J	1900 U	1900 U	580 J	600 J	520 J	500 J	830 J	800 J	970	970	1400	1400	530 U	530 U
Benzo(k)fluoranthene	ug/kg	8400 U	8600 UJN	1900 U	1900 UJ	410 J	400 J	390 J	400 J	990 J	1000 J	630	630	650	650	530 U	530 U
bis(2-Chloroethoxy)methane	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
bis(2-Chloroethyl)Ether	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
bis(2-Chloroisopropyl)ether	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	NA	NA	NA	NA	NA	NA
Bis(2-Ethylhexyl)phthalate	ug/kg	19000	19000	550 J	550 J	600 J	600 J	2000 U	2050 U	5500	5500	4700 E	4700 E	3800	3800	960	960
Butylbenzylphthalate	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
Carbazole	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
Chrysene	ug/kg	17000	15400	810 J	800 J	1300 J	1350 J	1000 J	1050 J	1900 J	1900 J	1800	1800	2400	2400	530 U	530 U
Dibenz(a,h)anthracene	ug/kg	1700 J	1500 J	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
Dibenzofuran	ug/kg	3100 J	3100 J	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	220 J	220 J	530 U	530 U
Diethylphthalate	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
Dimethylphthalate	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
Di-n-Butylphthalate	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	1000 J	1000 J	540 U	540 U	600 U	600 U	530 U	530 U
Di-n-octylphthalate	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
Fluoranthene	ug/kg	43000	43400	1900 U	1900 U	3200	3150	2000	2000	3900 J	3900 J	4500 E	4500 E	2900	2900	280 J	280 J
Fluorene	ug/kg	8300 J	8300 J	280 J	300 J	520 J	500 J	2000 U	2050 U	570 J	600 J	1500	1500	710	710	530 U	530 U
Hexachlorobenzene	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
Hexachlorobutadiene	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
Hexachlorocyclopentadiene	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
Hexachloroethane	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
Indeno(1,2,3-cd)pyrene	ug/kg	5200 J	5200 J	1900 U	1900 U	600 J	600 J	640 J	650 J	1000 J	1100 J	1100	1100	1200	1200	530 U	530 U
Isophorone	ug/kg	8400 U	8600 U	1800 J	1850 J	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	350 J	350 J
Naphthalene	ug/kg	8400 U	8600 U	750 J	750 J	2400 U	2450 U	2000 U	2050 U	1200 J	1300 J	540 U	540 U	140 J	140 J	120 J	120 J
Nitrobenzene	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
N-Nitroso-di-n-propylamine	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
N-Nitrosodiphenylamine (1)	ug/kg	8400 U	8600 U	1900 U	1900 U	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
Pentachlorophenol	ug/kg	20000 U	21400 U	4500 U	4700 U	5800 U	6150 U	4900 U	5150 U	12000 U	12100 U	2700 U	2700 U	3000 U	3000 U	2600 U	2600 U
Phenanthrene	ug/kg	37000	37200	980 J	1000 J	3400	3350	850 J	850 J	3900 J	3900 J	5500 E	5500 E	2900	2900	420 J	420 J
Phenol	ug/kg	8400 U	8600 U	520 J	500 J	2400 U	2450 U	2000 U	2050 U	4800 U	4800 U	540 U	540 U	600 U	600 U	530 U	530 U
Pyrene	ug/kg	39000	39300	740 J	750 J	3100	3150	1700 J	1750 J	3600 J	3600 J	6600 E	6600 E	6900 E	6900 E	340 J	340 J

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SUBSURFACE SOIL FROM TEST PITS

Sample ID		TP-8		TP-14		TP-31		TP-33		TP-34		TP-45		TP-46		TP-47	
Sample Depth		7-8 ft.		2-3 ft.		8-10 ft.		3-4 ft.		10-11 ft.		7-9 ft		6-8 ft		8-10 ft	
Lab Sample Number		A8317201		A8321101		A8325301		A8325302		A8328601		23199070		23199071		23199072	
Sampling Date		08/05/98		08/06/98		08/10/98		08/10/98		08/11/98		08/18/99		08/18/99		08/18/99	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Pesticides & PCBs																	
4,4' - DDD	ug/kg	8400 U	8400 UJ	3.7 U	3.7 U	24 U	24 U	3.9 U	3.9 U	47 U	47 U	540 U	540 U	600 U	600 U	52 U	52 U
4,4'- DDE	ug/kg	8400 U	8400 UJ	3.7 U	3.7 U	24 U	24 U	3.9 U	3.9 U	47 U	47 U	540 U	540 U	600 U	600 U	52 U	52 U
4,4'-DDT	ug/kg	8400 U	8400 UJ	3.7 U	3.7 U	24 U	24 U	3.9 U	3.9 U	47 U	47 U	540 U	540 U	600 U	600 U	52 U	52 U
Aldrin	ug/kg	4300 U	4300 UJ	1.9 U	1.9 U	12 U	12 U	2 U	2 U	24 U	24 U	280 U	280 U	310 U	310 U	27 U	27 U
alpha-Chlordane	ug/kg	4300 U	4300 UJ	1.9 U	1.9 U	12 U	12 U	2 U	2 U	24 U	24 U	280 U	280 U	310 U	310 U	27 U	27 U
BHC-alpha	ug/kg	4300 U	4300 UJ	1.9 U	1.9 U	12 U	12 U	2 U	2 U	24 U	24 U	280 U	280 U	310 U	310 U	27 U	27 U
BHC-beta	ug/kg	4300 U	4300 UJ	1.9 U	1.9 U	12 U	12 U	2 U	2 U	24 U	24 U	280 U	280 U	310 U	310 U	27 U	27 U
BHC-delta	ug/kg	4300 U	4300 UJ	1.9 U	1.9 U	12 U	12 U	2 U	2 U	24 U	24 U	280 U	280 U	310 U	310 U	27 U	27 U
BHC-gamma (Lindane)	ug/kg	4300 U	4300 UJ	1.9 U	1.9 U	12 U	12 U	2 U	2 U	24 U	24 U	280 U	280 U	310 U	310 U	27 U	27 U
Dieldrin	ug/kg	8400 U	8400 UJ	3.7 U	3.7 U	24 U	24 U	3.9 U	3.9 U	47 U	47 U	540 U	540 U	600 U	600 U	52 U	52 U
Endosulfan I	ug/kg	4300 U	4300 UJ	1.9 U	1.9 U	12 U	12 U	2 U	2 U	24 U	24 U	280 U	280 U	310 U	310 U	27 U	27 U
Endosulfan II	ug/kg	8400 U	8400 UJ	3.7 U	3.7 U	24 U	24 U	3.9 U	3.9 U	47 U	47 U	540 U	540 U	600 U	600 U	52 U	52 U
Endosulfan Sulfate	ug/kg	8400 U	8400 UJ	3.7 U	3.7 U	24 U	24 U	3.9 U	3.9 U	47 U	47 U	540 U	540 U	600 U	600 U	52 U	52 U
Endrin	ug/kg	8400 U	8400 UJ	3.7 U	3.7 U	24 U	24 U	3.9 U	3.9 U	47 U	47 U	540 U	540 U	600 U	600 U	52 U	52 U
Endrin Aldehyde	ug/kg	8400 U	8400 UJ	3.7 U	3.7 U	24 U	24 U	3.9 U	3.9 U	47 U	47 U	540 U	540 U	600 U	600 U	52 U	52 U
Endrin Ketone	ug/kg	8400 U	8400 UJ	3.7 U	3.7 U	24 U	24 U	3.9 U	3.9 U	47 U	47 U	540 U	540 U	600 U	600 U	52 U	52 U
gamma-Chlordane	ug/kg	4300 U	4300 UJ	1.9 U	1.9 U	12 U	12 U	2 U	2 U	24 U	24 U	280 U	280 U	310 U	310 U	27 U	27 U
Heptachlor	ug/kg	4300 U	4300 UJ	1.9 U	1.9 U	12 U	12 U	2 U	2 U	24 U	24 U	280 U	280 U	310 U	310 U	27 U	27 U
Heptachlor Epoxide	ug/kg	4300 U	4300 UJ	1.9 U	1.9 U	12 U	12 U	2 U	2 U	24 U	24 U	280 U	280 U	310 U	310 U	27 U	27 U
Methoxychlor	ug/kg	43000 U	43000 UJ	19 U	19 U	120 U	120 U	20 U	20 U	240 U	240 U	2800 U	2800 U	3100 U	3100 U	270 U	270 U
Toxaphene	ug/kg	430000 U	430000 UJ	190 U	190 U	1200 U	1200 U	200 U	200 U	2400 U	2400 U	28000 U	28000 U	31000 U	31000 U	1700 U	1700 U
Aroclor-1016	ug/kg	84000 U	84000 UJ	37 U	37 U	240 U	240 U	39 U	39 U	470 U	470 U	5400 U	5400 U	6000 U	6000 U	520 U	520 U
Aroclor-1221	ug/kg	170000 U	170000 UJ	74 U	74 U	480 U	480 U	80 U	65 U	960 U	960 U	5400 U	5400 U	6000 U	6000 U	520 U	520 U
Aroclor-1232	ug/kg	84000 U	84000 UJ	37 U	37 U	240 U	240 U	39 U	39 U	470 U	470 U	5400 U	5400 U	6000 U	6000 U	520 U	520 U
Aroclor-1242	ug/kg	84000 U	84000 UJ	37 U	37 U	240 U	240 U	39 U	39 U	470 U	470 U	5400 U	5400 U	6000 U	6000 U	520 U	520 U
Aroclor-1248	ug/kg	420000 PD	420000 PDJ	87 P	87 P	940	950	130	130	2300 P	2300 P	74000 G	74000 G	180000 G	180000 G	520 UG	520 UG
Aroclor-1254	ug/kg	84000 U	84000 UJ	37 U	37 U	240 U	240 U	39 U	39 U	470 U	470 U	5400 U	5400 U	6000 U	6000 U	520 U	520 U
Aroclor-1260	ug/kg	84000 U	84000 UJ	37 U	37 U	240 U	240 U	39 U	39 U	470 U	470 U	5400 U	5400 U	6000 U	6000 U	520 U	520 U

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SUBSURFACE SOIL FROM TEST PITS

Sample ID		TP-8		TP-14		TP-31		TP-33		TP-34		TP-45		TP-46		TP-47	
Sample Depth		7-8 ft.		2-3 ft.		8-10 ft.		3-4 ft.		10-11 ft.		7-9 ft		6-8 ft		8-10 ft	
Lab Sample Number		A8317201		A8321101		A8325301		A8325302		A8328601		23199070		23199071		23199072	
Sampling Date		08/05/98		08/06/98		08/10/98		08/10/98		08/11/98		08/18/99		08/18/99		08/18/99	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Metals																	
Aluminum	mg/kg	20600	20587	6420	6417	6290	6279	10600	10563	7220	7218	9030	9030	7480	7480	4730	4730
Antimony	mg/kg	8.2 BN	8.2 BNJ	2.1 BN	2.1 BNJ	1.8 BN	1.9 BNJ	1.4 UN	1.4 UNJ	1.6 UN	1.6 UNJ	9.9 BN	9.9 BN	22.0 N	22.0 N	4.8 UN	4.8 UN
Arsenic	mg/kg	16.2 *	16.2	6.2 *	6.2 *J	11.6 *	11.7	4 *	4.2 *J	17.0 *	17.0 *J	3.3 UN	3.3 UN	14.2 N	14.2 N	20.8 N	20.8 N
Barium	mg/kg	251 E	251 EJ	76.5 E	76 EJ	60.7 E	61 EJ	60.5 E	60	110 E	110	162	162	147	147	136	136
Beryllium	mg/kg	1.3 BN	1.3 BNJ	0.49 BN	0.5 BNJ	0.37 BN	0.4 BNJ	0.45 BN	0.5 BNJ	0.5 BN	0.5 B	1.0 U	1.0 U	1.1 U	1.1 U	1.0 U	1.0 U
Cadmium	mg/kg	32.9 EN*	32.9 ENJ	34.5 EN*	34.5 N*J	8.2 EN*	8.2 EN*J	10.6 EN	10.6 N*J	11.1 EN	11.1 N*J	24.2	24.2	6.0	6.0	26.8	26.8
Calcium	mg/kg	69100	69118	22700	22655	28200	28207	59900	59866	26200	26246	32900 G	32900 G	24600 G	24600 G	23800 G	23800 G
Chromium	mg/kg	4260 N*	4265	76.2 N*	76 N*J	64.9 N*	65 N*J	15.2 N*	15 N*J	30 N*	30 N*J	2060	2060	3930	3930	50	50
Cobalt	mg/kg	16.1 BN	16.1 BNJ	5.8 BN	5.8 BNJ	5 BN	5.0 BNJ	6.4 BN	6.4 BNJ	5.3 BN	5.3 B	8.5 B	8.5 B	12.5 B	12.5 B	6.3 U	6.3 U
Copper	mg/kg	3270	3273	105	105	42.3	42	18.4	18	42	42	990	990	1080	1080	62	62
Iron	mg/kg	39100 *	39078	54500	54497 *J	12700	12712	17500 *	17484 *J	17300 *	17329 *J	19400	19400	28400	28400	32200	32200
Lead	mg/kg	418 N*	418 NJ	78.9 N*	79 N*J	29.9 N*	30 N*J	22.2 N*	22 N*J	101 N*	101 N*J	240	240	310	310	54	54
Magnesium	mg/kg	23300	23336	1640	1645	3930	3930	15400	15410	6510	6507	10600	10600	9220	9220	5670	5670
Manganese	mg/kg	549 N*	549 NJ	1920 N*	1922 N*J	162 N*	162 N*J	523 N*	559 N*J	339 N*	339 N*J	256	256	259	259	600	600
Mercury	mg/kg	0.41	0.40	0.11 U	0.11 U	0.15 U	0.15 U	0.12 U	0.12 U	0.15	0.15	0.67	0.67	0.87	0.87	0.16 U	0.16 U
Nickel	mg/kg	1200	1205	48.7	49	36.1	36	14.9	15	30	29	875	875	1400	1400	30	30
Potassium	mg/kg	2720 E	2722	672 BE	672 B	1120 BE	1117 BE	2460 E	2463 EJ	1000 BE	1004 B	995 B	995 B	386 B	386 B	548 B	548 B
Selenium	mg/kg	2.6 UN	2.6 UNJ	1.1 UN	1.1 UNJ	1.4 UN	1.4 UNJ	1.2 UN	1.2 UNJ	1.4 UN	1.4 UJ	15.0 N	15.0 N	10.7 N	10.7 N	8.1 N	8.1 N
Silver	mg/kg	5.1 BN	5.1 BNJ	0.36 UN	0.4 UNJ	0.45 UN	0.5 UNJ	0.39 UN	0.4 UNJ	0.5 UN	0.45 U	10.10	10.10	5.40	5.40	3.20 U	3.20 U
Sodium	mg/kg	1970 B	1972 B	950 B	950 BJ	1090 B	1094 B	1050 B	1053 B	997 B	997 B	326 U	326 U	359 U	359 U	317 U	317 U
Thallium	mg/kg	3 UN	3 UNJ	1.6 BN	2 BNJ	1.6 U	2 UNJ	1.4 UN	1 UNJ	2 UN	2 UJ	4 N	4 N	4 N	4 N	3 UN	3 UN
Vanadium	mg/kg	46.3 E	46.3 EJ	12.2 E	12.1	15 E	15.0 E	23.9 E	23.9	13.1 BE	13.1 B	11.8 B	11.8 B	10.8 U	10.8 U	12.5 B	12.5 B
Zinc	mg/kg	1320 EN	1325	166 EN	166 NJ	130 EN	130 ENJ	289 EN	289 NJ	231 EN	231 NJ	635 E	635 E	632 E	632 E	470 E	470 E
Other Parameters																	
Cyanide	mg/kg	50.9	50.8	0.81	0.86	1.2	1.2	1.7	1.7	1.0	0.99	67.90	67.90	12.70	12.70	22.60	22.60
Solids	%	39.0	39.0	88.3	88.3	68.1	68.1	81.4	81.4	68.8	68.8	61	61	55	55	63	63

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SUBSURFACE SOIL FROM BORINGS

Sample ID		B-23		B-23		B-23		B-24		B-24		B-24	
Sample Depth		0-4 ft.		18-20 ft.		24-26 ft.		0-2 ft.		18-20 ft.		22-24 ft.	
Lab Sample Number		236699049		23699050		23699048		23699053		23699052		23699051	
Sampling Date		08/23/99		08/23/99		08/23/99		08/23/99		08/23/99		08/23/99	
	Units	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated	Lab	Validated
Metals													
Aluminum	mg/kg	10300	10300	4120	4120	2640	2640	7320	7320	2180	2180	1600	1600
Antimony	mg/kg	3.3 U	3.3 UN	3.2 U	3.2 UN	3.4 U	3.4 UN	3.2 U	3.2 UN	3.3 U	3.3 N	3.4 U	3.4 UN
Arsenic	mg/kg	2.2 U	2.2 UN	2.2 U	2.2 UN	2.3 U	2.3 UN	2.2 U	2.2 UN	2.2 U	2.2 N	2.2 U	2.2 UN
Barium	mg/kg	83.7	83.7	55.3	55.3	37.9	37.9 B	51.4	51.4	25.7	25.7 B	23.6	23.6 B
Beryllium	mg/kg	0.65 U	0.65 U	0.65 U	0.65 U	0.69 U	0.69 U	0.65 U	0.65 U	0.67 U	0.67 U	0.67 U	0.67 U
Cadmium	mg/kg	1.4	1.4	1.1 U	1.1 U	1.1 U	1.1 U	3.4	3.4	1.1 U	1.1 U	1.1 U	1.1 U
Calcium	mg/kg	36900	36900 G	571000	571000 G	36900	36900 G	40100	40100 G	36500	36500 G	39400	39400 G
Chromium	mg/kg	17.2	17.2	10.0	10.0	5.4	5.4	17.3	17.3	3.9	3.9	3.2	3.2
Cobalt	mg/kg	9.4	9.4 B	4.4	4.4 B	4.6 U	4.6 U	6.8	6.8 B	4.4 U	4.4 U	4.5 U	4.5 U
Copper	mg/kg	63.3	63.3	10.6	10.6	11.7	11.7	56.4	56.4	11.3	11.3	26.4	26.4
Iron	mg/kg	18500	18500	10600	10600	6090	6090	14600	14600	6250	6250	4900	4900
Lead	mg/kg	9.7	9.7	3.8	3.8	4.4	4.4	26.8	26.8	2.7	2.7	2.2	2.2
Magnesium	mg/kg	23500	23500	13000	13000	11100	11100	19300	19300	10800	10800	8710	8710
Manganese	mg/kg	477	477	364	364	194	194	420	420	226	226	193	193
Mercury	mg/kg	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.10 U	0.10 U	0.11 U	0.11 U	0.11 U	0.11 U
Nickel	mg/kg	23.4	23.4	10.9	10.9	7.4	7.4 B	22.9	22.9	6.7 U	6.7 U	6.7 U	6.7 U
Potassium	mg/kg	1550	1550	1100	1100	598	598 B	1350	1350	728	728 B	505	505 B
Selenium	mg/kg	19.3	19.3 N	18.5	18.5 N	13.8	13.8 N	19.3	19.3 N	14.7	14.7 N	14.5	14.5 N
Silver	mg/kg	200 U	200 U	2.2 U	2.2 U	2.3 U	2.3 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U
Sodium	mg/kg	217 U	217 U	216 U	216 U	229 U	229 U	215 U	215 U	222 U	222 U	224 U	224 U
Thallium	mg/kg	2.2 U	2.2 UN	2.7	2.7 N	3.3	3.3 N	2.2 U	2.2 U	2.9	2.9 N	3.1	3.1 N
Vanadium	mg/kg	17.1	17.1	8.2	8.2 B	6.9 U	6.9 U	13.4	13.4	6.7 U	6.7 U	6.7 U	6.7 U
Zinc	mg/kg	46.0	46.0 E	20.8	20.8 E	15.5	15.5 E	102.0	102.0 E	15.0	15.0 E	13.0	13.0 E
Other Parameters													
Ammonia-Nitrogen	mg/kg	12	12 G	0.5 U	0.5 UG	35	35 G	27	27 G	42	42 G	1 U	1 UG
Nitrate-Nitrogen	mg/kg	4.0 U	4.0 UR	4.0 U	4.0 UR	4.0 U	4.0 UR	4.0 U	4.0 UR	4.0 U	4.0 UR	4.0 U	4.0 UG
Total Kjeldahl Nitrogen	mg/kg	540	540 G	140	140 G	110 U	110 UG	710	710 G	110 U	110 UG	110 U	110 UG
Standard Plate Count	col/g	354000	354000	23000	23000	100 U	100	71000	71000	100 U	100	100 U	100
Percent Solids	%	92	92	92	92	87	87	93	93	90	90	89	89

APPENDIX D
Data Validation Reports

APPENDIX D-1

1998 Data Validation Summary

FOOTNOTES FOR THE ORGANIC TARGET ANALYTE LIST

BLANK QUALIFIERS

1. The reported compound was less than 5 times (10 times for the common EPA contaminants) the value of the method (prep) blank. The presence of this compound in the sample has been negated.

2. The reported compound was less than 5 times (10 times for the common EPA contaminants) the value of the QA blank. The presence of this compound in the sample is highly qualified.

3. The value reported was greater than 5 times (10 times for the common EPA contaminants) the value in the method (prep) blank and is considered "real" (J).

4. This sample was diluted prior to analysis. The value reported prior to the dilution is less than 5 times (10 times for the common EPA contaminants) the value in the method blank. The presence of this compound in the sample is likely due to laboratory contamination unrelated to the actual sample.

5. The value reported was less than 5 times (10 times for the common EPA contaminants) the value in the field or trip blank. The reported value was negated due to probable contamination.

7. The value reported was greater than 5 times (10 times of the common EPA contaminants) the value on the field or trip blank and is considered "real".

8. The results of this sample was qualified due to a problem with the blank which was not included in the above footnotes. Refer to the text for discussion.

9. The result of this sample was rejected due to a severe problem with the blank which was not included in the above footnotes. Refer to the text for discussion.

10. This non-target compound was found in the method blank. The laboratory did not flag it with the "B" qualifier.

11 The laboratory used an incorrectly associated method blank. This compound was not found in the method blank and does not require the "B' qualifier.

12. Blank data was not included by the laboratory. The extent of blank contamination cannot be assessed.

13. This compound was detected in a field or trip blank which as not received at the same time as the contaminated sample. See text for discussion.

CALIBRATION REQUIREMENTS

15. The compound is qualified due to the % RSD or % Difference being greater than the required limit but less than 90%.

16. The value for this compound is qualified because the response factor is less than the quality assurance limit required by the specific method. Low concentrations of this compound may have been overlooked.

17. The value for this compound is qualified because the response factor is less than 0.05.

18. The % RSD or % Difference of the semivolatile CCC compound was greater than 30%. The results of this sample are not rejected according to CLP protocols.

19. The results of this sample are rejected due to one volatile or 3 semivolatile CCC compounds being outside of their acceptable range.

20. The non-detected compound is unusable since the response factor is less than 0.05.

21. The RF of this compound is less than the required limit.

22. The % RSD or percent difference is greater than 90%. All non-detects should be considered to be unusable, compounds that were detected are highly qualified.

23. A continuing calibration standard was not analyzed within the 12 hour time limitation. The data for the samples involved would be technically rejected according to the EPA's HW-8 (Section 13.2, January 1992) data validation guidelines. The significant of this upon the end use of the data is discussed in the text.

24. An instrument tune was not analyzed within the 12 hour time limitation. The data for the samples involved would be technically rejected according to the EPA's HW-8 (Section 13.2, January 1992) data validation guidelines. The significant of this upon the end use of the data is discussed in the text.

25. The instrument tune performance was outside of the required quality assurance limits for the NYS DEC, but satisfied the tune criteria of the EPA. The specific aspects of the tune nonconformance are discussed in detail in the text.

26. The instrument tune performance was outside of the required quality assurance limits, and also outside of the expanded tune criteria. All sample spectra were examined in detail. The specific aspects of the tune nonconformance are discussed in detail in the text. Standard EPA data validation guidelines would require that the data associated with the tune be rejected.

27. An instrument tune was not analyzed within the 8 hour time limitation stated in Method 524.2, but the sample was analyzed within 12 hours of the previous acceptable tune.

28. A continuing calibration was not performed within the 8 hour time limitation stated in Method 524.2, but the sample was analyzed within 12 hours of the previous continuing calibration standard.

29. The EPA data validation guidelines (HW-8, January 1992 Section 13.3) require the rejection of a compound with a percent difference greater than 90% in a continuing calibration.

SPIKE RECOVERIES

30. The CLP required spike concentration was not added to this sample. Refer to the text for discussion of the effect the usability of the data.

31. The data were qualified due to poor recovery of the associated matrix spike or matrix spike duplicate. Only the sample used for the MS/MSD has been qualified.

32. The non-detects for this sample would be considered unusable (R) according to EPA CLP data validation guidelines due to MS and MSD recoveries both less than 10%. Only the sample used for the MS/MSD has been qualified.

33. The data for this sample are qualified as estimated values due to the poor RPD's of the matrix spike and matrix spike duplicate.

SAMPLE ANALYSES

50. The raw data included in the report could not be followed. The results of this analysis should be considered tentative until the discrepancy has been resolved.

51. The value reported on FORM I does not appear to agree with that found in the raw data.

52. This analyte has been analyzed by a method which is not routinely used in this concentration range. Refer to the text for a discussion of any impact this may have on the usability of the data.

53. The copies of the spectra were illegible. The spectral matches could not be verified.

54. The one or more of the surrogate compounds in this sample eluted outside of the required retention time range. The data for this sample should be considered to be highly qualified.

55. The reported concentration is qualified because the concentration is below the CRQL. This is prior to any dilutions which may have been associated with this sample.

56. The presence of this compound was noted on the quant report, but a copy of the spectra was not included. It was not reported on FORM I. It is tentatively added to the TCL list until a corrected report has been received from the laboratory.

57. The spectra of this compound was not included in the report. Its presence should be considered tentative until this is received.

58. This non-target compound is usually detected in another analytical fraction. The presence of this compound should be negated.

59. The mass spectral identification of this sample has not been confirmed and the identification of this compound has been rejected. The compound should be considered an unknown.

60. The laboratory did not quantify the pesticides present in this sample. The pesticide was confirmed on a second column. The value is greater than the CRDL.

61. The concentration of the compound exceeded the calibration range of the instrument. It should have been flagged with the "E" qualifier by the laboratory and reanalyzed at a higher dilution.

62. The compound is a suspected aldol condensation product. It should have been flagged with the "A" qualifier by the laboratory. It is due to a laboratory extraction artifact.

63. The sample holding time to re-extraction and/or re-analysis was exceeded. All positive as well as non-detected compounds are highly qualified.

64. The non-target compound is a suspected laboratory contaminant which was not present in the associated blanks.

65. The area of the non-target compound is less than 10% of the associated internal standard. it has been negated from the TIC list.

66. The non-target compound was not added to the TIC summary on FORM I. All spectra and quant reports were included in the raw data. The compounds have been added to the data summary table during the review.

67. This non-target compound is an aldol condensation product, siloxane or other common artifact. It should not be included in a data summary.

68. This compound is usually considered to be an aldol condensation product. This was not flagged with the "A" qualifier by the laboratory.

69. The quant reports for the non-target compounds were not included in the data summary. The concentrations reported could not be validated.

70. The area of the internal standard used to quantify this compound was outside of the acceptable range.

71. A confirmation analysis was not performed for this sample. The data from the primary column cannot be confirmed.

72. The sample was analyzed with another analysis which provided more accurate data for the concentration of this compound. The data for this analyte should not be used.

73. The surrogate were outside of the acceptable limit. This sample was rerun after the allowable holding time.

74. This result does not agree with the data obtained from the undiluted analysis. The value should be considered to be an estimate.

75. The spectra for this compound was not retrievable due to a computer problem. This compound has been detected in many of the other samples collected at this site.

76. The dilutions reported for this sample are not consistent for all data. See text.

77. Values less than the CRDL were not reported by the laboratory. These have been included in the data summary. Their spectra have not been examined, so their presence cannot be verified.

78. Surrogate recoveries were outside of the acceptable limits. The sample was reextracted and reanalyzed within the required holding time and poor surrogate recoveries were again obtained. The problem appears to be due to the nature of the sample matrix. The laboratory has satisfied all EPA CLP requirements.

79. The non-target compound is a common laboratory artifact such as carbon dioxide or a siloxane. The data should not be used.

80. The sample was diluted excessively prior to analyses. The value reported is less than the quantitation limit and is reported with a "J" qualifier. It should have been reanalyzed at a lower dilution.

81. The sample was extracted and/or analyzed outside of the required holding time.

82. The area, or retention time, of the internal standard was outside of the acceptable range, but the area was greater than 25%.

83. The recovery of the associated surrogate or system monitoring compound was outside of the acceptable quality assurance limits, but greater than 10%.

84. The recovery of the associated surrogate was less than 10%. This compound was detected in the sample, but the value should be considered to be highly estimated.

85. The recovery of the associated surrogate was less than 10%. This compound was not detected in the sample and the data would be considered to be unusable due to the standard EPA data validation guidelines. The sample was flagged with the "R" qualifier.

86. The spectra of this sample indicated a significant amount of interference which would make it difficult to verify the presence of this compound. This is being reported as undetected at a concentration greater than that of the standard detection limit for this analysis.

87. The standard spectra submitted for this compound does not match that of the library reference standard. The presence or absence of this compound should be considered as tentative until the discrepancies between the two spectra are resolved.

88. The spectra for this compound appears to be an acceptable match even though the compound would be present at a concentration less than the required reporting limit. This was included in the data validation summary and flagged with the "J" qualifier.

89. The area of the internal standard was outside of the acceptable range and less than 25%. All of the undetected data would be considered to be unusable (Jan. 1992 data validation guidelines section 14.1.3).

90. The area of the internal standard was outside of the acceptable range but greater than 25%. All of the reported results are highly estimated.

91. The area of the internal standard was less than 25%. The reported concentration is highly estimated.

92. The peak used for quantitation of this pesticide coelutes with an Aroclor peak. The presence of this compound in the sample cannot be verified.

93. Many Aroclor peaks were found in this sample that do not precisely fit a standard Aroclor pattern. This may be due to the low concentration of the Aroclor, weathering, or the presence of a mixture of Aroclors. The concentrations reported should be considered to be estimated values.

94. Many of the peaks reported for this Aroclor coelute with those of another Aroclor. The data reported may be overestimated because the results that were reported were not corrected for the presence of coeluting peaks.

95. The breakdown of this pesticide in the PEM standard was greater than 20%. Some or all of this pesticide may be due to the breakdown of the original pesticide (endrin or DDT).

96. The breakdown of this pesticide in the PEM standard was greater than 20%. The reported concentration may have been underestimated.

97. The breakdown of this pesticide in the PEM standard was greater than 20%. Since the pesticide was not detected in the sample, the quantitation limit should be considered to be unusable.

99. Inconsistencies were found in the way the presence or absence of this compound was reported in a GC analysis. See Text for a detailed discussion.

100. The instrument detection limit did not meet the Contract Required quantitation Limit generally required by the NYS DEC ASP program.

FOOTNOTES FOR THE INORGANIC TARGET ANALYTE LIST

BLANK QUALIFIERS

1. The value reported for the preparation blank is either greater than the CRDL when the IDL is less than or equal to the CRDL, or less than two times the IDL when the IDL is greater than the CRDL. All data greater than the CRDL concentration but less than ten times the preparation blank value are rejected (This footnote may also be applied to preparation blanks with concentrations less than the CRDL if low concentrations of TCL analytes could influence the end use of the data).

3. The inorganic value reported was greater than 10 times the value in the method (prep) blank and is considered to be "real" (J).

4. This analyte was qualified due to the negative value of the prep blank being greater than the absolute value of the CRDL. All associated sample results less than ten times the CRDL are rejected.

5. The value reported for the field blank is either greater than the CRDL when the IDL is less than or equal to the CRDL, or less than two times the IDL when the IDL is greater than the CRDL. All data greater than the CRDL concentration but less than five times the field blank value are negated. (This footnote may also be applied to preparation blanks with concentrations less than the CRDL if low concentrations of TCL analytes could influence the end use of the data.

6. The inorganic value reported was greater than 10 times the value in the method (prep) blank and is considered to be "real" (J).

8. This analyte was qualified due to the negative value of the calibration blank.

9. The inorganic value reported was less than 10 times the value in a calibration blank and the concentration in the calibration blank was greater than the CRDL. The reported value was negated due to probable contamination.

11. The inorganic value reported was greater than 10 times the value in a calibration blank and is considered "real" (J).

12. The result of this sample was qualified due to problem with a blank which was not included in the above footnotes. Refer to the text for discussion.

13. The result of this sample was rejected due to a severe problem with the blank which was not included in the above footnotes. Refer to the text for discussion.

CALIBRATION REQUIREMENTS

15. The calibration used for this analyte could not be followed. All results should be considered tentative until the discrepancy has been resolved.

16. The CLP calibration requirements were not followed for this analyte. The significance of this is discussed in the text (J/R).

17. The mid-range cyanide standard was not distilled. All results should be considered estimates (J).

18. The recovery of the initial or continuing calibration standard was outside of the required limit. The analyses should have been terminated and the instrument recalibrated. All data associated with this standard should be considered to be estimated values. See text.

CRDL STANDARD RECOVERIES

20. An **incorrect concentration** of CRDL **standard was used for this analysis**. Refer to the text for the significance of this on the data. Sample data was only qualified when the concentration was within the affected range.

21. The recovery of the CRDL standard was **< 80%, but > 50%** or **between 121% and 150%**. All low concentrations of analytes are considered estimated. Sample data was only qualified when the concentration was within the affected ranges. Non-detects were not qualified when the analyte was undetected and the CRDL recovery was between 121% and 150%.

22. The recovery of the CRDL standard was **less than 50%**. All values for low concentrations of this analyte are highly qualified. Associated data would be rejected according to the EPA HW-2 data validation guidelines if the sample concentration was within the affected ranges of the CRDL concentration (A.1.9.3.3).

23. The recovery of the CRDL standard was **greater than 150%** (this footnote is not used if the analyte was not detected). Associated data would be rejected according to the EPA HW-2 data validation guidelines if the sample concentration was within the affected range. (A.1.9.3.3).

SPIKE RECOVERIES

30. The **CLP required spike concentration was not added** to this sample. Refer to the text for discussion of the effect on the usability of the data.

31. The recovery of the **aqueous predigestion spike was between 30% and 75%**. The results were greater than the IDL. Significant matrix interference may be present. All samples associated with this quality assurance sample have been flagged with the "N" qualifier. The matrix interference associated with them may not be the same as that of the sample chosen for the matrix spike (J).

32. The recovery of the **aqueous** predigestion spike was less than 30%. Significant problems were found with matrix interference. All samples associated with this quality assurance sample have been flagged with the "N" qualifier. The data are unusable. The matrix interference associated with them may not be the same as that of the sample chosen for the matrix spike (R). Associated data would be **rejected** according to the EPA HW-2 data validation guidelines (A.1.9.7.4).

33. The recovery of the **aqueous** predigestion spike was **greater than 125% and less than 150%**, and the sample results were greater than the IDL. This indicates that matrix interference may be present. All samples associated with this quality assurance sample have been flagged with the "N" qualifier. The matrix interference associated with them may not be the same as that of the sample chosen for the matrix spike.

34. The recovery of the **aqueous** predigestion spike was **greater than 150%** and the sample results were greater than the IDL. This indicates that severe matrix interference may be present. All samples associated with this quality assurance sample have been flagged with the "N" qualifier. The matrix interference associated with them may not be

the same as that of the sample chosen for the matrix spike. Associated data would be **rejected** according to the EPA HW-2 data validation guidelines (A.1.9.7.4).

35. The recovery of the **soil** predigestion spike was **between 10% and 74%**. Significant matrix interference may be present. All samples associated with this quality assurance sample have been flagged with the "N" qualifier. The matrix interference associated with them may not be the same as that of the sample chosen for the matrix spike (J).

36. The recovery of the **soil** predigestion spike was **less than 10%**. Significant problems were found with matrix interference. All samples associated with this quality assurance sample have been flagged with the "N" qualifier. The data are unusable. The matrix interference associated with them may not be the same as that of the sample chosen for the matrix spike (R). Associated data would be **rejected** according to the EPA HW-2 data validation guidelines (A.1.9.7.5).

37. The recovery of the **soil** predigestion spike was **between 126% and 200%**, and the sample results were greater than the IDL. This indicates that matrix interference may be present. All samples associated with this quality assurance sample have been flagged with the "N" qualifier. The matrix interference associated with them may not be the same as that of the sample chosen for the matrix spike.

38. The recovery of the **soil** predigestion spike was **greater than 200%** and the sample results were greater than the IDL. This indicates that severe matrix interference may be present. All samples associated with this quality assurance sample have been flagged with the "N" qualifier. The matrix interference associated with them may not be the same as that of the sample chosen for the matrix spike. Associated data would be **rejected** according to the EPA HW-2 data validation guidelines (A.1.9.7.4).

39. The required post digestion spike was not analyzed for this element.

40. The recovery of the post digestion spike was less than 30%. Severe matrix interference is present.

41. Significant discrepancies exist between the recoveries of the predigestion and post digestion spikes. Refer to the text for a discussion of the impact of this on the data.

42. Spike or duplicate data was not included for this analyte.

DUPLICATE ANALYSES

43. The relative percent difference was **greater than 50% for waters, or greater than 100% for soils** (J).

44. The RPD data was incorrectly reported by the laboratory.

45. The RPD was greater than the 20% quality assurance limit, but less than 50% for water samples and less than 100% for soil samples.

LABORATORY CONTROL SAMPLE

46. The recovery of the LCS was less than 50%. The data would be rejected according to the EPA data validation guidelines (HW-2, A.1.19.3).

SERIAL DILUTION

47. A serial dilution was not analyzed for the samples of this delivery group. All concentrations greater than 10X the IDLs or greater than the CRDL when 10X the IDL is less than the CRDL.

48. The laboratory failed to flag this analyte with the "E" qualifier to denote that the serial dilution results did not meet the QC limit.

49. The percent difference of the serial dilution replicates was greater than 100% and the sample concentration was greater than 10X the CRDL. This data would be rejected according to EPA data validation guidelines (HW-2, A.1.20.4).

50. The field blank was used for the analysis of the serial dilution. All ICP data greater than 10X the IDL were flagged with the "J" qualifier.

51. The percent difference of the serial dilution for this analyte was greater than 10%, but less than 100%. The data for this analyte should be considered to be an estimated value.

SAMPLE ANALYSES

52. The value reported in the raw data has a significant negative drift which could affect the usability of low concentrations of this analyte. All data for low concentrations of this analyte should be considered to be estimated.

53. The analyte has been analyzed by a method which is not routinely used in this concentration range. Refer to the text for a discussion of any impact this may have on the usability of the data.

54. The results for this analyte have been qualified due to the nonconformance with the required holding time limitations.

55. The data for this analyte has been rejected. Refer to the text for discussion.

56. This sample was analyzed for dissolved metals. A dissolved matrix spike, serial dilution and duplicate were not performed. The quality assurance information for these analyses from the total metal data may not apply. Only those footnotes which concern the calibration quality assurance were noted for these samples.

57. The reported detection limit could not be confirmed from the initial calibration used for this analysis. The data was reported in the basis of the concentration of the lowest standard used in the initial calibration.

58. Raw data for this analysis was not found in the report. The data should be considered to be tentative until this is reviewed.

59. The laboratory flagged the data with a qualifier that did not apply to this sample matrix. The qualifier was removed in the data validation summary table. The data was flagged with the "J" qualifier to indicate that it was not possible to determine if any matrix interference would affect the end use of the data.

60. The raw data included in the report could not be followed. The results of this analysis should be considered tentative until the discrepancy has been resolved.

FURNACE ANALYSES

61. The **duplicate injections are outside of the 20% RSD** limits and the sample has **not been rerun** once was required (J).

62. The duplicate injections were reanalyzed and the RPD was still less than 20% (J).

63. The results of the analyte are greater than the IDL, but the recovery of the post digestion spike is less than 40%.

64. The recovery of the post digestion spike is between 10% and 40%. The results of the sample are less than the IDL (UJ).

65. The recovery of the post digestion spike is less than 10% and the sample results are less than the IDL (R).

66. The sample absorbance is less than 50% of the post digestion spike absorbance, and greater than the IDL, and the post digestion spike is outside of the 85% - 115% limits.

67. The sample absorbance is less than 50% of the post digestion spike absorbance, and less than the IDL, and the post digestion spike is outside of the 85% - 115% limits.

68. The method of standard additions was required, but not performed (J).

69. The sample was analyzed by standard additions, but the required spiking concentrations were not used. (J).

70. The correlation coefficient of the method of standard addition was less than 0.990. The data for this sample would be technically rejected according to the EPA's data validation guidelines (HW-2, 1/92, A.1.22.2). The data should be examined in terms of the specific data quality objectives of the site. The results may be usable to estimate the degree of contamination at the site. The correlation coefficient is discussed in the text.

71. The analyses were not performed according to CLP methodology. Extensive problems were found and the data should not be used (See text).

72. The %RSD for the two ICP duplicates was greater than 50%. The results should be considered to be highly estimated.

73. The results of this analyte were qualified because the linear regression of the initial calibration was less than 0.995.

74. This sample was analyzed by furnace, but it was not analyzed in duplicate and a post digestion spike was not analyzed. The data for this analyte is rejected according to Section A.1.21.1 of the HW-2 EPA data validation protocols.

LINEAR RANGE

75. The data was reported from a concentration greater than the linear range.

PERCENT SOLIDS

80. All data for this sample is qualified due to the very high moisture content. The percent solids for this sample were between 10% and 50%.

ICP INTERFERENCE CHECK SAMPLE

81. The data for this analyte were rejected because its recovery in the ICP Interference Check Sample (solution AB) was less than 50%.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Water Volatile Organic Analyses
Samples Received August 18th through 25th, 1998
Sample Delivery Group: MW0D
Laboratory Reference Numbers:

Holding Blank 1
Holding Blank 2

Received 8/18
Trip Blank (10)
TSL-MW-0D

Received 8/19
Trip Blank (12)
TSL-MW-6
TSL-MW-8
Trip Blank
TSL-MW-0
TSL-MW-9

Received 8/20
Trip Blank (13)
TSL-MW-7

Received 8/21
Trip Blank (14)
TSL-MW-5D
TSL-MW-5DMS
TSL-MW-5DMSD

Received 8/22
Trip Blank
TSL-MW-15

Received 8/25
Trip Blank (20)
TSL-MW-1
TSL-MW-14
TSL-MW-2
TSL-MW-4
TSL-MW-5

Soil samples were received for analyses of the volatile organic TCL analyte list by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

- Data Completeness
* - GC/MS Tuning
* - Holding Times
- Calibrations
- Laboratory Blanks
- Field Blank
- Trip Blanks
* - Holding Blank
* - System Monitoring Compound Recoveries
* - Internal Standard Recoveries
* - Matrix Spike / Matrix Spike Duplicate
* - Blank Spike
* - Compound Identification
* - Compound Quantitation
- Instrument Detection Limit

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

The laboratory's case narrative states that "sample TSL-MW-1, TSL-MW-6 and TSL-MW-8 exhibited pH readings of 7. Samples TSL-MW-0 exhibited a pH of four; sample TSL-MW-2 exhibited a pH of three. All other samples were preserved to a pH of less than 2.

The laboratory's case narrative also notes that "due to excessive foaming of the samples during the purge cycle, samples TSL-MW-7 and TSL-MW-15 required dilutions of 2.

Instrument detection limits were not submitted with this data package.

Nancy J. Potak
November 5, 1998

Holding Times

All samples were analyzed within the 10 day holding time required by the NYS DEC's ASP program.

Tunes

No problems were detected with any of the tunes associated with the samples of this delivery group.

System Monitoring Compound Recoveries

All system monitoring compound recoveries were within the NYS DEC's ASP quality assurance limits with the one exception of the initial analysis of sample TSP-MW-10. In this sample the recovery of toluene-d8 system monitoring compound (78%) was below the 88% - 110% quality assurance limit.

Calibrations

No problems were found with the one initial calibration associated with the samples of this delivery group.

The percent difference of vinyl chloride (39%) was above the 25% quality assurance limits in the third continuing calibration.

The data for this compound was flagged with the "J" qualifier and footnoted with #15 in the data validation summary table in the samples which were analyzed on this calibration.

Section D 9.3.5.4 of the NYS DEC ASP Manual states that up to 2 compounds may fail the criteria and still meet the minimum response factor and %RSD requirements. These compounds must have a minimum RRF greater or equal to 0.010 and the %RSD must be less than or equal to 40%. This requirement was satisfied in all of the calibrations of this sample delivery group.

Matrix Spike / Matrix Spike Duplicate

Sample TSL-MW-5D of this sample delivery group was used for the matrix spike and matrix spike duplicate. All recoveries and RPDs were within the required quality assurance limits.

Blank Spike

Two blank spikes were analyzed with this sample delivery group. All blank spike recoveries were within the required quality assurance limits.

Method Blanks

A low concentration of toluene (4J ug/l) was detected in the last of the three method blanks associated with the analyses of these samples. Toluene was negated whenever it was detected in one of the samples which were analyzed with this method blank.

Trip Blanks

Trip blanks were received on every day that the samples were received by the laboratory.

Low concentration of a non-target compound were detected in the trip blanks received 8/21 and 8/22. This compound was not detected in the samples which were associated with these trip blanks.

A low concentration of toluene (4BJ) was detected in the trip blank received on 8/25. This was negated in both the trip blank and the samples received on this date due to the presence of toluene in the method blank.

Field Blank

A field blank was not collected with this sample delivery group.

Holding Blank

No volatile compounds were detected in either of the two holding blanks.

Internal Standard Areas and Retention Times

No problems were found with the recoveries or retention times in any of the internal standards associated with the samples of this delivery group.

Instrument Detection Limits

Instrument detection limits were not included with this sample delivery group.

Sample Results

The laboratory's case narrative states that "sample TSL-MW-1, TSL-MW-6 and TSL-MW-8 exhibited pH readings of 7. Samples TSL-MW-0 exhibited a pH of four; sample TSL-MW-2 exhibited a pH of three. All other samples were preserved to a pH of less than 2.

The laboratory's case narrative also notes that "due to excessive foaming of the samples during the purge cycle, samples TSL-MW-7 and TSL-MW-15 required dilutions of 2.

No other problems were found with the reported results of any of the samples of this delivery group.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Water Semivolatile Organic Analyses
Samples Received August 18th through 25th, 1998
Sample Delivery Group: MW0D
Laboratory Reference Numbers:

Received 8/18
TSL-MW-0D

Received 8/19
TSL-MW-6
TSL-MW-8
TSL-MW-0
TSL-MW-9

Received 8/20
TSL-MW-7

Received 8/21
TSL-MW-5D
TSL-MW-5DMS
TSL-MW-5DMSD

Received 8/22
TSL-MW-15

Received 8/25
TSL-MW-1
TSL-MW-14
TSL-MW-2
TSL-MW-4
TSL-MW-5

Water samples were received for analyses of the Semivolatile organic TCL analyte list by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

- Data Completeness
- GC/MS Tuning
* - Holding Times
- Calibrations
- Laboratory Blanks
- Field Blank
- Surrogate Compound Recoveries
* - Internal Standard Recoveries
- Matrix Spike / Matrix Spike Duplicate
- Blank Spike
* - Compound Identification
* - Compound Quantitation
- Instrument Detection Limit

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

Instrument detection limits were not submitted with this data package.

No other significant problems were found with the Semivolatile analyses of these samples which would affect the end use of the data.

Nancy J. Potak
November 12, 1998

Holding Times

All samples were extracted and analyzed within the holding times required by the NYS DEC's ASP program.

Tunes

No problems were detected with any of the tunes associated with the samples of this delivery group.

Surrogate Compound Recoveries

All surrogate compound recoveries were within the NYS DEC's ASP quality assurance limits with the following exceptions:

Sample	S1	S2	S3	S4	S5	S6	S7 *	S8 *
TSL-MW-10								25
TSL-MW-1								29
TSL-MW-15								30
TSL-MW-6								22
TSL-MW-7								32
TSL-MW-8								30

The recoveries of surrogates S7 (2,4,6-tribromophenol) and S8 (terphenyl-d14) are only advisory and the samples were not required to be reanalyzed if their recoveries were outside of the quality assurance limits.

The NYS DEC's ASP protocols allow for the recovery of one acid and one base/neutral surrogate (as long as the recovery is greater than 10%) to be outside of the required limits. The sample data were not required to be qualified for the slightly high recoveries of these surrogates.

All other surrogate compound recoveries were within the NYS DEC's ASP quality assurance limits.

Calibrations

The percent difference of 4-bromophenyl phenyl ether (20.7%) was above the 20.5% quality assurance limit in the first initial calibration. The percent difference of benzo(k)fluoranthene (28%) was above this quality assurance limit in the second of the two initial calibrations.

The data for these compounds were flagged with the "J" qualifier and footnoted with #15 in the data validation summary table.

Section D 9.3.5.4 of the NYS DEC ASP Manual states that up to 4 compounds may fail the criteria and still meet the minimum response factor and %RSD requirements. These compounds must have a minimum RRF greater or equal to 0.010 and the %RSD must be less than or equal to 40%. This requirement was satisfied in all of the calibrations of this sample delivery group.

No problems were detected with any of the continuing calibrations.

Matrix Spike / Matrix Spike Duplicate

Sample TSL-MW-5D of this sample delivery group was used for the matrix spike and matrix spike duplicate for the soil samples. Several recoveries were outside of the acceptable limits:

Compound	MS %Rec	MSD %Rec	QC Limits	RPD Limits
Phenol			12 - 110	42
2-Chlorophenol			27 - 123	40
1,4-Dichlorobenzene			37 - 97	28
N-Nitroso-di-n-prop.			41 - 116	38
1,2,4-Trichlorobenzene			39 - 98	28
4-Chloro-3-methylphenol			23 - 97	42
Acenaphthene			46 - 118	31
4-Nitrophenol	87%	94%	10 - 80	50
2.4-Dinitrotoluene			24 - 96	38
Pentachlorophenol			9 - 103	50
Pyrene			26 - 127	31

The high recoveries of 4-nitrophenol and pentachlorophenol do not affect the end use of the data.

Blank Spike

All blank spike recoveries were within the required quality assurance limits with the one exception of the recoveries of 4-nitrophenol (96%, 105%, 113% and 128%) in each of the four blank spikes. These recoveries were above the 80% quality assurance limit.

4-Nitrophenol was not detected in any of the samples of this delivery group and the high recoveries do not affect the end use of the data.

Method Blanks

Five method blanks were analyzed with this sample delivery group:

No compounds were detected in SBLK18 (associated with sample TSL-MW-0D).

One non-target compound was present in SBLK20. this was not detected in the one associated sample (TSL-MW-7).

No compounds were detected in SBLK22 (associated with samples TSL-MW-5D and TSL-MW-15).

Three non-target compounds were detected in SBLK23.

One non-target compound was detected in SBLK34

These compounds were negated according to standard EPA protocols whenever they were detected in an associated sample.

Several non-target compounds (one to three in the different blanks) were detected in each of the three method blanks. These were negated whenever they were detected in an associated samples.

Field Blank

A field blank was not received with this sample delivery group.

Internal Standard Areas and Retention Times

No problems were found with the internal standard recoveries.

Instrument Detection Limits

Instrument detection limits were not included with this sample delivery group.

Sample Results

Sample TSL-MW-14

The spectra for the non-target alcohol (2J ug/l) eluting at 26.05 was not included in the copy of the analytical report submitted for validation. This was not requested from the laboratory since it does not significantly affect the end use fo the data.

No other problems were found with the reported results of any of the samples of this delivery group.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Water Volatile Organic Analyses
Samples Received August 25th through 28th, 1998
Sample Delivery Group: SLMW10
Laboratory Reference Numbers:

Holding Blank

Received 8/25
- TSL-MW-10
- TSL-MW-10DL

Received 8/26
- Trip Blank
- TSL-MW-12
- TSL-MW-12D
- TSL-MW-3
- TSL-MW-Field Dup

Received 8/27
- Trip Blank
- Field Blank
- TSL-SW-20
- TSL-SW-20MS
- TSL-SW-20MSD
- TSL-SW-21
- TSL-SW-22
- TSL-SW-25

Received 8/28
- TSL-SW-23
- TSL-SW-24

Water samples were received for analyses of the volatile organic TCL analyte list by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

- Data Completeness
* - GC/MS Tuning
* - Holding Times
- Calibrations
* - Laboratory Blanks
- Field Blank
- Trip Blanks
* - Holding Blank
- System Monitoring Compound Recoveries
* - Internal Standard Recoveries
* - Matrix Spike / Matrix Spike Duplicate
* - Blank Spike
* - Compound Identification
* - Compound Quantitation
- Instrument Detection Limit

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

Sample TSL-MW-10 was reanalyzed with a 1,000X dilution due to very high concentrations of 12 compounds which were above the linear range in the initial analysis:

In the medium level analysis, only 1,2-dichloroethene, 1,1,1-trichloroethane, trichloroethene, toluene, ethylbenzene and xylene were detected. Since vinyl chloride, acetone, 1,1-dichloroethene, 1,1-dichloroethane and styrene were not detected in the medium level analysis, their concentrations reported in the initial low level analysis should be used for the final reporting, but these concentrations should be considered to be highly estimated. The data for these compounds were flagged with the "J" qualifier and footnoted with the "See Text" notation in the data validation summary table.

All of the final data, with the exceptions 1,2-dichloroethene, 1,1,1-trichloroethane, trichloroethene, toluene, ethylbenzene and xylene should be taken from the initial low level analysis of this sample.

The problems with the recoveries of the system monitoring compounds in the undiluted analysis should also be noted.

The laboratory's case narrative states that "sample TSL-MW-3 exhibited a pH of 7. All other samples were preserved to a pH of less than 2.

The laboratory's case narrative also notes that "due to excessive foaming of the samples during the purge cycle, samples TSL-MW-3 and TSL-MW-12 were analyzed at an initial dilution of 2.

Instrument detection limits were not submitted with this data package.

Trip blanks were only received with the samples collected on 8/26 and 8/27.

Nancy J. Potak

November 1, 1998

Holding Times

All samples were analyzed within the 10 day holding time required by the NYS DEC's ASP program.

Tunes

No problems were detected with any of the tunes associated with the samples of this delivery group.

System Monitoring Compound Recoveries

All system monitoring compound recoveries were within the NYS DEC's ASP quality assurance limits with the one exception of the initial analysis of sample TSP-MW-10. In this sample the recovery of toluene-d8 system monitoring compound (78%) was below the 88% - 110% quality assurance limit.

This sample was reanalyzed with a medium level analysis due to very high concentrations of 12 compounds and the concentrations of all the system monitoring compounds were within the required quality assurance limits in the reanalysis. The data for the original undiluted analysis of the sample was flagged with the "J" qualifier and footnoted with #83 in the data validation summary table.

Calibrations

No problems were found with the one initial calibration associated with the samples of this delivery group.

Several minor problems were found with the continuing calibrations:

The percent difference of vinyl chloride (33%, 39% and 39%) were above the 25% quality assurance limits in all three of the continuing calibrations.

The percent difference of bromomethane (30%) was also above the 25% quality assurance limit in the third continuing calibration.

The data for these compounds were flagged with the "J" qualifier and footnoted with #15 in the data validation summary table in the samples which were analyzed with these respective calibrations.

Section D 9.3.5.4 of the NYS DEC ASP Manual states that up to 2 compounds may fail the criteria and still meet the minimum response factor and %RSD requirements. These compounds must have a minimum RRF greater or equal to 0.010 and the %RSD must be less than or equal to 40%. This requirement was satisfied in all of the calibrations of this sample delivery group.

Matrix Spike / Matrix Spike Duplicate

Sample TSL-MW-20 of this sample delivery group was used for the matrix spike and matrix spike duplicate. All recoveries and RPDs were within the required quality assurance limits.

Blank Spike

Two blank spikes were analyzed with this sample delivery group. All blank spike recoveries were within the required quality assurance limits.

Method Blanks

Low concentrations of toluene (4J ug/l and 1J ug/l) were detected in two of the three method blanks associated with the analyses of these samples. The toluene data in all samples, with the one exception of sample TSL-MW-10 (toluene concentration in this sample was 93,000 ug/l) were negated due to the presence of toluene in the method blank.

Trip Blanks

Trip blanks were only received with the samples collected on 8/26 and 8/27.

Only low concentration of toluene (1BJ and 4BJ) were detected in the trip blanks. These were negated in both samples due to the presence of toluene in the method blanks.

Field Blank

Low concentrations of chloroform (8J ug/l) and bromodichloromethane (3J ug/l) were detected in the one field blank associated with the samples of this delivery group. Neither of these compounds were detected in any of the samples of this delivery group and their presence in the field blank did not affect the end use of the data.

Holding Blank

A low concentration of a toluene (1BJ ug/l) was also detected in the holding blank. The toluene in the holding blank was negated due to its presence in the associated method blank.

Internal Standard Areas and Retention Times

No problems were found with the recoveries or retention times in any of the internal standards associated with the samples of this delivery group.

Instrument Detection Limits

Instrument detection limits were not included with this sample delivery group.

Sample Results

The laboratory's case narrative states that "sample TSL-MW-3 exhibited a pH of 7. All other samples were preserved to a pH of less than 2.

The laboratory's case narrative also notes that "due to excessive foaming of the samples during the purge cycle, samples TSL-MW-3 and TSL-MW-12 were analyzed at an initial dilution of 2.

Sample TSL-MW-10

This sample was reanalyzed with a 1,000X dilution due to very high concentrations 12 compounds which were above the linear range in the initial analysis.

In the medium level analysis, only 1,2-dichloroethene, 1,1,1-trichloroethane, trichloroethene, toluene, ethylbenzene and xylene were detected. Since vinyl chloride, acetone, 1,1-dichloroethene, 1,1-dichloroethane and styrene were not detected in the medium level analysis, their concentrations reported in the initial low level analysis should be used for the final reporting, but these concentrations should be considered to be highly estimated. The data for these compounds were flagged with the "J" qualifier and footnoted with the "See Text" notation in the data validation summary table.

All of the final data, with the exceptions 1,2-dichloroethene, 1,1,1-trichloroethane, trichloroethene, toluene, ethylbenzene and xylene should be taken from the initial low level analysis of this sample.

The problems with the recoveries of the system monitoring compounds in the undiluted analysis should also be noted.

No other problems were found with the reported results of any of the samples of this delivery group.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Water Semivolatile Organic Analyses
Samples Received August 25th through 28th, 1998
Sample Delivery Group: SLMW10
Laboratory Reference Numbers:

Received 8/25
- TSL-MW-10
- TSL-MW-10DL

Received 8/26
- TSL-MW-12
- TSL-MW-12D
- TSL-MW-3
- TSL-MW-Field Dup

Received 8/27
- Field Blank
- TSL-SW-20
- TSL-SW-20MS
- TSL-SW-20MSD
- TSL-SW-21
- TSL-SW-22
- TSL-SW-25

Received 8/28
- TSL-SW-23
- TSL-SW-24

Water samples were received for analyses of the semivolatile organic TCL analyte list by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

- Data Completeness
* - GC/MS Tuning
* - Holding Times
- Calibrations
* - Laboratory Blanks
- Field Blank
- Surrogate Compound Recoveries
* - Internal Standard Recoveries
- Matrix Spike / Matrix Spike Duplicate
- Blank Spike
* - Compound Identification
* - Compound Quantitation
- Instrument Detection Limit

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

Instrument detection limits were not submitted with this data package.

No other significant problems were found with the Semivolatile analyses of these samples which would affect the end use of the data.

Several minor items are noted below.

Nancy J. Potak

November 12, 1998

Holding Times

All samples were extracted and analyzed within the holding times required by the NYS DEC's ASP program.

Tunes

No problems were detected with any of the tunes associated with the samples of this delivery group.

Surrogate Compound Recoveries

All surrogate compound recoveries were within the NYS DEC's ASP quality assurance limits with the following exceptions:

Sample	S1	S2	S3	S4	S5	S6	S7 *	S8 *
TSL-MW-10DL		135%						
TSL-SW-20 MSD								32%
TSL-SW-21								32%
TSL-SW-22								32%
TSL-SW-23								30%
TSL-SW-25								28%

The recoveries of surrogates S7 (2,4,6-tribromophenol) and S8 (terphenyl-d14) are only advisory and the samples were not required to be reanalyzed if their recoveries were outside of the quality assurance limits.

In sample TSL-MW-10DL (Lab. #: A8356404), the recovery of the 2-fluorophenol surrogate (135%) was above the 110% quality assurance limit. This slightly high recovery does not affect the end use of the data. This sample was initially analyzed undiluted but was reanalyzed with a 5X dilution due to high concentrations of several compounds. The high recovery in the dilution does not affect the end use of the data.

The NYS DEC's ASP protocols allow for the recovery of one acid and one base/neutral surrogate (as long as the recovery is greater than 10%) to be outside of the required limits. The sample data were not required to be qualified for the slightly high recoveries of these surrogates.

All other surrogate compound recoveries were within the NYS DEC's ASP quality assurance limits.

Calibrations

The percent difference of 4-bromophenyl phenyl ether (20.7%) was above the 20.5% quality assurance limit in the first initial calibration. The percent difference of benzo(k)fluoranthene (28%) was above this quality assurance limit in the second of the two initial calibrations.

The data for these compounds were flagged with the "J" qualifier and footnoted with #15 in the data validation summary table.

Section D 9.3.5.4 of the NYS DEC ASP Manual states that up to 4 compounds may fail the criteria and still meet the minimum response factor and %RSD requirements. These compounds must have a minimum RRF greater or equal to 0.010 and the %RSD must be less than or equal to 40%. This requirement was satisfied in all of the calibrations of this sample delivery group.

No problems were detected with any of the continuing calibrations.

Matrix Spike / Matrix Spike Duplicate

Sample TSL-SW-20 of this sample delivery group was used for the matrix spike and matrix spike duplicate. Several recoveries were outside of the acceptable limits:

Compound	MS %Rec	MSD %Rec	QC Limits	RPD Limits
Phenol			12 - 110	42
2-Chlorophenol			27 - 123	40
1,4-Dichlorobenzene			37 - 97	28
N-Nitroso-di-n-prop.			41 - 116	38
1,2,4-Trichlorobenzene			39 - 98	28
4-Chloro-3-methylphenol			23 - 97	42
Acenaphthene			46 - 118	31
4-Nitrophenol	95%	86%	10 - 80	50
2.4-Dinitrotoluene			24 - 96	38
Pentachlorophenol	110%	106%	9 - 103	50
Pyrene			26 - 127	31

The high recoveries of 4-nitrophenol and pentachlorophenol do not affect the end use of the data.

Blank Spike

All blank spike recoveries were within the required quality assurance limits with the one exception of the recoveries of 4-nitrophenol (113%, 128% and 104%) in each of the three blank spikes. These recoveries were above the 80% quality assurance limit.

4-Nitrophenol was not detected in any of the samples of this delivery group and the high recoveries do not affect the end use of the data.

Method Blanks

Several non-target compounds (one to three in the different blanks) were detected in each of the three method blanks. These were negated whenever they were detected in an associated samples.

Some of the non-target compounds in the samples were not flagged with the "B" qualifier by the laboratory even though they were detected in an associated samples. The "B" qualifier was added in bold in the data validation summary form. The laboratory was not contacted to revise these forms since the change does not significantly affect the end use of the data.

Field Blank

Two non-target compounds were detected in the one field blank associated with the samples of this delivery group. These were negated and flagged with footnote #5 whenever they were detected in a sample.

Internal Standard Areas and Retention Times

No problems were found with the internal standard recoveries.

Instrument Detection Limits

Instrument detection limits were not included with this sample delivery group.

Sample Results

Sample TSL-MW-10 (Lab. #: A8349901)

The recovery of the 2-fluorophenol surrogate (135%) was above the 110% quality assurance limit in the diluted analysis of this sample. This slightly high recovery does not affect the end use of the data. This sample was initially analyzed undiluted but was reanalyzed with a 5X dilution due to high concentrations of two compounds. The high recovery in the dilution does not affect the end use of the data.

The data for all target compounds, with the exceptions of 2-methylphenol and 4-methylphenol should be taken from the initial analysis.

The data for the non-target compound eluting at 2.88 minutes should be included from the 5X dilution. This probably was not picked up in the undiluted analysis due to interference.

The presence of the non-target compound identified as bezoic acid (1J ug/l) eluting at 12.60 minutes could not be verified during the data validation. The laboratory's handwritten notations (page 612) could not be followed. The laboratory was not contacted to resolve this discrepancy since it did not appear to affect the end use of the data.

No other problems were found with the reported results of any of the samples of this delivery group.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Water Pesticide and PCB Analyses
Samples Received August 18th through 25th, 1998
Sample Delivery Group: MW0D
Laboratory Reference Numbers:

Received 8/18
- TSL-MW-0D

Received 8/19
- TSL-MW-6
- TSL-MW-8
- TSL-MW-0
- TSL-MW-9

Received 8/20
- TSL-MW-7

Received 8/21
- TSL-MW-5D
- TSL-MW-5DMS
- TSL-MW-5DMSD

Received 8/22
- TSL-MW-15

Received 8/25
- TSL-MW-1
- TSL-MW-14
- TSL-MW-2
- TSL-MW-4
- TSL-MW-5

Water samples was received for analyses of the pesticide and PCB TCL analyte list by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

- Data Completeness
* - Holding Times
* - Laboratory Blanks
- Field Blanks
- Surrogate Recoveries
* - Surrogate Retention Times
* - Matrix Spike / Matrix Spike Duplicate
- Blank Spike
- Calibrations
- Analyte Resolutions
- Performance Evaluation Mixtures
- IND A and IND B Standards
* - Florisil Cartridge Check
- GPC Calibration
* - Compound Identification
- Method Detection Limit

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

The minor problems with the calibrations should be noted.

No significant problems were found with the analyses of these samples which would affect the end use of the data.

Nancy J. Potak
November 30, 1998

Holding Times

All extractions and analyses were performed within the required holding times.

Surrogate Recoveries

All surrogate recoveries were within the required quality assurance limits with the following exceptions:

	TCX 1	TCX 2	DCB 1	DCB 2
MW5D			28%	27%
MW5D MS			29%	28%
TSLMW15			23%	18%
TSLMW7			29%	28%

It is possible that low concentrations of pesticides and PCBs may have been overlooked in the samples of this delivery group.

EPA data validation guidelines do not require the data to be qualified for a low recovery of one surrogate.

Matrix Spike

Sample TSL-SW-20 of this sample delivery group was used for the matrix spike and matrix spike duplicate. All recoveries and RPDs were within the required quality assurance limits.

Blank Spike

A total of 8 blank spikes were analyzed with this sample delivery group. The first four of these were grouped as two pairs of MS/MSDs.

All of the blank spike recoveries and RPD's were within the acceptable limits with the following exceptions in the MS/MSD pair MSB02/MSBD02:

Compound	MS %Rec	MSD %Rec	QC Limits	RPD	Limits
gamma-BHC			56 - 123		15
heptachlor			40 - 131		20
aldrin			40 - 120	27	22
dieldrin			52 - 126		18
endrin	130	130	56 - 121		21
DDT			38 - 127		27

These problems were not significant enough to affect the end use of the data. The data were not required to be qualified for these quality assurance problems.

Initial Calibrations

No problems were found with any of the initial calibrations.

The percent RSD of each of the single component pesticides must be less than 20%. The percent RSD of the two surrogates must be less than or equal to 30%.

Up to two single compound target compounds per column may exceed the 20% limit for the %RSD, but those compounds must have a percent RSD of less than or equal to 30.0%. All of these requirements were met in the initial calibration.

Analyte Resolution

All percent resolutions were greater than 60% on both the RTX-5 and DB1701 columns.

Performance Evaluation Mixtures

One minor problem was found with the resolution between gamma-BHC and beta-BHC (89% - PEM01). The NYS DEC ASP program requires that the resolution between all compounds in this standard be 90% (page D-25).

The RPD of methoxychlor in PEM01 on the DB17 column (28%) was greater than the 25% quality assurance limit.

The relative percent difference of the calculated amount and the true amount for each of the single component pesticides and surrogates in the PEMs must be less than or equal to 25%.

No other problems were found with any of the performance evaluation mixtures.

Continuing Calibrations - IND A & IND B

All percent resolutions were greater than 90% on both the DB-608 and DB-1701 columns.

The relative percent difference of the calculated amount and the true amount for each of the single component pesticides and surrogates in the INDA and INDB standards must be less than or equal to 25%.

No other problems were detected with the continuing calibrations.

Surrogate Retention Times

All surrogate retention times were within the required limits for both surrogates and on both columns.

Florisil Cartridge Check

All recoveries were within the 80% - 120% quality assurance limits.

The florisil cartridge check was performed on 2/17/98.

GPC Calibration

A GPC cleanup was not performed on any of the samples of this delivery group.

Method Blanks

No compounds were detected in any of the method blanks.

Calibration Blanks

No compounds were detected in any of the calibration blanks.

Field Blanks

No compounds were detected in the one field blank associated with the samples of this delivery group.

Instrument Detection Limits

The instrument detection limits were not included with this sample delivery group.

Sample Results

Sample TSLMW8 (Lab. #: A8340302)

The laboratory reported the higher methoxychlor concentration (0.113 ug/l) instead of the lower (0.0522 ug/l) of the two values. The lower concentration was reported in the data validation summary table.

No other problems were detected with any of the samples.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Water Pesticide and PCB Analyses
Samples Received August 25th through 28th, 1998
Sample Delivery Group: SLMW10
Laboratory Reference Numbers:

Received 8/25
- TSL-MW-10

Received 8/26
- TSL-MW-12
- TSL-MW-12D
- TSL-MW-3
- TSL-MW-Field Dup

Received 8/27
- Field Blank
- TSL-SW-20
- TSL-SW-20MS
- TSL-SW-20MSD
- TSL-SW-21
- TSL-SW-22
- TSL-SW-25

Received 8/28
- TSL-SW-23
- TSL-SW-24

Water samples were received for analyses of the pesticide and PCB TCL analyte list by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

- Data Completeness
* - Holding Times
- Laboratory Blanks
- Field Blanks
* - Surrogate Recoveries
* - Surrogate Retention Times
- Matrix Spike / Matrix Spike Duplicate
- Blank Spike
- Calibrations
* - Analyte Resolutions
- Performance Evaluation Mixtures
- IND A and IND B Standards
* - Florisil Cartridge Check
- GPC Calibration
* - Compound Identification
- Method Detection Limit

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

No significant problems were found with the analyses of these samples which would affect the end use of the data.

Nancy J. Potak
October 24, 1997

Holding Times

All extractions and analyses were performed within the required holding times.

Surrogate Recoveries

All surrogate recoveries were within the required quality assurance limits.

Matrix Spike

Sample TSL-SW-20 of this sample delivery group was used for the matrix spike and matrix spike duplicate. All recoveries and RPDs were within the required quality assurance limits with the one exception of the recovery of endrin (131%) in the matrix spike. This was above the 131% quality assurance limit.

The sample data were not required to be qualified for this high recovery.

Blank Spike

A total of 5 blank spikes were analyzed with this sample delivery group. The first four of these were grouped as two pairs of MS/MSDs.

All of the blank spike recoveries and RPD's were within the acceptable limits with the one exception of the RPD of aldrin (23%) in the first pair of MS/MSD. This was just above the 23% quality assurance limit.

The data were not required to be qualified for this high RPD.

Initial Calibrations

No problems were found with any of the initial calibrations.

The percent RSD of each of the single component pesticides must be less than 20%. The percent RSD of the two surrogates must be less than or equal to 30%. Up to two single compound target compounds per column may exceed the 20% limit for the %RSD, but those compounds must have a percent RSD of less than or equal to 30.0%. All of these requirements were met in the initial calibration.

Analyte Resolution

All percent resolutions were greater than 60% on both the RTX-5 and DB1701 columns.

Performance Evaluation Mixtures

One minor problem was found with the resolution between gamma-BHC and beta-BHC (89% - PEM01). The NYS DEC ASP program requires that the resolution between all compounds in this standard be 100% (page E-89).

The RPD of methoxychlor in PEM01 on the DB17 column (28%) was greater than the 25% quality assurance limit.

The relative percent difference of the calculated amount and the true amount for each of the single component pesticides and surrogates in the PEMs must be less than or equal to 25%.

No other problems were found with any of the performance evaluation mixtures.

Continuing Calibrations - IND A & IND B

All percent resolutions were greater than 90% on both the DB-608 and DB-1701 columns.

The relative percent difference of the calculated amount and the true amount for each of the single component pesticides and surrogates in the INDA and INDB standards must be less than or equal to 25%.

No other problems were detected with the continuing calibrations.

Surrogate Retention Times

All surrogate retention times were within the required limits for both surrogates and on both columns.

Florisil Cartridge Check

All recoveries were within the 80% - 120% quality assurance limits.

The florisil cartridge check was performed on 2/17/98.

GPC Calibration

A GPC cleanup was not performed on any of the samples of this delivery group.

Method Blanks

No compounds were detected in the method blank.

Calibration Blanks

No compounds were detected in any of the calibration blank.

Field Blanks

No compounds were detected in the one field blank associated with the samples of this delivery group.

Instrument Detection Limits

The instrument detection limits were not included with this sample delivery group.

Sample Results

No problems were detected with any of the samples.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Water Total and Dissolved TAL Inorganic and Cyanide Analyses
Samples Received August 18th through 25th, 1998
Sample Delivery Group: MW0D
Laboratory Reference Numbers:

Received 8/18
- TSL-MW-0D
- TSL-MW-0DMS
- TSL-MW-0DMD

Received 8/19
- TSL-MW-6
- TSL-MW-8
- TSL-MW-0
- TSL-MW-9

Received 8/20
- TSL-MW-7

Received 8/21
- TSL-MW-5D
- TSL-MW-5DMS
- TSL-MW-5DMD

Received 8/22
- TSL-MW-15

Received 8/25
- TSL-MW-1
- TSL-MW-14
- TSL-MW-2
- TSL-MW-4
- TSL-MW-5

Water samples were received for TAL metals and cyanide analyses by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

- Data Completeness
* - Holding Times
* - Calibration Verification
- CRDL Standards
* - ICP Interference Check Sample
* - Laboratory Control Sample
- Serial Dilutions
* - Laboratory Blanks
- Field Blanks
* - Preparation Blanks
- Matrix Spike
- Duplicate Analyses
* - Detection Limit Results
* - Linear Range
- Sample Results

* - Indicates that all criteria were met for this parameter.

Data Validation Summary

The recoveries of the potassium matrix spike in both the total and soluble metals analyses of sample MW-5D were above the 150% quality assurance limit for the technical rejection of the data (154% and 178%).

The recovery of the potassium predigestion spike was greater than 150% and the sample results were greater than the IDL in all of the samples of this delivery group. This indicates that severe matrix interference may be present. All samples associated with this quality assurance sample have been flagged with the "N" qualifier. The matrix interference associated with them may not be the same as that of the sample chosen for the matrix spike. Associated data would be rejected according to the EPA HW-2 data validation guidelines (A.1.9.7.4).

It should be noted that the NYS DEC ASP quality assurance protocols do not require that calcium or potassium matrix spikes be analyzed. Since these were analyzed, the data were qualified according to the standard EPA data validation protocols. End users of the data should decide how they want to consider these results for the purposes of the data usability.

The low recoveries of the barium (57%) and calcium (69%) in the total metals analysis of sample MW-5D should also be noted by all end users of the data.

The post digestion spike recovery of barium was only 16%. This type of recovery is not generally found in a post digestion spike and there are no standard data validation protocols for qualifying the data on the basis of the very poor post digestion spike recoveries. The barium data should be considered to be very highly estimated.

The very low matrix spike recoveries in the soluble analysis of sample MW-5D for lead (28%) and silver (15%) would require the technical rejection of the data. Neither of these analytes were flagged with the "N" qualifier by the laboratory in the data validation summary table. These were added in the data validation summary table.

The NYS DEC ASP required spiking concentrations were not used by the laboratory.

The RPD of zinc in the total metals analysis of sample MW-0D was 177%.

The laboratory qualified all of the sample data for each quality assurance parameter that was outside of the required quality assurance limits. For example, the barium data in sample MW-0D was flagged with the "N" qualifier on the basis of the poor chromium spike recovery in sample MW-5D, even though the matrix spike recovery of chromium in sample MW-0D was within the required quality assurance limits. The analytes of sample MW-5D were also qualified with the "*" qualifier for the analyte which was outside of the precision quality assurance in the matrix duplicate of sample MW-0D, even though all of the matrix duplicate analyses were within the quality assurance limits in sample MW-5D itself.

The same problem was encountered with the nine (9) samples which were analyzed for the serial dilutions.

As a result, this makes the qualification of the data very confusing. During the data validation, a laboratory's qualifier was removed in the data validation summary table if that sample itself was analyzed for a matrix spike, matrix duplicate, or serial dilution and no problem was found.

The basis for each qualification is noted in detail below.

Nancy J. Potak
November 22, 1998

Holding Times

All samples were analyzed within the required holding times.

CRDL Standards

Several separate ICP runs were analyzed with this sample delivery group.

Samples MW-1, MW-14 , MW-15, MW-2, MW-4, MW-5 and MW-7 were initially analyzed on the first ICP run. The recoveries of all CRDL standards were within the 80% to 120% quality assurance limits in the first ICP run with the following exception:

Analyte	Initial % Recovery	Final %Recovery
Lead		132%
Selenium	128%	

Low concentrations of lead were found in the total analyses of samples MW-7, MW-14, MW-2 and MW-4. The lead data for these samples were flagged with the "J" qualifier and footnoted with #21 in the data validation summary table.

The soluble analyses of the samples MW-0D, MW-6, MW-8, MW-0 and MW-9 were initially analyzed on the third major ICP run. The recoveries of all CRDL standards were within the 80% to 120% quality assurance limits in the first ICP run with the following exception:

Analyte	Initial % Recovery	Final %Recovery
Zinc	122%	

Low concentrations of zinc were found in the soluble metals analyses of these five samples. The data were flagged with the "J" qualifier and footnoted with #21 in the data validation summary table. The low concentrations of zinc reported may have been slightly overestimated.

Initial and Continuing Calibrations

No problems were detected with any of the calibrations associated with this sample delivery group.

Preparation Blank

Three preparation blanks were analyzed with this sample delivery group.

Several analytes were found in the preparation blanks at concentrations between the absolute value of CRDL and instrument detection limit. The data were not required to be qualified for these low concentrations.

Calibration Blanks

Several analytes were found in the continuing calibration blanks at concentrations between the CRDL and instrument detection limit. The data were not required to be qualified for these low concentrations.

Field Blank

A field blank was not submitted with this sample delivery group.

ICP Interference Check Sample

No problems were detected with the reported ICP Interference Check Sample recoveries.

All of the traditional furnace analytes were included in this standard.

Matrix Spike Recovery

Total Metals Matrix Spike

Two matrix spikes were analyzed for the full TAL list of total metals in this sample delivery group.

Sample MW-0D of this sample delivery group was used for the matrix spike associated with all of the samples of this delivery group. All recoveries were within the 75% - 125% quality assurance limits with the following exceptions:

Analyte	% Rec.	Qualifier
Potassium	127%	33

The recovery of the potassium post digestion spike was 115%.

Sample MW-5D of this sample delivery group was also used for the matrix spike associated with all of the samples of this delivery group. All recoveries were within the 75% - 125% quality assurance limits with the following exceptions:

Analyte	% Rec.	Qualifier	
Barium	57%	31	
Calcium	69%	31	
Potassium	154%	34	Reject

The NYS DEC ASP quality assurance protocols do not require that calcium or potassium matrix spikes be analyzed. Since this was done, the data will be qualified according to the standard EPA data validation protocols. End users of the data should decide how they want to consider these results for the purposes of the data usability.

The low recoveries of the barium and calcium matrix spikes indicate that the data reported for these analytes may have been significantly underestimated.

The post digestion spike recovery of barium was only 16% and the post digestion spike recovery of calcium was only 49%. These types of recoveries in a post digestion spike are not generally found and there are no standard protocols for qualifying the data on the basis of the post digestion spike recoveries.

The data for these analytes were flagged with the "See Text" notation in the data validation summary table. The data for these two analytes are

considered to be very unreliable. The barium data should be considered to be "unusable".

The recovery of the sodium matrix spike in this sample was only 34%, but the concentration of sodium added in the matrix spike (100,000 ug/l) was ten times less than the concentration of sodium in the sample (1,256,656 ug/l). As a result, the data from the recovery of the sodium matrix spike cannot be used to asses the validity of the data. The matrix spike summary form (FORM V, page 1695) was not flagged with the "N" qualifier, but the "N" qualifier was added on all of the sample FORM I's for the total metals analyses of these samples. This was removed from the data validation summary table. The data for sodium in these samples were flagged with the "See Text" notation.

The recovery of the potassium aqueous predigestion spike was greater than 150% and the sample results were greater than the IDL in all of the samples of this delivery group. This indicates that severe matrix interference may be present. All samples associated with this quality assurance sample have been flagged with the "N" qualifier. The matrix interference associated with them may not be the same as that of the sample chosen for the matrix spike. Associated data would be rejected according to the EPA HW-2 data validation guidelines (A.1.9.7.4).

The recovery of the potassium post digestion spike was 144% in this sample. This is also very unusual.

Since two matrix spikes were analyzed with this sample delivery group, the reporting of the qualifiers was somewhat confusing and overlapping between the two sets of digestions. All of the analytes with spike recoveries outside of the quality assurance limits were qualified by the laboratory for each of the total metals samples. They did not take into account the different digestion dates:

Although this is the most conservative way to report the data, barium and calcium were flagged with the "N" qualifier in sample MW-0D even though the recoveries of both of these analytes were within the required quality assurance limits.

The "N" qualifier was removed from these analytes in the data for each were flagged with the "See Text" notation in the data validation summary table.

The "R" qualifier for the potassium data in sample MW-0D was changed to the "J" qualifier since the recovery of the potassium matrix spike was less than the 150% cut off point for the rejection of the data. The "N" flag was also removed from the calcium and barium data in sample MW-0D since the recoveries of these two analytes were within the required quality assurance limits.

Soluble Metals Matrix Spike

Two matrix spikes were analyzed for the full TAL list of soluble metals in this sample delivery group.

Sample MW-0D of this sample delivery group was used for the soluble matrix spike associated with all of the samples of this delivery group. All recoveries

were within the 75% - 125% quality assurance limits with the following exceptions:

Analyte	% Rec.	Qualifier
Potassium	132%	33

The NYS DEC ASP quality assurance protocols do not require that a potassium matrix spike be analyzed. Since this was done, the data will be qualified according to the standard EPA data validation protocols. End users of the data should decide how they want to consider these results for the purposes of the data usability.

The "N" qualifier for potassium was not added to any of the sample FORM I's. This was added in the data validation summary table along with the "See Text" notation. The potassium data were also flagged with the "J" qualifier and footnoted with #33 in the data validation summary table.

Sample MW-5D of this sample delivery group was also used for the matrix spike associated with all of the samples of this delivery group. All recoveries were within the 75% - 125% quality assurance limits with the following exceptions:

Analyte	% Rec.	Qualifier	
Lead	28%	32	Reject
Potassium	178%	34	Reject
Silver	15%	32	Reject

The NYS DEC ASP quality assurance protocols do not require that calcium or potassium matrix spikes be analyzed. Since this was done, the data will be qualified according to the standard EPA data validation protocols. End users of the data should decide how they want to consider these results for the purposes of the data usability.

The recovery of the aqueous predigestion spike was less than 30% for both lead and silver. Significant problems were found with matrix interference. All samples associated with this quality assurance sample have been flagged with the "N" qualifier. The data are unusable. The matrix interference associated with them may not be the same as that of the sample chosen for the matrix spike (R). Associated data would be rejected according to the EPA HW-2 data validation guidelines (A.1.9.7.4).

None of these analytes were flagged with the "N" qualifier by the laboratory in the data validation summary table. These were added in the data validation summary table with the "See Text" notation.

The "R" qualifier for the potassium data in sample MW-0D was changed to the "J" qualifier since the recovery of the potassium matrix spike was less than the 150% cut off point for the rejection of the data. The "N" qualifiers and "reject" notations were removed from lead and silver in sample MW-5D since their recoveries were within the required quality assurance limits.

The matrix spikes were generally added at much higher concentrations than those required of the NYS DEC ASP program. These higher concentrations may result in slightly higher percent recoveries than those that would have been obtained if the correct concentrations were added.

Post digestion spikes were not analyzed for the soluble matrix spikes.

For the purposes of the data validation, all of the analytes which were outside of the quality assurance limits in either of the two matrix spikes were flagged with the "N" qualifier in the data validation summary table.

Duplicate Analysis

Total Metals Matrix Duplicate

Two matrix duplicates were analyzed for the full TAL list of total metals in this sample delivery group.

Sample MW-0D of this sample delivery group was used for the matrix duplicate associated with all of the samples of this delivery group. All RPDs were within the 20% quality assurance limit with the following exception:

Analyte	RPD	Qualifier	
Zinc	177%	43	Reject

An RPD of 177% for a water sample is extremely unusual. Although the EPA data validation protocols only qualify data with RPD's above 50%, the 177% RPD is so unusual that the zinc data cannot be considered to be usable. The zinc data were flagged with the "R" qualifier and footnoted with #43 in the data validation summary table.

Sample MW-5D of this sample delivery group was also used for a matrix duplicate. All RPDs were within the 20% quality assurance limit

Soluble Metals Duplicate Analyses

Both samples MW-0D and MW-5D were also used for the soluble metals precision analyses. All RPDs were within the 20% quality assurance limit.

Laboratory Control Sample

Two LCS standards were analyzed with this sample delivery group.

No problems were detected with the recoveries of either water LCS standards.

Serial Dilutions

Total Metals Serial Dilutions

A grand total of nine (9) serial dilutions were analyzed with this sample delivery group:

Sample MW-0D of this sample delivery group was used for the first serial dilution. All of the percent differences which could be calculated less than the 10% assurance limit with the following exceptions:

Analyte	% D.	Qualifier
Potassium	15%	51
Sodium	14%	51

Sample MW-1 of this sample delivery group was used for the second serial dilution. All of the percent differences which could be calculated less than the 10% assurance limit with the following exceptions:

Analyte	% D.	Qualifier
Potassium	21%	51
Sodium	17%	51

Sample MW-15 of this sample delivery group was used for the third serial dilution. All of the percent differences which could be calculated less than the 10% assurance limit with the following exceptions:

Analyte	% D.	Qualifier
Potassium	15%	51
Sodium	15%	51

Sample MW-5D of this sample delivery group was used for the fourth serial dilution. All of the percent differences which could be calculated less than the 10% assurance limit with the following exceptions:

Analyte	% D.	Qualifier
Potassium	36%	51
Sodium	14%	51

Sample MW-5 of this sample delivery group was used for the fifth serial dilution. All of the percent differences which could be calculated less than the 10% assurance limit with the following exception:

Analyte	% D.	Qualifier
Barium	10.5%	51

Note: Only barium and thallium were analyzed on this ICP run.

Sample MW-6 of this sample delivery group was used for the sixth serial dilution. All of the percent differences which could be calculated less than the 10% assurance limit with the following exception:

Analyte	% D.	Qualifier
Sodium	12%	51

Sample MW-7 of this sample delivery group was used for the seventh serial dilution. All of the percent differences which could be calculated less than the 10% assurance limit with the following exceptions:

Analyte	% D.	Qualifier
Potassium	26%	51
Sodium	16%	51

Sample MW-8 of this sample delivery group was used for the eighth serial dilution. All of the percent differences which could be calculated less than the 10% assurance limit. Note: Only barium, manganese, potassium and zinc were analyzed on this ICP run.

Sample MW-9 of this sample delivery group was used for the ninth serial dilution. All of the percent differences which could be calculated less than the 10% assurance limit with the following exception:

Analyte	% D.	Qualifier
Potassium	12%	51
Sodium	10.1%	51

Since nine serial dilutions were analyzed with this sample delivery group, the reporting of the qualifiers was somewhat confusing and overlapping. All of the analytes with serial dilution percent differences outside of the quality assurance limits were qualified by the laboratory for all of the samples. They did not take into account the specific serial dilution analyses:

In those samples which were analyzed for a serial dilution, the data were flagged with the "J" qualifier and footnoted with #51 only when the serial dilution percent difference was outside of the quality assurance limits for that particular sample. The "E" qualifier was removed from these analytes.

Soluble Metals Serial Dilutions

A grand total of eight (8) serial dilutions were analyzed with this sample delivery group:

Sample MW-0D of this sample delivery group was used for the first serial dilution. All of the percent differences which could be calculated less than the 10% assurance limit with the following exceptions:

Analyte	% D.	Qualifier
Potassium	32%	51
Sodium	17%	51

Sample MW-1 of this sample delivery group was used for the second serial dilution. All of the percent differences which could be calculated less than the 10% assurance limit with the following exceptions:

Analyte	% D.	Qualifier
Potassium	29%	51

Note: Only barium, manganese, potassium and thallium were analyzed on this ICP run.

Sample MW-15 of this sample delivery group was used for the third serial dilution. All of the percent differences which could be calculated less than the 10% assurance limit with the following exceptions:

Analyte	% D.	Qualifier
Potassium	21%	51
Sodium	13%	51

Sample MW-4 of this sample delivery group was used for the fourth serial dilution. All of the percent differences which could be calculated less than the 10% assurance limit with the following exceptions:

Analyte	% D.	Qualifier
Sodium	15%	51

Sample MW-5D of this sample delivery group was used for the fifth serial dilution. All of the percent differences which could be calculated less than the 10% assurance limit with the following exception:

Analyte	% D.	Qualifier
Potassium	42%	51
Sodium	12%	51

Sample MW-7 of this sample delivery group was used for the sixth serial dilution. All of the percent differences which could be calculated less than the 10% assurance limit with the following exception:

Analyte	% D.	Qualifier
Potassium	29%	51
Sodium	10.5%	51

Sample MW-8 of this sample delivery group was used for the seventh serial dilution. All of the percent differences which could be calculated less than the 10% assurance limit with the following exceptions:

Analyte	% D.	Qualifier
Potassium	25%	51
Sodium	12%	51

Sample MW-9 of this sample delivery group was used for the eighth serial dilution. All of the percent differences which could be calculated less than the 10% assurance limit. Note: Only barium, manganese, potassium and zinc were analyzed on this ICP run.

Analyte	% D.	Qualifier
Barium	43%	51
Potassium	24%	51
Sodium	13%	51
Zinc	26%	51

The run logs note that even more samples were actually analyzed for a serial dilution, but the data for these were not reported on summary forms.

Instrument Detection Limit

No problems with the instrument detection limits were found.

ICP Linear Ranges

No problems were detected with the linear ranges. The reported concentrations of all samples in this delivery group were within their linear range for each analyte.

Sample Results

No problems, in addition to those noted above, were found with any of the reported sample data.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Water Total and Dissolved TAL Inorganic and Cyanide Analyses
Samples Received August 25th through 28th, 1998
Sample Delivery Group: SLMW10
Laboratory Reference Numbers:

Received 8/25
- TSL-MW-10 - Total
- TSL-MW-10

Received 8/26
- TSL-MW-12 - Total
- TSL-MW-12 - Dissolved
- TSL-MW-12D - Total
- TSL-MW-12D - Dissolved
- TSL-MW-3 - Total
- TSL-MW-3 - Dissolved
- TSL-MW-Field Dup - Total
- TSL-MW-Field Dup

Received 8/27
- Field Blank - Total
- Field Blank - Dissolved
- TSL-SW-20 - Total
- TSL-SW-20 - Dissolved
- TSL-SW-20MS - Total
- TSL-SW-20MSD - Total
- TSL-SW-21 - Total
- TSL-SW-21 - Dissolved
- TSL-SW-22 - Total
- TSL-SW-22 - Dissolved
- TSL-SW-25 - Total
- TSL-SW-25 - Dissolved

Received 8/28
- TSL-SW-23 - Total
- TSL-SW-23 - Dissolved
- TSL-SW-24 - Total
- TSL-SW-24 - Dissolved

Water samples were received for TAL metals and cyanide analyses by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

* - Data Completeness
* - Holding Times
* - Calibration Verification
  - CRDL Standards
* - ICP Interference Check Sample
* - Laboratory Control Sample
  - Serial Dilutions
* - Laboratory Blanks
  - Field Blanks
* - Preparation Blanks
  - Matrix Spike
  - Duplicate Analyses
* - Detection Limit Results
* - Linear Range
* - Sample Results

* - Indicates that all criteria were met for this parameter.

Data Validation Summary

A matrix spike, matrix duplicate and serial dilution were not analyzed for the soluble fractions of any of the samples.

The minor problems with the CRDL standards should be noted.

No other problems were found with the matrix spike recoveries, duplicate analysis or serial dilution of the total metals fraction.

Nancy J. Potak
November 23, 1998

Holding Times

All samples were analyzed within the required holding times.

CRDL Standards

Several separate ICP runs were analyzed with this sample delivery group.

All of the total metals samples were initially analyzed on the first ICP run. The recoveries of all CRDL standards were within the 80% to 120% quality assurance limits in the first ICP run with the following exception:

Analyte	Initial % Recovery	Second %Recovery	Final %Recovery
Lead		132%	
Selenium	128%		
Thallium		77%	

Low concentrations of lead were found in the total metals analyses of samples MW-10, MW-12, MW-3, SW-20, SW-21, SW-22, SW-23, SW-24 and SW-25. The lead data for these samples were flagged with the "J" qualifier and footnoted with #21 in the data validation summary table.

The lead data were not qualified if lead was not detected in a sample analyzed on this ICP run, since a high CRDL standard recovery does not affect the end use of the data if the analyte is not detected in a sample.

Selenium was only detected the total metals analysis of sample MW10. The selenium data for this sample was flagged with the "J" qualifier and footnoted with #21 in the data validation summary table. Selenium was not detected in any other samples analyzed on this ICP run and as a result the data were not required to be qualified.

Thallium was not detected in any of the total metal samples of this delivery group. It is possible that very low concentrations of thallium may have been overlooked. All of the thallium data was flagged with the "J" qualifier and footnoted with #21 in the data validation summary table.

The soluble analyses of the all of the samples of this delivery group were initially analyzed on the third major ICP run. The recoveries of all CRDL standards were within the 80% to 120% quality assurance limits in the first ICP run with the following exception:

Analyte	Initial % Recovery	Final %Recovery
Selenium	136%	143%

Selenium was only detected in low concentrations in the soluble analyses of samples MW-3, MW-12 and MW10. The selenium data for these samples were flagged with the "J" qualifier and footnoted with #21 in the data validation summary table. Selenium was not detected in any other samples analyzed on this ICP run and the undetected data were not required to be qualified.

Initial and Continuing Calibrations

No problems were detected with any of the calibrations associated with this sample delivery group.

Preparation Blank

Several analytes were found in the preparation blank at concentrations between the absolute value of CRDL and instrument detection limit. The data were not required to be qualified for these low concentrations.

Calibration Blanks

Several analytes were found in the continuing calibration blanks at concentrations between the CRDL and instrument detection limit. The data were not required to be qualified for these low concentrations.

Field Blank

Several analytes were found in the total metals analysis of the blank at concentrations between the CRDL and instrument detection limit. The data were not required to be qualified for these low concentrations.

Zinc was detected at a concentration of 26.4 ug/l in the soluble analysis of the field blank. This was just above the CRDL concentration of 20 ug/l). This was most likely due to low level contamination from the field or laboratory.

ICP Interference Check Sample

No problems were detected with the reported ICP Interference Check Sample recoveries.

All of the traditional furnace analytes were included in this standard.

Matrix Spike Recovery

Sample MW-20 of this sample delivery group was used for the total metals matrix spike associated with all of the samples of this delivery group. All recoveries were within the 75% - 125% quality assurance limits.

A matrix spike was not analyzed for the soluble fraction.

Duplicate Analysis

Sample MW-20 of this sample delivery group was used for the total metals matrix duplicate associated with all of the samples of this delivery group. All RPDs were within the 20% quality assurance limit.

A matrix duplicate was not analyzed for the soluble fraction.

Laboratory Control Sample

No problems were detected with the recoveries of the water LCS standard.

Serial Dilutions

Sample MW-20 of this sample delivery group was also used for the only serial dilution. All of the percent differences which could be calculated less than the 10% assurance limit.

A serial dilution was not analyzed for the soluble fraction.

Instrument Detection Limit

No problems with the instrument detection limits were found.

ICP Linear Ranges

No problems were detected with the linear ranges. The reported concentrations of all samples in this delivery group were within their linear range for each analyte.

Sample Results

No problems, other than those mentioned above, were found with any of the reported sample data.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Water Wet Chemistry Analyses
Samples Received August 18th through 25th, 1998
Sample Delivery Group: MW0D
Laboratory Reference Numbers:

Received 8/18	
TSL-MW-0D	A8338501
Received 8/19	
TSL-MW-6	A8340301
TSL-MW-8	A8340302
TSL-MW-0	A8340501
TSL-MW-9	A8340502
Received 8/20	
TSL-MW-7	A8343201
TSL-WP-5	A8342803
TSL-WP-6	A8342802
TSL-WP-7	A8342801
Received 8/21	
TSL-MW-5D	A8346002
TSL-MW-5DMS	A8346002MS
TSL-MW-5DMSD	A8346002MSD
TSL-WP-2	A8346004
TSL-WP-3	A8346005
TSL-WP-4	A8346001
Received 8/22	
TSL-MW-15	A8348201
TSL-WP-1	A8348202
Received 8/25	
TSL-MW-1	A8349801
TSL-MW-14	A8349802
TSL-MW-2	A8349804
TSL-MW-4	A8349806
TSL-MW-5	A8349805

Water samples were received for TAL metals and cyanide analyses by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

- Data Completeness
- Holding Times
- Calibration Verification
* - Laboratory Control Sample
* - Laboratory Blanks
- Field Blanks
* - Preparation Blanks
- Matrix Spike
- Duplicate Analyses
- Detection Limit Results
* - Linear Range
- Sample Results

* - Indicates that all criteria were met for this parameter.

Data Validation Summary

The ammonia raw data were not found for samples TSL-MW-5D (A8346002), its matrix spike and matrix spike duplicate, TSL-WP-2 (A8346004) and TSL-WP-3 (A8346005)

The laboratory's case narrative states that "Samples TSL-MW-1, TSL-MW-14, TSL-TB-20, TSL-MW-2, TSL-MW-5 and TSL-MW-4 were analyzed outside of holding time for filterable residue and nitrate analyses."

The nitrate analyses were analyzed 8 days after sample receipt. The holding time for unpreserved samples is 24 hours. Low concentrations of nitrate/nitrate may have been overlooked in these samples.

The raw data for filterable residue was not found in the analytical report for samples TSL-MW-1 (A8349801), TSL-MW-14 (A8349802), TSL-MW-2 (A8349804), TSL-MW-4 (A8349806) and TSL-MW-5 (A8349805). The bottom half of the raw data form for filterable residue on page 162 was not legible in the copy of the analytical report submitted for data validation.

The laboratory's case narrative also notes that TSL-WP-1 was initially analyzed at a dilution for biochemical oxygen demand; results were below the detection limit. The sample was reanalyzed without dilution, outside of holding time. The data for the reanalysis was not found in the raw data. It is recommended that the data from the initial analysis (4U mg/l) be used for the final reporting.

Sample TSL-WP-6 (Lab. #:A8342802) was used as an additional matrix duplicate. The precision of the two replicates (15 mg/l and 4 mg/l) was 116% was very poor. The BOD samples received on 8/20 were all flagged with the "See Text" notation in the data validation summary table.

The filterable residue for sample TSL-MW-8 (Lab. #: A8340302) was reported by the laboratory as 10U mg/l, but a concentration of 539 mg/l was calculated from the raw data.

The total alkalinity and hardness raw data could not be followed. The data could not be validated because the laboratory did not provide a copy of the SOP, the normality of the titration solutions or an example calculation.

Turbidity raw data was not found for samples TSL-MW-0D (A8338501), TSL-MW-6 (A8340301), TSL-MW-8 (A8340302), TSL-MW-0 (A8340501) and TSL-MW-9 (A8340502) and TSL-MW-4 (A8349806).

Nancy J. Potak
December 6, 1998

Holding Times

The laboratory's case narrative states that "Samples TSL-MW-1, TSL-MW-14, TSL-TB-20, TSL-MW-2, TSL-MW-5 and TSL-MW-4 were analyzed outside of holding time for filterable residue and nitrate analyses."

The nitrate analyses were analyzed 8 days after sample receipt. The holding time for unpreserved samples is 24 hours. Low concentrations of nitrate/nitrate may have been overlooked in these samples.

The raw data for filterable residue was not found in the analytical report for samples TSL-MW-1 (A8349801), TSL-MW-14 (A8349802), TSL-MW-2 (A8349804), TSL-MW-4 (A8349806) and TSL-MW-5 (A8349805). The bottom half of the raw data form for filterable residue on page 162 was not legible in the copy of the analytical report submitted for data validation.

All other samples were analyzed within the required holding times.

Initial and Continuing Calibrations

No problems were detected with any of the calibrations associated with this sample delivery group.

Preparation Blank

Three preparation blanks were analyzed with this sample delivery group.

Several analytes were found in the preparation blanks at concentrations between the absolute value of CRDL and instrument detection limit. The data were not required to be qualified for these low concentrations.

Calibration Blanks

Several analytes were found in the continuing calibration blanks at concentrations between the CRDL and instrument detection limit. The data were not required to be qualified for these low concentrations.

Field Blank

A field blank was not submitted with this sample delivery group.

Blank Spike Recovery

The first blank spike and blank spike duplicate analyzed with the BOD run associated with had low recoveries of 73% and 70%. The BOD data were not qualified for these low recoveries in the data validation summary table.

In the second set of MSB/MSBD, the blank spike duplicate analyzed with the BOD analyses had an RPD of 21%. The BOD data were not qualified for this high RPD in the data validation summary table.

No other problems were found with the blank spike recoveries. A blank spike was not analyzed for all of the wet chemistry parameters.

Matrix Spike Recovery

Sample TSL-MW-5D (Lab. #: A8346002) of this sample delivery group was used for the matrix spike associated with all of the samples of this delivery group. All recoveries were within the 75% - 125% quality assurance.

Several other samples from this delivery group were occasionally used as additional quality assurance samples in the individual wet chemistry analyses. All of these were within the required quality assurance limits. They are not noted in detail in this data validation.

The ammonia raw data were not found for samples TSL-MW-5D (A8346002), its matrix spike and matrix spike duplicate, TSL-WP-2 (A8346004) and TSL-WP-3 (A8346005)

Duplicate Analysis

Sample TSL-MW-5D (Lab. #: A8346002) of this sample delivery group was used for the matrix duplicate associated with all of the samples of this delivery group. All RPDs were within the 20% quality assurance limit.

Sample TSL-WP-6 (Lab. #:A8342802) was used as an additional matrix duplicate. The precision of the two replicates (15 mg/l and 4 mg/l) was 116% was very poor. The BOD samples received on 8/20 were all flagged with the "See Text" notation in the data validation summary table.

Laboratory Control Sample

Two LCS standards were analyzed with this sample delivery group.

No problems were detected with the recoveries of water LCS standards. An LCS standard was not analyzed for all of the wet chemistry parameters

Linear Ranges

No problems were detected with the linear ranges. The reported concentrations of all samples in this delivery group were within their linear range for each analyte.

Sample Results

The ammonia raw data were not found for samples TSL-MW-5D (A8346002), its matrix spike and matrix spike duplicate, TSL-WP-2 (A8346004) and TSL-WP-3 (A8346005)

The laboratory's case narrative states that "Samples TSL-MW-1, TSL-MW-14, TSL-TB-20, TSL-MW-2, TSL-MW-5 and TSL-MW-4 were analyzed outside of holding time for filterable residue and nitrate analyses."

The nitrate analyses were analyzed 8 days after sample receipt. The holding time for unpreserved samples is 24 hours. Low concentrations of nitrate/nitrate may have been overlooked in these samples.

The raw data for filterable residue was not found in the analytical report for samples TSL-MW-1 (A8349801), TSL-MW-14 (A8349802), TSL-MW-2 (A8349804), TSL-MW-4 (A8349806) and TSL-MW-5 (A8349805). The bottom

half of the raw data form for filterable residue on page 162 was not legible in the copy of the analytical report submitted for data validation.

The laboratory's case narrative also notes that TSL-WP-1 was initially analyzed at a dilution for biochemical oxygen demand; results were below the detection limit. The sample was reanalyzed without dilution, outside of holding time. The data for the reanalysis was not found in the raw data. It is recommended that the data from the initial analysis (4U mg/l) be used for the final reporting.

Sample TSL-WP-6 (Lab. #:A8342802) was used as an additional matrix duplicate. The precision of the two replicates (15 mg/l and 4 mg/l) was 116% was very poor. The BOD samples received on 8/20 were all flagged with the "See Text" notation in the data validation summary table.

The filterable residue for sample TSL-MW-8 (Lab. #: A8340302) was reported by the laboratory as 10U mg/l, but a concentration of 539 mg/l was calculated from the raw data.

The total alkalinity and hardness raw data could not be followed. The data could not be validated because the laboratory did not provide a copy of the SOP, the normality of the titration solutions or an example calculation.

Turbidity raw data was not found for samples TSL-MW-0D (A8338501), TSL-MW-6 (A8340301), TSL-MW-8 (A8340302), TSL-MW-0 (A8340501) and TSL-MW-9 (A8340502) and TSL-MW-4 (A8349806).

No other problems were found with any of the reported sample data.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Water Wet Chemistry Analyses
Samples Received August 18th through 25th, 1998
Sample Delivery Group: MW0D
Laboratory Reference Numbers:

Received 8/18	
TSL-MW-0D	A8338501
Received 8/19	
TSL-MW-6	A8340301
TSL-MW-8	A8340302
TSL-MW-0	A8340501
TSL-MW-9	A8340502
Received 8/20	
TSL-MW-7	A8343201
TSL-WP-5	A8342803
TSL-WP-6	A8342802
TSL-WP-7	A8342801
Received 8/21	
TSL-MW-5D	A8346002
TSL-MW-5DMS	A8346002MS
TSL-MW-5DMSD	A8346002MSD
TSL-WP-2	A8346004
TSL-WP-3	A8346005
TSL-WP-4	A8346001
Received 8/22	
TSL-MW-15	A8348201
TSL-WP-1	A8348202
Received 8/25	
TSL-MW-1	A8349801
TSL-MW-14	A8349802
TSL-MW-2	A8349804
TSL-MW-4	A8349806
TSL-MW-5	A8349805

Water samples were received for TAL metals and cyanide analyses by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

- Data Completeness
- Holding Times
- Calibration Verification
* - Laboratory Control Sample
* - Laboratory Blanks
- Field Blanks
* - Preparation Blanks
- Matrix Spike
- Duplicate Analyses
- Detection Limit Results
* - Linear Range
- Sample Results

* - Indicates that all criteria were met for this parameter.

Data Validation Summary

The ammonia raw data were not originally found for samples TSL-MW-5D (A8346002), its matrix spike and matrix spike duplicate, TSL-WP-2 (A8346004) and TSL-WP-3 (A8346005). The missing data was submitted in the laboratory's 12/22 addendum.

The laboratory's case narrative states that "Samples TSL-MW-1, TSL-MW-14, TSL-TB-20, TSL-MW-2, TSL-MW-5 and TSL-MW-4 were analyzed outside of holding time for filterable residue and nitrate analyses."

The nitrate analyses were analyzed 8 days after sample receipt. The holding time for unpreserved samples is 24 hours. Low concentrations of nitrate/nitrate may have been overlooked in these samples.

The raw data for filterable residue was not found in the analytical report for samples TSL-MW-1 (A8349801), TSL-MW-14 (A8349802), TSL-MW-2 (A8349804), TSL-MW-4 (A8349806) and TSL-MW-5 (A8349805). The bottom half of the raw data form for filterable residue on page 162 was not legible in the copy of the analytical report submitted for data validation. The raw data was submitted in the laboratory's 12/22 addendum.

The laboratory's case narrative also notes that TSL-WP-1 was initially analyzed at a dilution for biochemical oxygen demand; results were below the detection limit. The sample was reanalyzed without dilution, outside of holding time. The data for the reanalysis was not found in the raw data. It is recommended that the data from the initial analysis (4U mg/l) be used for the final reporting.

Sample TSL-WP-6 (Lab. #:A8342802) was used as an additional matrix duplicate. The precision of the two replicates (15 mg/l and 4 mg/l) was 116% was very poor. The BOD samples received on 8/20 were all flagged with the "See Text" notation in the data validation summary table.

The filterable residue for sample TSL-MW-8 (Lab. #: A8340302) was reported by the laboratory as 10U mg/l, but a concentration of 539 mg/l was calculated from the raw data. The laboratory's value was corrected in the laboratory's 12/22 addendum.

The total alkalinity and hardness raw data could not be followed. The data could not be validated because the laboratory did not provide a copy of the SOP, the normality of the titration solutions or an example calculation. An SOP was provided in the laboratory's 12/22 addendum.

Turbidity raw data was not found for samples TSL-MW-0D (A8338501), TSL-MW-6 (A8340301), TSL-MW-8 (A8340302), TSL-MW-0 (A8340501) and TSL-MW-9 (A8340502) and TSL-MW-4 (A8349806). The missing data was provided in the laboratory's 12/22 addendum.

Nancy J. Potak
January 20, 1999

Holding Times

The laboratory's case narrative states that "Samples TSL-MW-1, TSL-MW-14, TSL-TB-20, TSL-MW-2, TSL-MW-5 and TSL-MW-4 were analyzed outside of holding time for filterable residue and nitrate analyses."

The nitrate analyses were analyzed 8 days after sample receipt. The holding time for unpreserved samples is 24 hours. Low concentrations of nitrate/nitrate may have been overlooked in these samples.

The raw data for filterable residue was not found in the analytical report for samples TSL-MW-1 (A8349801), TSL-MW-14 (A8349802), TSL-MW-2 (A8349804), TSL-MW-4 (A8349806) and TSL-MW-5 (A8349805). The bottom half of the raw data form for filterable residue on page 162 was not legible in the copy of the analytical report submitted for data validation. The missing data was provided in the laboratory's 12/22 addendum.

All other samples were analyzed within the required holding times.

Initial and Continuing Calibrations

No problems were detected with any of the calibrations associated with this sample delivery group.

Preparation Blank

Three preparation blanks were analyzed with this sample delivery group.

Several analytes were found in the preparation blanks at concentrations between the absolute value of CRDL and instrument detection limit. The data were not required to be qualified for these low concentrations.

Calibration Blanks

Several analytes were found in the continuing calibration blanks at concentrations between the CRDL and instrument detection limit. The data were not required to be qualified for these low concentrations.

Field Blank

A field blank was not submitted with this sample delivery group.

Blank Spike Recovery

The first blank spike and blank spike duplicate analyzed with the BOD run associated with had low recoveries of 73% and 70%. The BOD data were not qualified for these low recoveries in the data validation summary table.

In the second set of MSB/MSBD, the blank spike duplicate analyzed with the BOD analyses had an RPD of 21%. The BOD data were not qualified for this high RPD in the data validation summary table.

No other problems were found with the blank spike recoveries. A blank spike was not analyzed for all of the wet chemistry parameters.

Matrix Spike Recovery

Sample TSL-MW-5D (Lab. #: A8346002) of this sample delivery group was used for the matrix spike associated with all of the samples of this delivery group. All recoveries were within the 75% - 125% quality assurance.

Several other samples from this delivery group were occasionally used as additional quality assurance samples in the individual wet chemistry analyses. All of these were within the required quality assurance limits. They are not noted in detail in this data validation.

The ammonia raw data were not found for samples TSL-MW-5D (A8346002), its matrix spike and matrix spike duplicate, TSL-WP-2 (A8346004) and TSL-WP-3 (A8346005). The missing data was provided in the laboratory's 12/22 addendum.

Duplicate Analysis

Sample TSL-MW-5D (Lab. #: A8346002) of this sample delivery group was used for the matrix duplicate associated with all of the samples of this delivery group. All RPDs were within the 20% quality assurance limit.

Sample TSL-WP-6 (Lab. #:A8342802) was used as an additional matrix duplicate. The precision of the two replicates (15 mg/l and 4 mg/l) was 116% was very poor. The BOD samples received on 8/20 were all flagged with the "See Text" notation in the data validation summary table.

Laboratory Control Sample

Two LCS standards were analyzed with this sample delivery group.

No problems were detected with the recoveries of water LCS standards. An LCS standard was not analyzed for all of the wet chemistry parameters

Linear Ranges

No problems were detected with the linear ranges. The reported concentrations of all samples in this delivery group were within their linear range for each analyte.

Sample Results

The ammonia raw data were not found for samples TSL-MW-5D (A8346002), its matrix spike and matrix spike duplicate, TSL-WP-2 (A8346004) and TSL-WP-3 (A8346005). The missing data was provided in the laboratory's 12/22 addendum.

The laboratory's case narrative states that "Samples TSL-MW-1, TSL-MW-14, TSL-TB-20, TSL-MW-2, TSL-MW-5 and TSL-MW-4 were analyzed outside of holding time for filterable residue and nitrate analyses."

The nitrate analyses were analyzed 8 days after sample receipt. The holding time for unpreserved samples is 24 hours. Low concentrations of nitrate/nitrate may have been overlooked in these samples.

The raw data for filterable residue was not found in the analytical report for samples TSL-MW-1 (A8349801), TSL-MW-14 (A8349802), TSL-MW-2 (A8349804), TSL-MW-4 (A8349806) and TSL-MW-5 (A8349805). The bottom half of the raw data form for filterable residue on page 162 was not legible in the copy of the analytical report submitted for data validation. The missing data was provided in the laboratory's 12/22 addendum.

The laboratory's case narrative also notes that TSL-WP-1 was initially analyzed at a dilution for biochemical oxygen demand; results were below the detection limit. The sample was reanalyzed without dilution, outside of holding time. The data for the reanalysis was not found in the raw data. It is recommended that the data from the initial analysis (4U mg/l) be used for the final reporting.

Sample TSL-WP-6 (Lab. #:A8342802) was used as an additional matrix duplicate. The precision of the two replicates (15 mg/l and 4 mg/l) was 116% was very poor. The BOD samples received on 8/20 were all flagged with the "See Text" notation in the data validation summary table.

The filterable residue for sample TSL-MW-8 (Lab. #: A8340302) was reported by the laboratory as 10U mg/l, but a concentration of 539 mg/l was calculated from the raw data. A corrected FORM I was submitted in the laboratory's 12/22 addendum.

The total alkalinity and hardness raw data could not be followed. The data could not be validated because the laboratory did not provide a copy of the SOP, the normality of the titration solutions or an example calculation. An SOP was submitted in the laboratory's 12/22 addendum.

Turbidity raw data was not found for samples TSL-MW-0D (A8338501), TSL-MW-6 (A8340301), TSL-MW-8 (A8340302), TSL-MW-0 (A8340501) and TSL-MW-9 (A8340502) and TSL-MW-4 (A8349806). The missing data was provided in the laboratory's 12/22 addendum.

No other problems were found with any of the reported sample data.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Water Wet Chemistry Analyses
Samples Received August 25th through 28th, 1998
Sample Delivery Group: SLMW10
Laboratory Reference Numbers:

Received 8/25	
TSL-MW-10	A8349901
Received 8/26	
TSL-MW-12	A8352702
TSL-MW-12D	A8352703
TSL-MW-3	A8352701
TSL-MW-Field Dup	A8352704
Received 8/27	
Field Blank	A8355001
TSL-SW-20	A8255202
TSL-SW-21	A8355203
TSL-SW-22	A8355204
TSL-SW-25	A8355201
Received 8/28	
TSL-SW-23	A8359201
TSL-SW-24	A8359202

Water samples were received for TAL metals and cyanide analyses by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

- Data Completeness
- Holding Times
- Calibration Verification
* - Laboratory Control Sample
* - Laboratory Blanks
- Field Blanks
* - Preparation Blanks
- Matrix Spike
- Duplicate Analyses
- Detection Limit Results
* - Linear Range
- Sample Results

* - Indicates that all criteria were met for this parameter.

Data Validation Summary

The laboratory's case narrative notes that "Due to a laboratory error, sample TSL-MW-10 was analyzed for filterable residue outside of holding time." The filterable residue raw data was not initially found for this sample. This was submitted in the laboratory's 12/22 addendum.

The laboratory's case narrative also notes that "sample TSL-MW-10 MS exhibited a percent recovery for total recoverable phenols which was above quality control limits. The corresponding matrix spike blank and matrix spike blank duplicate were with set limits, however."

Matrix spikes were only analyzed for phenolics, hardness and biological oxygen demand. No problems were detected with any of these.

Matrix duplicates were only analyzed for phenolics, nitrate hardness and biological oxygen demand. No problems were detected with any of these.

The BOD raw data were not found for sample TSL-SW-23 (A8359201). This was submitted in the laboratory's 12/22 addendum.

The TOC raw data were not found for the field blank (A8355001). This was submitted in the laboratory's 12/22 addendum.

No other problems were found with any of the reported sample data.

Nancy J. Potak
December 6, 1998

Holding Times

The laboratory's case narrative notes that "Due to a laboratory error, sample TSL-MW-10 was analyzed for filterable residue outside of holding time." The filterable residue raw data was not found for this sample. The data for filterable residue in this sample was flagged with the "J" qualifier and footnoted with #81 in the data validation summary table.

All other samples were analyzed within the required holding times.

Initial and Continuing Calibrations

No problems were detected with any of the calibrations associated with this sample delivery group.

Preparation Blank

Three preparation blanks were analyzed with this sample delivery group.

Several analytes were found in the preparation blanks at concentrations between the absolute value of CRDL and instrument detection limit. The data were not required to be qualified for these low concentrations.

Calibration Blanks

Several analytes were found in the continuing calibration blanks at concentrations between the CRDL and instrument detection limit. The data were not required to be qualified for these low concentrations.

Field Blank

The total alkalinity in the field blank was 7.60 mg/l and the turbidity of the field blank was 4NTU.

No other wet chemistry parameters were detected in the field blank.

The field blank data were not qualified for the presence of the total alkalinity and turbidity.

Blank Spike Recovery

No problems were found with the blank spike recoveries.

A blank spike was not analyzed for all of the wet chemistry parameters.

Matrix Spike Recovery

Matrix spikes were only analyzed for phenolics, hardness and biological oxygen demand.

The laboratory's case narrative notes that "sample TSL-MW-10 MS exhibited a percent recovery for total recoverable phenols which was above quality control limits. The corresponding matrix spike blank and matrix spike blank duplicate were with set

limits, however." The recovery of the matrix spike was right at the 125% quality assurance limit. The phenolic data were not qualified for this slightly high recovery.

Only one very low concentration of a phenolics was detected in one of the samples and the slightly high recovery did not affect the end use of the data.

No other problems were detected with any of the matrix spike recoveries.

Duplicate Analysis

Matrix duplicates were only analyzed for phenolics, nitrate hardness and biological oxygen demand. No problems were detected with any of these.

Laboratory Control Sample

No problems were detected with the recoveries of water LCS standards. An LCS standard was not analyzed for all of the wet chemistry parameters

Linear Ranges

No problems were detected with the linear ranges. The reported concentrations of all samples in this delivery group were within their linear range for each analyte.

Sample Results

The laboratory's case narrative notes that "Due to a laboratory error, sample TSL-MW-10 was analyzed for filterable residue outside of holding time." The filterable residue raw data was not found for this sample. This was submitted in the laboratory's 12/22 addendum.

The BOD raw data were not found for sample TSL-SW-23 (A8359201). This was submitted in the laboratory's 12/22 addendum.

The TOC raw data were not found for the field blank (A8355001). This was submitted in the laboratory's 12/22 addendum.

No other problems were found with any of the reported sample data.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Water Volatile Organic Analyses
Samples Received October 1, 1998
Sample Delivery Group: TSLL6
Laboratory Reference Numbers:

Holding Blank
TSL-L-1
TSL-L-2
TSL-L-6
TSL-L-6MS
TSL-L-6MSD

Water samples were received for analyses of the volatile organic TCL analyte list by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

- Data Completeness
* - GC/MS Tuning
* - Holding Times
* - Calibrations
* - Laboratory Blanks
- Field Blank
- Trip Blanks
* - Holding Blank
* - System Monitoring Compound Recoveries
* - Internal Standard Recoveries
* - Matrix Spike / Matrix Spike Duplicate
* - Blank Spike
* - Compound Identification
* - Compound Quantitation
- Instrument Detection Limit

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

Instrument detection limits were not submitted with this data package.

No other problems were found which would affect the end use of the data.

Nancy J. Potak
December 15, 1998

Holding Times

All samples were analyzed within the 10 day holding time required by the NYS DEC's ASP program.

Tunes

No problems were detected with any of the tunes associated with the samples of this delivery group.

System Monitoring Compound Recoveries

All system monitoring compound recoveries were within the NYS DEC's ASP quality assurance limits.

Calibrations

No problems were found with the initial calibration or continuing calibration associated with the samples of this delivery group.

Section D 9.3.5.4 of the NYS DEC ASP Manual states that up to 2 compounds may fail the criteria and still meet the minimum response factor and %RSD requirements. These compounds must have a minimum RRF greater or equal to 0.010 and the %RSD must be less than or equal to 40%. This requirement was satisfied in all of the calibrations of this sample delivery group.

Matrix Spike / Matrix Spike Duplicate

Sample TSL-L-6 of this sample delivery group was used for the matrix spike and matrix spike duplicate. All recoveries and RPDs were within the required quality assurance limits.

Blank Spike

All blank spike recoveries were within the required quality assurance limits.

Method Blanks

No compounds were detected in the one method blank.

Trip Blanks

A trip blank was not received with this sample delivery group.

Field Blank

A field blank was not collected with this sample delivery group.

Holding Blank

No volatile compounds were detected in either of the two holding blanks.

Internal Standard Areas and Retention Times

No problems were found with the recoveries or retention times in any of the internal standards associated with the samples of this delivery group.

Instrument Detection Limits

Instrument detection limits were not included with this sample delivery group.

Sample Results

No problems were found with the reported results of any of the samples of this delivery group.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Water Semivolatile Organic Analyses
Samples Received October 1, 1998
Sample Delivery Group: TSLL6
Laboratory Reference Numbers:

TSL-L-1
TSL-L-2
TSL-L-6
TSL-L-6MS
TSL-L-6MSD

Water samples were received for analyses of the Semivolatile organic TCL analyte list by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

- Data Completeness
* - GC/MS Tuning
* - Holding Times
* - Calibrations
- Laboratory Blanks
- Field Blank
- Surrogate Compound Recoveries
* - Internal Standard Recoveries
- Matrix Spike / Matrix Spike Duplicate
* - Blank Spike
* - Compound Identification
* - Compound Quantitation
- Instrument Detection Limit

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

Instrument detection limits were not submitted with this data package.

The many non-target qualifiers were cut off due to poor photocopying in the copy of the analytical report submitted for validation.

No other significant problems were found with the Semivolatile analyses of these samples which would affect the end use of the data.

Nancy J. Potak
December 15, 1998

Holding Times

All samples were extracted and analyzed within the holding times required by the NYS DEC's ASP program.

Tunes

No problems were detected with any of the tunes associated with the samples of this delivery group.

Surrogate Compound Recoveries

All surrogate compound recoveries were within the NYS DEC's ASP quality assurance limits with the following exceptions:

Sample	S1	S2	S3	S4	S5	S6	S7 *	S8 *
TSL-L-1								27
TSL-L-2								28
TSL-L-6								22
TSL-L-6MS								20
TSL-L-6MSD								18

The recoveries of surrogates S7 (2,4,6-tribromophenol) and S8 (terphenyl-d14) are only advisory and the samples were not required to be reanalyzed if their recoveries were outside of the quality assurance limits.

The NYS DEC's ASP protocols allow for the recovery of one acid and one base/neutral surrogate (as long as the recovery is greater than 10%) to be outside of the required limits. The sample data were not required to be qualified for the slightly high recoveries of these surrogates.

All other surrogate compound recoveries were within the NYS DEC's ASP quality assurance limits.

Calibrations

No problems were detected with either the initial or continuing calibrations.

Matrix Spike / Matrix Spike Duplicate

Sample TSL-L-6 of this sample delivery group was used for the matrix spike and matrix spike duplicate for the soil samples. All recoveries and RPDs were within the required quality assurance limits with the following exception:

Compound	MS %Rec	MSD %Rec	QC Limits	RPD	Limits
Phenol			12 - 110		42
2-Chlorophenol			27 - 123		40
1,4-Dichlorobenzene			37 - 97		28
N-Nitroso-di-n-prop.			41 - 116		38
1,2,4-Trichlorobenzene			39 - 98		28
4-Chloro-3-methylphenol			23 - 97		42
Acenaphthene			46 - 118		31
4-Nitrophenol			10 - 80		50
2.4-Dinitrotoluene			24 - 96		38
Pentachlorophenol			9 - 103		50
Pyrene			26 - 127	38%	31

The slightly high pyrene RPD does not significantly affect the end use of the data.

Blank Spike

All blank spike recoveries were within the required quality assurance limits with the one exception of the recovery of 4-nitrophenol (82%) in the one blank spike. This recovery was above the 80% quality assurance limit and this slightly high recovery does not affect the end use of the data.

Method Blanks

One non-target oxygenated compound eluting at 3.45 minutes was detected in the method blank at a concentration of 4J ug/l. This was only detected in sample TSL-L-6 at a concentration of 2 BJ ug/l). The data for this compound was negated according to standard EPA data validation protocols. It was negated and footnoted with #1 in the data validation summary table.

Field Blank

A field blank was not received with this sample delivery group.

Internal Standard Areas and Retention Times

No problems were found with the internal standard recoveries.

Instrument Detection Limits

Instrument detection limits were not included with this sample delivery group.

Sample Results

Sample TSL-L-1

Chlorobenzene was reported as a non-target compound in this sample. Since this is a part of the volatile target list, it should be reported from that fraction. The data for chlorobenzene was footnoted with #58 in the data validation summary table.

No other problems were found with the reported results of any of the samples of this delivery group.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Water Pesticide and PCB Analyses
Samples Received October 1, 1998
Sample Delivery Group: TSLL6
Laboratory Reference Numbers:

TSL-L-1
TSL-L-2
TSL-L-6
TSL-L-6MS
TSL-L-6MSD

Water samples were received for analyses of the pesticide and PCB TCL analyte list by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

- Data Completeness
* - Holding Times
* - Laboratory Blanks
- Field Blanks
- Surrogate Recoveries
* - Surrogate Retention Times
- Matrix Spike / Matrix Spike Duplicate
* - Blank Spike
- Calibrations
* - Analyte Resolutions
* - Performance Evaluation Mixtures
* - IND A and IND B Standards
* - Florisil Cartridge Check
- GPC Calibration
* - Compound Identification
* - Method Detection Limit

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

The minor problems with the calibrations should be noted.

No significant problems were found with the analyses of these samples which would affect the end use of the data.

Nancy J. Potak
December 16, 1998

Holding Times

All extractions and analyses were performed within the required holding times.

Surrogate Recoveries

All surrogate recoveries were within the required quality assurance limits with the following exceptions:

	TCX 1	TCX 2	DCB 1	DCB 2
TSLL1			11%	10%
TSLL2			26%	22%
TSLL6MS			13%	14%
TSLLMSD			13%	16%

It is possible that low concentrations of pesticides and PCBs may have been overlooked in samples TSLL1 and TSLL2.

Even though there were problems with the DCB surrogate recoveries in both the matrix spike and matrix spike duplicate of sample TSLL6, all of the surrogate recoveries were within the required quality assurance limits in the analysis of the sample itself.

EPA data validation guidelines do not require the data to be qualified for a low recovery of one surrogate.

Matrix Spike

Sample TSL-L-6 of this sample delivery group was used for the matrix spike and matrix spike duplicate. All recoveries and RPDs were within the required quality assurance limits with the following exceptions:

Compound	MS %Rec	MSD %Rec	QC Limits	RPD Limits
gamma-BHC			56 - 123	15
heptachlor			40 - 131	20
aldrin			40 - 120	22
dieldrin			52 - 126	18
endrin			56 - 121	21
DDT	30%	29%	38 - 127	27

Low concentrations of DDT and other pesticides or PCBs may have overlooked or underestimated in the samples of this delivery group.

Blank Spike

All of the blank spike recoveries were within the acceptable quality control limits.

Initial Calibrations

The %RSD of DDT in the initial calibration on the DB1701 column was 30%. The %RSD of alpha-BHC in the initial calibration on the DB17 column was 20.2%. The data for both of these compounds were flagged with the "J" qualifier and footnoted with #15 in the data validation summary table.

The percent RSD of each of the single component pesticides must be less than 20%. The percent RSD of the two surrogates must be less than or equal to 30%. Up to two single compound target compounds per column may exceed the 20% limit for the %RSD, but those compounds must have a percent RSD of less than or equal to 30.0%. All of these requirements were met in the initial calibration.

Analyte Resolution

All percent resolutions were greater than 60% on both the RTX-5 and DB1701 columns.

Performance Evaluation Mixtures

All percent resolutions were greater than 90% on both the DB-17 and DB-1701 columns.

The RPD of methoxychlor in PEM01 on the DB17 column (28%) was greater than the 25% quality assurance limit.

The relative percent difference of the calculated amount and the true amount for each of the single component pesticides and surrogates in the PEMs must be less than or equal to 25%.

No other problems were found with any of the performance evaluation mixtures.

Continuing Calibrations - IND A & IND B

All percent resolutions were greater than 90% on both the DB-17 and DB-1701 columns.

The relative percent difference of the calculated amount and the true amount for each of the single component pesticides and surrogates in the INDA and INDB standards must be less than or equal to 25%.

No other problems were detected with the continuing calibrations.

Surrogate Retention Times

All surrogate retention times were within the required limits for both surrogates and on both columns.

Florisil Cartridge Check

All recoveries were within the 80% - 120% quality assurance limits.

The florisil cartridge check was performed on 2/17/98.

GPC Calibration

A GPC cleanup was not performed on any of the samples of this delivery group.

Method Blanks

No compounds were detected in any of the method blanks.

Calibration Blanks

No compounds were detected in any of the calibration blanks.

Field Blanks

A field blank was not associated with the samples of this delivery group.

Instrument Detection Limits

The instrument detection limits were not included with this sample delivery group.

Sample Results

No other problems were detected with any of the samples.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Water TAL Inorganic and Cyanide Analyses
Samples Received October 1, 1998
Sample Delivery Group: TSLL6
Laboratory Reference Numbers:

TSL-L-1
TSL-L-2
TSL-L-6
TSL-L-6MS
TSL-L-6MSD

Water samples were received for TAL metals and cyanide analyses by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

* - Data Completeness
* - Holding Times
* - Calibration Verification
  - CRDL Standards
* - ICP Interference Check Sample
* - Laboratory Control Sample
  - Serial Dilutions
* - Laboratory Blanks
  - Field Blanks
* - Preparation Blanks
  - Matrix Spike
* - Duplicate Analyses
* - Detection Limit Results
* - Linear Range
  - Sample Results

* - Indicates that all criteria were met for this parameter.

Data Validation Summary

Twelve analytes had problems with the serial dilutions with percent differences up to 36%. Significant interferences may have affected the results of these parameters. The specific analytes are detailed below.

The low recoveries of the aluminum (73%) and calcium (70%) matrix spikes should be noted.

The NYS DEC ASP required spiking concentrations were not used in this sample delivery group.

No other significant problems were found which would affect the end use of the data.

Nancy J. Potak
December 15, 1998

Holding Times

All samples were analyzed within the required holding times.

CRDL Standards

The recoveries of all CRDL standards were within the 80% to 120% quality assurance limits with the following exceptions:

Analyte	Initial % Recovery	Final %Recovery
Arsenic	133%	123%

Arsenic was not detected in any of the sample of this delivery group and the high recoveries did not affect the end use of the data.

Initial and Continuing Calibrations

No problems were detected with any of the calibrations associated with this sample delivery group.

Preparation Blank

No compounds were detected in the preparation blank at concentrations above the IDL.

Calibration Blanks

Several analytes were found in the continuing calibration blanks at concentrations between the CRDL and instrument detection limit. The data were not required to be qualified for these low concentrations.

Field Blank

A field blank was not submitted with this sample delivery group.

ICP Interference Check Sample

No problems were detected with the reported ICP Interference Check Sample recoveries.

All of the traditional furnace analytes were included in this standard.

Matrix Spike Recovery

Sample TSL-L-6 of this sample delivery group was used for the matrix spike associated with all of the samples of this delivery group. All recoveries were within the 75% - 125% quality assurance limits with the following exceptions:

Analyte	% Rec.	Qualifier
Aluminum	73%	31
Calcium	70%	31

The recovery of the post digestion spikes were 90% and 64% respectively.

The low recoveries of the aluminum and calcium matrix spikes indicate that the data reported for these analytes may have been somewhat underestimated.

The NYS DEC ASP quality assurance protocols do not require that calcium or potassium matrix spikes be analyzed. Since this was done, the data will be qualified according to the standard EPA data validation protocols. End users of the data should decide how they want to consider these results for the purposes of the data usability.

The NYS DEC ASP required spiking concentrations were not used in this sample delivery group.

Duplicate Analysis

Sample TSL-L-6 of this sample delivery group was used for the matrix duplicate associated with all of the samples of this delivery group. All RPDs were within the 20% quality assurance limit.

Laboratory Control Sample

No problems were detected with the recoveries of the LCS standards.

Serial Dilutions

Sample TSL-L-6 of this sample delivery group also used for the serial dilution. All of the percent differences which could be calculated less than the 10% assurance limit with the following exceptions:

Analyte	% D.
Aluminum	25%
Barium	28%
Calcium	33%
Chromium	29%
Copper	29%
Iron	28%
Lead	26%
Magnesium	25%
Manganese	27%
Potassium	13%
Sodium	12%
Zinc	36%

The data for these compounds were flagged with the "J" qualifier and footnoted with #51 in the data validation summary table. Significant interferences may have been present in the analyses of these parameters and the data for these analytes should be considered as estimated concentrations.

Instrument Detection Limit

No problems with the instrument detection limits were found.

ICP Linear Ranges

No problems were detected with the linear ranges. The reported concentrations of all samples in this delivery group were within their linear range for each analyte.

Sample Results

No problems, in addition to those noted above, were found with any of the reported sample data.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Soil Volatile Organic Analyses
Samples Collected August 27th and 28th, 1998
Sample Delivery Group: SLSED2
Laboratory Reference Numbers:

Holding Blank

Received 8/27
TSL-SED-20
TSL-SED-20MS
TSL-SED-20MSD
TSL-SED-20D
TSL-SED-21
TSL-SED-21D
TSL-SED-22
TSL-SED-22D
TSL-SED-25
TSL-SED-25D

Received 8/28
TSL-SED-23
TSL-SED-23D
TSL-SED-24
TSL-SED-24D

Soil samples were received for analyses of the volatile organic TCL analyte list by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

- Data Completeness
* - GC/MS Tuning
* - Holding Times
- Calibrations
* - Laboratory Blanks
- Field Blank
- Trip Blanks
* - Holding Blank
* - System Monitoring Compound Recoveries
* - Internal Standard Recoveries
* - Matrix Spike / Matrix Spike Duplicate
* - Blank Spike
- Compound Identification
* - Compound Quantitation
- Instrument Detection Limit

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

A low concentration of 4-methyl-2-pentanone (12J ug/kg) was reported in sample TSL-SED-22D, but the spectra did not match that of this compound. The compound was removed from the data validation summary table.

Instrument detection limits were not submitted with this data package.

Trip and field blanks were not analyzed with this sample delivery group.

No other significant problems were found with the volatile analyses of these samples which would affect the end use of the data.

Nancy J. Potak
November 1, 1998

Holding Times

All samples were analyzed within the 10 day holding time required by the NYS DEC's ASP program.

Tunes

No problems were detected with any of the tunes associated with the samples of this delivery group.

System Monitoring Compound Recoveries

All system monitoring compound recoveries were within the NYS DEC's ASP quality assurance limits.

Calibrations

No problems were found with the one initial calibration associated with the samples of this delivery group.

The percent difference of 1,1-dichloroethane (28%) and chloroform (29%) were above the 20% quality assurance limit in the first continuing calibration. The percent difference of chloroform (30%) and 1,2-dichloroethane (26%) were above this quality assurance limit in the second continuing calibration. All samples were analyzed on the first continuing calibration with the exceptions of samples TSL-SED-24 and TSL-SED-24D.

The data for these compounds were flagged with the "J" qualifier and footnoted with #15 in the data validation summary table in the samples which were analyzed with their respective calibrations.

Section D 9.3.5.4 of the NYS DEC ASP Manual states that up to 2 compounds may fail the criteria and still meet the minimum response factor and %RSD requirements. These compounds must have a minimum RRF greater or equal to 0.010 and the %RSD must be less than or equal to 40%. This requirement was satisfied in all of the calibrations of this sample delivery group.

Matrix Spike / Matrix Spike Duplicate

Sample TSL-SED-20 of this sample delivery group was used for the matrix spike and matrix spike duplicate. All recoveries and RPDs were within the required quality assurance limits.

Blank Spike

All blank spike recoveries were within the required quality assurance limits.

Method Blanks

No compounds were detected in any of the method blanks associated with the samples of this delivery group.

Trip Blank

A trip blank was not collected with this sample delivery group.

Field Blank

A field blank was not collected with this sample delivery group.

Holding Blank

A low concentration of a nontarget compound was present in the holding blank. This compound was not detected in any of these samples.

Internal Standard Areas and Retention Times

No problems were found with the recoveries or retention times in any of the internal standards associated with the samples of this delivery group.

Instrument Detection Limits

Instrument detection limits were not included with this sample delivery group.

Sample Results

Several of the samples contained siloxane or freon compounds which are common laboratory contaminants. These were footnoted with #64 in the data validation summary table. They should not be used in the final reporting of the data.

Sample TSL-SED-22D

A low concentration of 4-methyl-2-pentanone (12J ug/kg) was reported in this sample, but the spectra did not match that of this compound. The compound was removed from the data validation summary table.

No other problems were found with the reported results of any of the samples of this delivery group.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Soil Semivolatile Organic Analyses
Samples Collected August 27th and 28th, 1998
Sample Delivery Group: SLSED2
Laboratory Reference Numbers:

Received 8/27
- TSL-SED-20
- TSL-SED-20MS
- TSL-SED-20MSD
- TSL-SED-20MSDRE
- TSL-SED-20D
- TSL-SED-20DRE
- TSL-SED-21
- TSL-SED-21RE
- TSL-SED-21D
- TSL-SED-22
- TSL-SED-22D
- TSL-SED-22DRE
- TSL-SED-25
- TSL-SED-25D

Received 8/28
- TSL-SED-23
- TSL-SED-23D
- TSL-SED-24
- TSL-SED-24D

Soil samples were received for analyses of the Semivolatile organic TCL analyte list by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

- Data Completeness
* - GC/MS Tuning
- Holding Times
- Calibrations
- Laboratory Blanks
- Field Blank
- Surrogate Compound Recoveries
- Internal Standard Recoveries
- Matrix Spike / Matrix Spike Duplicate
* - Blank Spike
- Compound Identification
- Compound Quantitation
- Instrument Detection Limit

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

The laboratory's case narrative notes that:

"Due to severe sample matrix samples TSL-SED-20, TSL-SED-20D, TSL-SED-20RE, TSL-SED-21, TSL-SED-21D, TSL-SED-22, TSL-SED-23 and TSL-SED-23D were all analyzed at an initial dilution factor of five."

"Due to severe sample matrix samples TSL-SED-22D and TSL-SED-22DRE were analyzed at an initial dilution factor of ten."

"Sample TSL-SED-22D was inadvertently spiked with spiking compounds instead of the surrogate compounds, therefore requiring re-extraction. Sample TSL-SED-22DRE was extracted outside of the extraction holding time. As a result both sets of data were reported."

"Due to severe sample matrix sample TSL-SED-24 was analyzed at an initial dilution factor of 50."

"Sample TSL-SED-21 exhibits the recovery of internal standards acenaphthene-d10, chrysene-d12, 1,4-dichlorobenzene-d4, naphthalene-d8 and perylene-d12 as outside quality control limits. Sample TSL-SED-21RE exhibits the concentration of pyrene as slightly above the linear range of the initial calibration standard curve. Due to severe sample matrix a dilution of this sample was not re-analyzed. Sample TSL-SED-21RE was analyzed at a higher dilution than samples TSL-SED-21. Sample TSL-SED-21RE was analyzed at a higher dilution than sample TSL-SED-21. Sample TSL-SED-21RE exhibits the concentration of pyrene as within the linear range of the initial calibration standard curve."

"Samples TSL-SED-20SD and TSL-SED-20MSDRE both exhibited the recovery of internal standard perylene-d-21 as outside quality control limits."

"Sample TSL-SED-20D exhibits the recovery of internal standards acenaphthene-d10, 1,4-dichlorobenzene-d4, naphthalene-d8, phenanthrene-d10, and perylene-d12 as outside quality control limits. Sample TSL-SED-20DRE exhibits the recovery of all six internal standards outside quality control limits."

The significance of the problems with the recoveries of the surrogates and internal standards are discussed below.

Instrument detection limits were not submitted with this data package.

A field blank was not analyzed with this sample delivery group.

No other significant problems were found with the Semivolatile analyses of these samples which would affect the end use of the data.

Nancy J. Potak
November 8, 1998

Holding Times

The laboratory's case narrative states that "Sample TSL-SED-22D was inadvertently spiked with spiking compounds instead of the surrogate compounds, therefore requiring re-extraction. Sample TSL-SED-22DRE was extracted outside of the extraction holding time. As a result both sets of data were reported." The data for the reanalysis was flagged with the "J" qualifier and footnoted with #81 in the data validation summary table.

All other samples were extracted and analyzed within the holding times required by the NYS DEC's ASP program.

Tunes

No problems were detected with any of the tunes associated with the samples of this delivery group.

Surrogate Compound Recoveries

All surrogate compound recoveries were within the NYS DEC's ASP quality assurance limits with the following exceptions:

Sample	S1	S2	S3	S4	S5	S6	S7*	S8*
TSL-SED-20SD								140%
TSL-SED-20D						114%		
TSL-SED-21								256%
TSL-SED-21RE			17%					
TSL-SED-22D	0%	0%	0%	0%	0%	0%	0%	0%

The recoveries of surrogates S7 (2,4,6-tribromophenol) and S8 (terphenyl-d14) are only advisory and the samples were not required to be reanalyzed if their recoveries were outside of the quality assurance limits.

In sample TSL-SED-20D (Lab. #: A8356404), the recovery of the phenol-d5 surrogate (114%) was just above the 113% quality assurance limit. This slightly high recovery does not affect the end use of the data.

The laboratory states in their case narrative that they spiked sample TSL-SED-22D with the matrix spiking compounds instead of the surrogate compounds. The sample was re-extracted with the surrogates approximately one month after the sample was received by the laboratory. All surrogate recoveries were within the required quality assurance limits in the reanalysis.

The NYS DEC's ASP protocols allow for the recovery of one acid and one base/neutral surrogate (as long as the recovery is greater than 10%) to be outside of the required limits. The sample data were not required to be qualified for the slightly high recoveries of these surrogates.

All other surrogate compound recoveries were within the NYS DEC's ASP quality assurance limits.

Calibrations

No problems were detected with either of the two initial calibrations.

The percent differences of isophorone (26%) and 2,4-dimethylphenol (27%) were just above the 25% quality assurance limit in the second continuing calibration. This continuing calibration was only associated with the re-extraction of sample TSL-SED-22D.

The data for these compounds were flagged with the "J" qualifier and footnoted with #15 in the data validation summary table.

Section D 9.3.5.4 of the NYS DEC ASP Manual states that up to 4 compounds may fail the criteria and still meet the minimum response factor and %RSD requirements. These compounds must have a minimum RRF greater or equal to 0.010 and the %RSD must be less than or equal to 40%. This requirement was satisfied in all of the calibrations of this sample delivery group.

Matrix Spike / Matrix Spike Duplicate

Sample TSL-SED-20 of this sample delivery group was used for the matrix spike and matrix spike duplicate for the Water samples. Several recoveries were outside of the acceptable limits:

Compound	MS %Rec Limits	MSD %Rec	QC Limits	RPD	
Phenol			26-90		35
2-Chlorophenol			25-102		50
1,4-Dichlorobenzene			28-104		27
N-Nitroso-di-n-prop.			41-126		38
1,2,4-Trichlorobenzene			38-107		23
4-Chloro-3-methylphenol		113%	26-103		33
Acenaphthene			31-137		19
4-Nitrophenol		130%	11-114		50
2.4-Dinitrotoluene		118%	28-89		47
Pentachlorophenol			17-109		47
Pyrene		880%	35-142	158%	36

The high recoveries of 4-chloro-3-methylphenol, 4-nitrophenol and 2,4-dinitrotoluene do not affect the end use of the data.

The very high matrix spike recovery of pyrene in the MSD may be due to variations in the pyrene concentration in the sample. A pyrene concentration of 7,653 ug/kg was detected in the sample and only 3,474 ug/kg were added as a matrix spike.

Blank Spike

Two blank spikes were analyzed with this sample delivery group. All blank spike recoveries were within the required quality assurance limits.

All blank spike recoveries were within the required quality assurance limits.

Method Blanks

Several non-target compounds (approximately 7) were detected in each of the two method blanks. These were negated whenever they were detected in an associated samples.

Some of the non-target compounds in the samples were not flagged with the "B" qualifier by the laboratory even though they were detected in an associated samples. The "B" qualifier was added in bold in the data validation summary form. The laboratory was not contacted to revise these forms since the change does not significantly affect the end use of the data.

Field Blank

A field blank was not collected with this sample delivery group.

Internal Standard Areas and Retention Times

Several problems were found with the internal standard recoveries:

Sample TSL-SED-20D (Lab. #: A8356404)

The recoveries of five of the six internal standards were less than the 50% quality assurance limit in the initial analysis of this sample. The recoveries of these five internal standards were all greater than 25%. The data for the compounds which were quantitated against these internal standards were flagged with the "J" qualifier and footnoted with #82 in the data validation summary table.

This sample was reanalyzed according to the NYS DEC ASP requirements, but the recoveries of the internal standards were much less in the reanalysis of the sample. The recoveries of all six internal standards were less than the 25% rejection limit. All of the undetected compounds were flagged with the "R" qualifier and footnoted with #89 in the data validation summary table. The data for the compounds which were detected in the samples were flagged with the "J" qualifier and footnoted with #91 in the data validation summary table. The data for these compounds should be considered to be highly estimated.

The data from the initial analysis of this sample should be used for all final reporting.

Sample TSL-SED-21 (Lab. #: A8356405)

The recoveries of four of the six internal standards were less than the 50% quality assurance limit in the initial analysis of this sample. The recoveries of three of these were greater than 25%. The data for the compounds which were quantitated against these internal standards were flagged with the "J" qualifier and footnoted with # 82 in the data validation summary table.

The recovery of the second internal standard was only 23%. The undetected compounds which were quantitated against this internal

standard were flagged with the "R" qualifier and footnoted with #89 in the data validation summary table. None of these compounds were detected in the sample. It is possible that low concentrations of some of these may have been overlooked.

The data for the two non-target compounds quantitated against this internal standard were flagged with the "J" qualifier and footnoted with #91 in the data validation summary table. The data for these compounds should be considered to be highly estimated.

The concentration of pyrene (24,000 ug/kg) was just above the linear range of the analysis (21,000 ug/kg). This sample should have been reanalyzed at a higher dilution to bring the concentration of this compound into the linear range. This was not done by the laboratory.

This sample was reanalyzed according to the NYS DEC ASP requirements, but the recoveries of the internal standards were much less in the reanalysis of the sample. The recoveries of all six internal standards were less than the 25% rejection limit. All of the undetected compounds were flagged with the "R" qualifier and footnoted with #89 in the data validation summary table. The data for the compounds which were detected in the samples were flagged with the "J" qualifier and footnoted with #91 in the data validation summary table. The data for these compounds should be considered to be highly estimated.

The data from the initial analysis of this sample should be used for all final reporting.

No other problems were found with the recoveries or retention times in any of the internal standards associated with the samples of this delivery group.

Instrument Detection Limits

Instrument detection limits were not included with this sample delivery group.

Sample Results

The laboratory's case narrative notes that:

"Due to severe sample matrix samples TSL-SED-20, TSL-SED-20D, TSL-SED-20RE, TSL-SED-21, TSL-SED-21D, TSL-SED-22, TSL-SED-23 and TSL-SED-23D were all analyzed at an initial dilution factor of five."

"Due to severe sample matrix samples TSL-SED-22D and TSL-SED-22DRE were analyzed at an initial dilution factor of ten. Sample TSL-SED-22D was inadvertently spiked with spiking compounds instead of the surrogate compounds, therefore requiring re-extraction. Sample TSL-SED-22DRE was extracted outside of the extraction holding time. As a result both sets of data were reported."

"Due to severe sample matrix sample TSL-SED-24 was analyzed at an initial dilution factor of 50."

Sample TSL-SED-20D (Lab. #: A8356404)

The recovery of the phenol-d5 surrogate (114%) was just above the 113% quality assurance limit. This slightly high recovery does not affect the end use of the data.

The recoveries of five of the six internal standards were less than the 50% quality assurance limit in the initial analysis of this sample. The recoveries of these five internal standards were all greater than 25%. The data for the compounds which were quantitated against these internal standards were flagged with the "J" qualifier and footnoted with # 82 in the data validation summary table.

This sample was reanalyzed according to the NYS DEC ASP requirements, but the recoveries of the internal standards were much less in the reanalysis of the sample. The recoveries of all six internal standards were less than the 25% rejection limit. All of the undetected compounds were flagged with the "R" qualifier and footnoted with #89 in the data validation summary table. The data for the compounds which were detected in the samples were flagged with the "J" qualifier and footnoted with #91 in the data validation summary table. The data for these compounds should be considered to be highly estimated.

The data from the initial analysis of this sample should be used for all final reporting.

Sample TSL-SED-21 (Lab. #: A8356405)

The recoveries of four of the six internal standards were less than the 50% quality assurance limit in the initial analysis of this sample. The recoveries of three of these were greater than 25%. The data for the compounds which were quantitated against these internal standards were flagged with the "J" qualifier and footnoted with # 82 in the data validation summary table.

The recovery of the second internal standard was only 23%. The undetected compounds which were quantitated against this internal standard were flagged with the "R" qualifier and footnoted with #89 in the data validation summary table. None of these compounds were detected in the sample. It is possible that low concentrations of some of these may have been overlooked.

The data for the two non-target compounds quantitated against this internal standard were flagged with the "J" qualifier and footnoted with #91 in the data validation summary table. The data for these compounds should be considered to be highly estimated.

The concentration of pyrene (24,000 ug/kg) was just above the linear range of the analysis (21,000 ug/kg). This sample should have been reanalyzed at a higher dilution to bring the concentration of this compound into the linear range.

The lower concentration of pyrene in the reanalysis may be partly due to the very poor recovery of the chrysene-d12 internal standard (18%) in the

reanalysis. The recovery of this internal standard was in the acceptable range in the initial analysis.

The higher pyrene data from the initial analysis should be used for the final reporting. The concentration (24,000 ug/kg) should be considered to be highly estimated.

This sample was reanalyzed according to the NYS DEC ASP requirements, but the recoveries of the internal standards were much less in the reanalysis of the sample. The recoveries of all six internal standards were less than the 25% rejection limit. All of the undetected compounds were flagged with the "R" qualifier and footnoted with #89 in the data validation summary table. The data for the compounds which were detected in the samples were flagged with the "J" qualifier and footnoted with #91 in the data validation summary table. The data for these compounds should be considered to be highly estimated.

The data from the initial analysis of this sample should be used for all final reporting.

Sample TSL-SED-22D (Lab. #: A8356408)

This sample was inadvertently spiked with spiking compounds instead of the surrogate compounds, therefore requiring re-extraction. The sample was re-extracted approximately one month after it was received by the laboratory.

The data for the re-extraction was flagged with the "J" qualifier and footnoted with #81 in the data validation summary table.

All of the data should be taken from the initial analysis of this sample, with the exception of the 11 matrix spiking compounds. Of these 11, only pyrene was detected in re-extraction at a concentration of 8,00 ug/kg. The concentration of this compound reported in the re-extraction may have been significantly underestimated. Significant concentrations of the other 10 spiking compounds may also have been overlooked.

No other problems were found with the reported results of any of the samples of this delivery group.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Soil Pesticide and PCB Analyses
Samples Collected August 27th and 28th, 1998
Sample Delivery Group: SLSED2
Laboratory Reference Numbers:

Received 8/27
- TSL-SED-20
- TSL-SED-20DL
- TSL-SED-20MS
- TSL-SED-20MSD
- TSL-SED-20D
- TSL-SED-20DDL
- TSL-SED-21
- TSL-SED-21DL
- TSL-SED-21D
- TSL-SED-21DDL
- TSL-SED-22
- TSL-SED-22DL
- TSL-SED-22D
- TSL-SED-22DDL
- TSL-SED-25
- TSL-SED-25D

Received 8/28
- TSL-SED-23
- TSL-SED-23D
- TSL-SED-24
- TSL-SED-24DL
- TSL-SED-24D

Soil samples was received for analyses of the pesticide and PCB TCL analyte list by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

- Data Completeness
- Holding Times
- * - Laboratory Blanks
- Field Blanks
- Surrogate Recoveries
- * - Surrogate Retention Times
- Matrix Spike / Matrix Spike Duplicate
- * - Blank Spike
- Calibrations
- * - Analyte Resolutions
- Performance Evaluation Mixtures
- IND A and IND B Standards
- * - Florisil Cartridge Check
- * - GPC Calibration
- * - Compound Identification
- Method Detection Limit

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

It should be noted that the percent difference of the concentrations of the Aroclors between the two columns was often between 100% and 350%. Many times the pattern for Aroclor 1248 differed from the Aroclor 1248 standard. Only three peaks were used by the laboratory for quantitation, and the Aroclor concentration determined from the third peak was often half that of the other two peaks on both columns.

It is possible that significant concentrations of single component pesticides may have been overlooked due to the high concentrations of Aroclors in many of these samples.

The laboratory's case narrative notes that "The presence of Aroclor 1248 was confirmed by GC/MS in samples TSLSED20, TSLSED20D, TSLSED21, TSLSED21D and TSLSED22D".

The samples which were received on 8/27 were extracted 2 days beyond the required 5 day holding time, while the samples received on 8/28 were extracted 6 days after they were received.

The problems with the calibrations should also be noted.

No other significant problems were found with the analyses of these samples which would affect the end use of the data.

Nancy J. Potak
December 13, 1998

Holding Times

The samples which were received on 8/27 were extracted 2 days beyond the required 5 day holding time, while the samples received on 8/28 were extracted 6 days after they were received. The data for these samples were flagged with the "J" qualifier and footnoted with #81 in the data validation summary table.

All analyses were performed within the required holding times.

Surrogate Recoveries

All surrogate recoveries were within the required quality assurance limits with the following exceptions:

	TCX 1	TCX 2	DCB 1	DCB 2
TSLSED20			168%	216%
TSLSED20MS			171%	224%
TSLSED20SD				190%
TSLSED22			188%	262%
TSLED24				26%

All of the above samples were reanalyzed at a greater dilution due to the very high concentrations of PCBs. The problems with the surrogate recoveries are likely due to the nature of the matrix of the samples.

The surrogate recoveries could not be determined in most of these reanalyses due to the very high dilutions which were used.

EPA data validation guidelines do not require the data to be qualified for a low recovery of one surrogate.

Matrix Spike

Sample TSLSED20 of this sample delivery group was used for the matrix spike and matrix spike duplicate. A matrix spike/matrix duplicate summary form was not included for this sample.

When the raw data for the MS and MSD were examined, it was found that the high concentration of PCBs interfered with the peaks of the spiking compounds. It was not possible to distinguish the matrix spike peaks from those of the Aroclors.

Blank Spike

One blank spike was analyzed with this sample delivery group.

All recoveries were within the required quality assurance limits.

Initial Calibrations

The percent RSD of DDT (22%) was above the 20% quality assurance limit in the DB1701 column initial calibration.

The percent RSD of each of the single component pesticides must be less than 20%. The percent RSD of the two surrogates must be less than or equal to 30%. Up to two single compound target compounds per column may exceed the 20% limit for the %RSD, but those compounds must have a percent RSD of less than or equal to 30.0%. All of these requirements were met in the initial calibration.

No other problems were detected with the initial calibrations.

Analyte Resolution

All percent resolutions were greater than 60% on both the RTX-5 and DB1701 columns.

Performance Evaluation Mixtures

All percent resolutions were greater than 90% on both the DB-608 and DB-1701 columns.

The relative percent difference of the calculated amount and the true amount for each of the single component pesticides and surrogates in the PEMs must be less than or equal to 25%. This requirement was satisfied in all of the PEM standards in this sample delivery group.

The retention times of alpha-BHC, beta-BHC and gamma-BHC were eluting at or just above their upper retention time window in the final PEM standard (PEM09) on the BD17 column.

No other problems were found with any of the performance evaluation mixtures.

Continuing Calibrations - IND A & IND B

All percent resolutions were greater than 90% on both the DB-608 and DB-1701 columns.

The relative percent difference of the calculated amount and the true amount for each of the single component pesticides and surrogates in the INDA and INDB standards must be less than or equal to 25%.

Several minor problems were noted with the continuing calibration retention times:

The retention times of all four BHC's were at the lower limit of their retention time windows in the analysis of both INDA04 and INDB04 on the DB1701 column.

The retention times of all four BHC's and aldrin were at the upper limit of their retention time windows in the analysis of both INDA06 and INDB06 on the DB17 column.

The retention times of all alpha-BHC, gamma-BHC and aldrin were at the upper limit of their retention time windows in the analysis of INDA07 on the DB17 column.

The chromatograms of the samples which were analyzed near these standards were examined for possible pesticide and PCB's which might have been overlooked. No problems were detected with these chromatograms.

No other problems were detected with the continuing calibrations.

Surrogate Retention Times

All surrogate retention times were within the required limits for both surrogates and on both columns.

Florisil Cartridge Check

All recoveries were within the 80% - 120% quality assurance limits.

The florisil cartridge check was performed on 2/17/98.

GPC Calibration

No problems were detected with the GPC calibrations.

Method Blanks

No compounds were detected in any of the method blanks.

Calibration Blanks

No compounds were detected in any of the calibration blanks.

Field Blanks

No compounds were detected in the one field blank associated with the samples of this delivery group.

Instrument Detection Limits

The instrument detection limits were not included with this sample delivery group.

Sample Results

It should be noted that the percent difference of the concentrations of the Aroclors between the two columns was often between 100% and 350%.

It is possible that significant concentrations of single component pesticides may have been overlooked due to the high concentrations of Aroclors in many of these samples.

Sample TSL-SED-20

The concentration of Aroclor 1248 should be reported from the 50X dilution.

The concentration of Aroclor 1260 in this sample was calculated as 2,000 ug/kg during the data validation, but 2,600 ug/kg was reported by the laboratory.

Sample TSL-SED-20D

The concentration of Aroclor 1248 should be reported from the 1000X dilution.

The "E" qualifier was not added to Aroclor 1248 in the initial 100X dilution of this sample. This was added in the data validation summary table.

Sample TSL-SED-21

The concentration of Aroclor 1248 should be reported from the 100X dilution.

The concentration of Aroclor 1260 in the initial analysis of this sample was calculated as 3,200 ug/kg during the data validation, but 2,400 ug/kg was reported by the laboratory. The data for Aroclor 1260 should be reported from this analysis.

The concentration of Aroclor 1260 in the diluted analysis of this sample was calculated as 4,100 ug/kg during the data validation, but 3,700 ug/kg was reported by the laboratory.

Sample TSL-SED-21D

The concentration of Aroclor 1248 should be reported from the 100X dilution.

Sample TSL-SED-22

The concentration of Aroclor 1248 should be reported from the 50X dilution.

Sample TSL-SED-22D

The concentration of Aroclor 1248 should be reported from the 1000X dilution.

The "E" qualifier was not added to Aroclor 1248 in the initial 100X dilution of this sample. This was added in the data validation summary table.

Sample TSL-SED-23D

The concentration of Aroclor 1248 should be reported from the 100X dilution.

The "E" qualifier was also added to Aroclor 1248 in the 100X dilution of this sample, but the concentration of this PCB was within the linear range in this dilution. The "E" qualifier was removed in the data validation summary table.

Sample TSL-SED-24

The concentration of Aroclor 1248 should be reported from the 50X dilution.

No other problems were detected with any of the samples.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Soil TAL Inorganic and Cyanide Analyses
Samples Collected August 27th and 28th, 1998
Sample Delivery Group: SLSED2
Laboratory Reference Numbers:

Received 8/27
- TSL-SED-20
- TSL-SED-20MS
- TSL-SED-20MD
- TSL-SED-20D
- TSL-SED-21
- TSL-SED-21D
- TSL-SED-22
- TSL-SED-22D
- TSL-SED-25
- TSL-SED-25D

Received 8/28
- TSL-SED-23
- TSL-SED-23D
- TSL-SED-24
- TSL-SED-24D

Soil samples were received for TAL metals and cyanide analyses by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

- Data Completeness
* - Holding Times
- Calibration Verification
- CRDL Standards
* - ICP Interference Check Sample
* - Laboratory Control Sample
- Serial Dilutions
- Laboratory Blanks
- Field Blanks
* - Preparation Blanks
- Matrix Spike
- Duplicate Analyses
* - Detection Limit Results
* - Linear Range
- Sample Results

* - Indicates that all criteria were met for this parameter.

Data Validation Summary

All of the lead data in this sample delivery group were technically rejected due to the lack of any lead matrix spike recovery.

All of the manganese data in this sample delivery group were technically rejected due to the very high manganese matrix spike recovery (320%).

The data reported for both lead and manganese are too unreliable to be used in assessing the degree of contamination of these samples.

Several other more minor problems were found with both the matrix spike recoveries, duplicate analyses and/or serial dilutions for the majority of the inorganic analytes. These should be noted by all end users of the data.

Several samples were analyzed for the serial dilutions. The laboratory qualified all of the sample data for each quality assurance parameter that was outside of the required quality assurance limits. As a result, this made the qualification of the data very confusing. During the data validation, a laboratory's qualifier was removed in the data validation summary table if that sample itself was analyzed for a matrix spike, matrix duplicate, or serial dilution and no problem was found.

These data should be considered to be estimated based upon the types of problems that were found with the matrix spike recoveries and the duplicate precision. With the exceptions of lead and manganese, they are not unusual in the analysis of soil samples.

Nancy J. Potak
November 20, 1998

Holding Times

All samples were analyzed within the required holding times.

CRDL Standards

Several separate ICP runs were analyzed with this sample delivery group.

All of the samples were initially analyzed on the first ICP run. The recoveries of all CRDL standards were within the 80% to 120% quality assurance limits in the first ICP run with the following exception:

Analyte	Initial % Recovery	Second % Recovery	Final %Recovery
Lead		122%	
Selenium	138%		

All of the lead concentrations in these samples were much too high to be affected by the high CRDL standard recoveries. The data for these analytes were not required to be qualified in the data validation summary table.

Selenium was not detected in any of the samples of this delivery group and as a result, the selenium concentrations were too high to be affected by the CRDL standard recovery.

Thallium was analyzed on two separate ICP runs. Samples SED-25, SED-25D, SED-20, SED20D, SED-21, SED-21D, SED-22 and SED-22D were analyzed with this ICP run.

Analyte	Initial % Recovery	Second % Recovery	Final %Recovery
Thallium		76%	

Thallium was not detected in any of these samples and it is possible that low concentrations of this analyte may have been overlooked. The thallium data for the above samples were flagged with the "J" qualifier and footnoted with #21 in the data validation summary table.

Initial and Continuing Calibrations

No problems were detected with any of the calibrations associated with this sample delivery group.

Preparation Blank

Two preparation blanks were analyzed with this sample delivery group.

Several other analytes were found in the preparation blanks at concentrations between the absolute value of CRDL and instrument detection limit. The data were not required to be qualified for these low concentrations.

Calibration Blanks

The concentration of iron (101 ug/l) was just above the CRDL of 100 in the first continuing calibration blank. According to the NYS DEC ASP protocols, the run should have been halted, but this does not affect the end use of the data.

Several other analytes were found in the continuing calibration blanks at concentrations between the CRDL and instrument detection limit. The data were not required to be qualified for these low concentrations.

Field Blank

A field blank was not submitted with this sample delivery group.

ICP Interference Check Sample

No problems were detected with the reported ICP Interference Check Sample recoveries.

All of the traditional furnace analytes were included in this standard.

Matrix Spike Recovery

Sample SED-20 of this sample delivery group was used for the matrix spike associated with all of the samples of this delivery group. All recoveries were within the 75% - 125% quality assurance limits with the following exceptions:

Analyte	% Rec.	Qualifier	
Antimony	59%	35	
Chromium	50%	35	
Copper	72%	35	
Lead	7.8%	36	Reject
Manganese	320%	38	Reject
Nickel	74%	35	
Silver	69%	35	
Zinc	67%	35	
Cyanide	134%	37	

Lead was not recovered from the matrix spike. Since, the recovery of the soil predigestion spike was less than 10%, significant problems were found with matrix interference. All samples associated with this quality assurance sample have been flagged with the "N" qualifier. The data are technically unusable even though the matrix interference associated with the other samples may not be the same as that of the sample chosen for the matrix spike. Associated data would be rejected according to the EPA HW-2 data validation guidelines (A.1.9.7.5). All of the lead data were flagged with the "R" qualifier and footnoted with #36 in the data validation summary table.

The recovery of the manganese soil predigestion spike was greater than 200% and the sample results were greater than the IDL. This indicates that severe matrix interference may be present. All samples associated with this quality assurance sample have been flagged with the "N" qualifier. The matrix interference associated with the other samples may not be the same as that of the sample chosen for the matrix spike. Associated data would be rejected according to the EPA HW-2 data

validation guidelines (A.1.9.7.4). All of the manganese data were flagged with the "R" qualifier and footnoted with #38 in the data validation summary table.

The recovery of the cyanide soil predigestion spike was between 126% and 200%, and the sample results were greater than the IDL for all of the samples of this delivery group. This indicates that matrix interference may be present. All samples associated with this quality assurance sample have been flagged with the "N" qualifier. The matrix interference associated with the other samples of this delivery group may not be the same as that of the sample chosen for the matrix spike. All of the cyanide data were flagged with the "J" qualifier and footnoted with #37 in the data validation summary table..

The concentrations of the remaining analytes, antimony, chromium, copper, nickel, silver and zinc, may have been underestimated in these samples. The data for these analytes were flagged with the "J" qualifier and footnoted with #35 in the data validation summary table. The concentrations reported for these analytes should be considered to be estimated values.

The post digestion recoveries of all of these analytes were within the required quality assurance limits (ranging from 79% to 101%).

Duplicate Analysis

Sample SED20 of this sample delivery group was used for the matrix duplicate associated with the digestions of samples TP-31, TP-33 and TP-34. All RPDs were within the 20% quality assurance limit with the following exceptions:

Analyte	RPD	Qualifier
Calcium	22%	45
Chromium	68%	45
Copper	54%	45
Lead	66%	45
Magnesium	23%	45
Nickel	47%	45
Zinc	44%	45

The data for these analytes were flagged with the "J" qualifier and footnoted with #45 in the data validation summary table. The concentrations reported for these analytes should be considered to be estimated values.

Laboratory Control Sample

Two LCS standards were analyzed with this sample delivery group.

No problems were detected with the recoveries of either soil LCS standards.

Serial Dilutions

Two serial dilutions were analyzed with this sample delivery group:

Sample SED-2D of this sample delivery group was used for the first serial dilution. All of the percent differences which could be calculated less than the 10% assurance limits with the following exception:

Analyte	% D.	Qualifier
Zinc	12%	51

Sample SED 24 of this sample delivery group was used for the second serial dilution. All of the percent differences which could be calculated less than the 10% assurance limits with the following exception:

Analyte	% D.	Qualifier
Potassium	17%	51

Since two serial dilutions were analyzed with this sample delivery group, the reporting of the qualifiers was somewhat confusing and overlapping. All of the analytes with serial dilution percent differences outside of the quality assurance limits were qualified by the laboratory for all of the samples. They did not take into account the specific serial dilution analyses:

In those samples which were analyzed for a serial dilution, the data were flagged with the "J" qualifier and footnoted with #51 only when the serial dilution percent difference was outside of the quality assurance limits for that particular sample. The "E" qualifier was removed from these analytes.

Instrument Detection Limit

No problems with the instrument detection limits were found.

ICP Linear Ranges

No problems were detected with the linear ranges. The reported concentrations of all samples in this delivery group were within their linear range for each analyte.

Sample Results

No problems were found with any of the reported sample data.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Soil Volatile Organic Analyses
Samples Collected August 20, 1998
Sample Delivery Group: SS10
Laboratory Reference Numbers:

Holding Blank
TSL-SS-10
TSL-SS-11
TSL-SS-12
TSL-SS-13
TSL-SS-14
TSL-SS-15
TSL-SS-16
TSL-SS-16MS
TSL-SS-16MSD

Soil samples were received for analyses of the volatile organic TCL analyte list by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

- Data Completeness
* - GC/MS Tuning
* - Holding Times
- Calibrations
* - Laboratory Blanks
- Field Blank
- Trip Blanks
* - Holding Blank
* - System Monitoring Compound Recoveries
* - Internal Standard Recoveries
* - Matrix Spike / Matrix Spike Duplicate
* - Blank Spike
* - Compound Identification
* - Compound Quantitation
- Instrument Detection Limit

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

Instrument detection limits were not submitted with this data package.

A field and trip blank was not analyzed with this sample delivery group.

No other significant problems were found with the volatile analyses of these samples which would affect the end use of the data.

Nancy J. Potak

Nancy J. Potak
October 28, 1998

Holding Times

All samples were analyzed within the 10 day holding time required by the NYS DEC's ASP program.

Tunes

No problems were detected with any of the tunes associated with the samples of this delivery group.

System Monitoring Compound Recoveries

All system monitoring compound recoveries were within the NYS DEC's ASP quality assurance limits.

Calibrations

The percent RSD of bromoform (31%) was above the 20.%% quality assurance limit in the one initial calibration associated with the samples of this delivery group. The data for this compound was flagged with the "J" qualifier and footnoted with #15 in the data validation summary table. This compound was not detected in any of the samples.

No problems were detected with either of the two continuing calibrations.

Section D 9.3.5.4 of the NYS DEC ASP Manual states that up to 2 compounds may fail the criteria and still meet the minimum response factor and %RSD requirements. These compounds must have a minimum RRF greater or equal to 0.010 and the %RSD must be less than or equal to 40%. This requirement was satisfied in all of the calibrations of this sample delivery group.

Matrix Spike / Matrix Spike Duplicate

Sample TSL-SS-16 of this sample delivery group was used for the matrix spike and matrix spike duplicate. All recoveries and RPDs were within the acceptable quality control limits.

Blank Spike

Two soil blank spikes were analyzed with this sample delivery group. All blank spike recoveries were within the required quality assurance limits.

Method Blanks

No compounds were detected in either of the two method blanks associated with the samples of this delivery group.

Trip Blanks

A trip blank was not analyzed with the samples of this delivery group.

Field Blank

A field blank was not collected with this sample delivery group.

Holding Blank

No compounds were detected in the one holding blank associated with the samples of this delivery group.

Internal Standard Areas and Retention Times

No problems were found with the recoveries or retention times in any of the internal standards associated with the samples of this delivery group.

Instrument Detection Limits

Instrument detection limits were not included with this sample delivery group.

Sample Results

No problems were found with the reported results of any of the samples of this delivery group.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Soil Semivolatile Organic Analyses
Samples Collected August 20, 1998
Sample Delivery Group: SS10
Laboratory Reference Numbers:

TSL-SS-10
TSL-SS-11
TSL-SS-12
TSL-SS-13
TSL-SS-14
TSL-SS-15
TSL-SS-16
TSL-SS-16MS
TSL-SS-16MSD

Soil samples were received for analyses of the Semivolatile organic TCL analyte list by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

- Data Completeness
* - GC/MS Tuning
* - Holding Times
- Calibrations
* - Laboratory Blanks
- Field Blank
* - Holding Blank
* - Surrogate Compound Recoveries
* - Internal Standard Recoveries
* - Matrix Spike / Matrix Spike Duplicate
* - Blank Spike
* - Compound Identification
* - Compound Quantitation
- Instrument Detection Limit

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

The laboratory's case narrative states that "due to matrix thickness and dark coloration, samples TSL-SS-10 and TSL-SS-13 were analyzed at an initial dilution factor of five". Also "due to matrix thickness and dark coloration, samples TSL-SS-11 and TSL-SS-12 were analyzed at an initial dilution factor of ten".

Instrument detection limits were not submitted with this data package.

A field blank was not analyzed with this sample delivery group.

No other significant problems were found with the Semivolatile analyses of these samples which would affect the end use of the data.

Nancy J. Potak

November 5, 1998

Holding Times

All samples were extracted and analyzed within the holding times required by the NYS DEC's ASP program.

Tunes

No problems were detected with any of the tunes associated with the samples of this delivery group.

Surrogate Compound Recoveries

All surrogate compound recoveries were within the NYS DEC's ASP quality assurance limits with the following exceptions:

Sample	S1	S2	S3	S4	S5	S6	S7 *	S8 *
TSL-SS-10				134%		114%		
TSL-SS-11								141%

The recoveries of surrogates S7 (2,4,6-tribromophenol) and S8 (terphenyl-d14) are only advisory and the samples were not required to be reanalyzed if their recoveries were outside of the quality assurance limits.

The NYS DEC's ASP protocols allow for the recovery of one acid and one base/neutral surrogate (as long as the recovery is greater than 10%) to be outside of the required limits. The sample data were not required to be qualified for the slightly high recoveries of these surrogates.

All other surrogate compound recoveries were within the NYS DEC's ASP quality assurance limits.

Calibrations

The percent RSD of benzo(k)fluoranthene (28%) was above the 20% quality assurance limit in the one initial calibration associated with the samples of this delivery group.

The percent difference of benzo(ghi)perylene (26%) was just above the 25% quality assurance limit in the second continuing calibration. This was associated with the analyses of all samples with the one exception of sample TSL-SS-15.

The data for these compounds were flagged with the "J" qualifier and footnoted with #15 in the data validation summary table.

No other problems were detected with the calibrations.

Section D 9.3.5.4 of the NYS DEC ASP Manual states that up to 4 compounds may fail the criteria and still meet the minimum response factor and %RSD requirements. These compounds must have a minimum RRF greater or equal to 0.010 and the %RSD must be less than or equal to 40%. This requirement was satisfied in all of the calibrations of this sample delivery group.

Matrix Spike / Matrix Spike Duplicate

Sample TSL-SS-16 of this sample delivery group was used for the matrix spike and matrix spike duplicate for the soil samples. Several recoveries were outside of the acceptable limits:

Compound	MS %Rec	MSD %Rec	QC Limits	RPD Limits
Phenol			26-90	35
2-Chlorophenol			25-102	50
1,4-Dichlorobenzene			28-104	27
N-Nitroso-di-n-prop.			41-126	38
1,2,4-Trichlorobenzene			38-107	23
4-Chloro-3-methylphenol		108%	26-103	33
Acenaphthene			31-137	19
4-Nitrophenol			11-114	50
2.4-Dinitrotoluene	106%	103%	28-89	47
Pentachlorophenol	9%	10%	17-109	47
Pyrene			35-142	36

The slightly high recoveries of 4-chloro-3-methylphenol and 2,4-dinitrotoluene do not affect the end use of the data.

The low recoveries of pentachlorophenol indicate that some phenolic compounds may have been overlooked or underestimated.

Blank Spike

All blank spike recoveries were within the required quality assurance limits with the one exception of the recovery of 4-chloro-3-methylphenol (106%). This was just above the 103% quality assurance limit. The slightly high recovery of this surrogate does not affect the end use of the data.

Method Blanks

A low concentration of di-n-butylphthalate (94J ug/kg) and 8 non-target compounds were detected in the one method blank associated with the samples of this delivery group.

Di-n-butylphthalate was not detected in any of the samples of this delivery group. The non-target compounds were negated according to standard EPA data validation protocols whenever they were detected in a sample.

Some of the non-target compounds in the samples were not flagged with the "B" qualifier by the laboratory even though they were detected in an associated samples. The "B" qualifier was added in bold in the data validation summary form. The laboratory was not contacted to revise these forms since the change does not significantly affect the end use of the data.

Field Blank

A field blank was not collected with this sample delivery group.

Internal Standard Areas and Retention Times

No problems were found with the recoveries or retention times in any of the internal standards associated with the samples of this delivery group.

Instrument Detection Limits

Instrument detection limits were not included with this sample delivery group.

Sample Results

The laboratory's case narrative states that "due to matrix thickness and dark coloration, samples TSL-SS-10 and TSL-SS-13 were analyzed at an initial dilution factor of five". Also "due to matrix thickness and dark coloration, samples TSL-SS-11 and TSL-SS-12 were analyzed at an initial dilution factor of ten".

No other problems were found with the reported results of any of the samples of this delivery group.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Soil Pesticide and PCB Analyses
Samples Collected August 20, 1998
Sample Delivery Group: SS10
Laboratory Reference Numbers:

TSL-SS-10
TSL-SS-11
TSL-SS-12
TSL-SS-13
TSL-SS-14
TSL-SS-15
TSL-SS-16
TSL-SS-16DL
TSL-SS-16MS
TSL-SS-16MSD

Soil samples was received for analyses of the pesticide and PCB TCL analyte list by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

- Data Completeness
* - Holding Times
* - Laboratory Blanks
- Field Blanks
- Surrogate Recoveries
* - Surrogate Retention Times
- Matrix Spike / Matrix Spike Duplicate
- Blank Spike
- Calibrations
* - Analyte Resolutions
- Performance Evaluation Mixtures
- IND A and IND B Standards
* - Florisil Cartridge Check
* - GPC Calibration
* - Compound Identification
- Method Detection Limit

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

A blank spike was not analyzed with this sample delivery group.

No significant problems were found with the analyses of these samples which would affect the end use of the data.

Nancy J. Potak
December 4, 1998

Holding Times

All extractions and analyses were performed within the required holding times.

Surrogate Recoveries

All surrogate recoveries were within the required quality assurance limits with the following exceptions:

	TCX 1	TCX 2	DCB 1	DCB 2
TSLSS11				212%
TSLSS12			154%	179%
TSLSS16MS			204%	182%
TSLSS16MSD			13%	

EPA data validation guidelines do not require the data to be qualified for high recoveries of one surrogate compound.

Although there were problems with the recoveries of the surrogates in the matrix spike and matrix spike duplicate of sample TSLSS16, no problems were found with the recoveries of the surrogates in the sample itself. The problems with the recoveries of the surrogates in the matrix spike and matrix spike duplicate do not affect the end use of the data.

Matrix Spike

Sample TSLSS16 of this sample delivery group was used for the matrix spike and matrix spike duplicate. None of the spiking compounds were recovered from this sample.

When the raw data for the MS and MSD were examined, it was found that the high concentration of PCBs interfered with the peaks of the spiking compounds. It was not possible to distinguish the matrix spike peaks from those of the Aroclor.

Both the matrix spike and matrix spike duplicate were reanalyzed at a dilution. None of the spiking compounds were recovered from the dilution due to the high concentration of Aroclor 1248.

Blank Spike

A blank spike was not analyzed with this sample delivery group.

Initial Calibrations

The percent RSD of DDT (22%) was above the 20% quality assurance limit in the DB1701 column initial calibration. DDT was flagged with the "J" qualifier and footnoted with # 15in the data validation summary table.

No other problems were detected with the initial calibrations.

The percent RSD of each of the single component pesticides must be less than 20%. The percent RSD of the two surrogates must be less than or equal to 30%.

Up to two single compound target compounds per column may exceed the 20% limit for the %RSD, but those compounds must have a percent RSD of less than or equal to 30.0%. All of these requirements were met in the initial calibration.

Analyte Resolution

All percent resolutions were greater than 60% on both the RTX-5 and DB1701 columns.

Performance Evaluation Mixtures

All percent resolutions were greater than 90% on both the DB-608 and DB-1701 columns.

The relative percent difference of the calculated amount and the true amount for each of the single component pesticides and surrogates in the PEMs must be less than or equal to 25%. This requirement was satisfied in all of the PEM standards in this sample delivery group.

The retention times of alpha-BHC, beta-BHC and gamma-BHC were eluting at or just above their upper retention time window in the final PEM standard (PEM09) on the BD17 column. The chromatogram of the samples eluting near these peaks were examined and it did not appear that the possible presence of any pesticide of PCB was overlooked.

No other problems were found with any of the performance evaluation mixtures.

Continuing Calibrations - IND A & IND B

All percent resolutions were greater than 90% on both the DB-608 and DB-1701 columns.

The relative percent difference of the calculated amount and the true amount for each of the single component pesticides and surrogates in the INDA and INDB standards must be less than or equal to 25%.

Several minor problems were noted with the continuing calibration retention times:

The retention times of all four BHCs were at the lower limit of their retention time windows in the analysis of both INDA04 and INDB04 on the DB1701 column.

The retention times of all four BHCs and aldrin were at the upper limit of their retention time windows in the analysis of both INDA06 and INDB06 on the DB17 column.

The retention times of all alpha-BHC, gamma-BHC and aldrin were at the upper limit of their retention time windows in the analysis of INDA07 on the DB17 column.

The chromatograms of the samples which were analyzed near these standards were examined for possible pesticide and PCB's which might have been overlooked. No problems were detected with these chromatograms.

No other problems were detected with the continuing calibrations.

Surrogate Retention Times

All surrogate retention times were within the required limits for both surrogates and on both columns.

Florisil Cartridge Check

All recoveries were within the 80% - 120% quality assurance limits.

The florisil cartridge check was performed on 2/17/98.

GPC Calibration

No problems were detected with the GPC calibrations.

Method Blanks

No compounds were detected in any of the method blanks.

Calibration Blanks

No compounds were detected in any of the calibration blanks.

Field Blanks

A field blank was not collected with this sample delivery group.

Instrument Detection Limits

The instrument detection limits were not included with this sample delivery group.

Sample Results

Sample TSL-SS-11 (Lab. #: A8343302)

Although there were many of the Aroclor peaks present in this sample in relatively high concentrations, no clear pattern for any of the Aroclors was detected.

Sample TSL-SS-12 (Lab. #: A8343303)

Although there were many of the Aroclor peaks present in this sample in relatively high concentrations, no clear pattern for any of the Aroclors was detected.

Sample TSL-SS-13 (Lab. #: A8343304)

Although there were many of the Aroclor peaks present in this sample in relatively high concentrations, no clear pattern for any of the Aroclors was detected.

Sample TSL-SS-15 (Lab. #: A8343306)

Since Aroclor 1248 was detected in this sample, it was not possible to determine the presence or absence of many of the pesticides. There may have been some pesticides which were overlooked due to the presence of the Aroclor in this sample. There were many overlaps between the Aroclor peaks and those of the single component pesticides.

Sample TSL-SS-16 (Lab. #: A8343307)

This sample was analyzed at a 50X dilution due to the high concentration of Aroclor 1248 (8,600 ug/kg) in this sample.

Although the concentration of Aroclor 1248 the laboratory reported on FORM I agreed with that calculated during the data validation, the concentrations reported on FORM X (page 777, 11,000 ug/kg and 10,000 ug/kg) could not be confirmed during the data validation. The laboratory has not been asked to revise this form.

Since Aroclor 1248 was detected in this sample, it was not possible to determine the presence or absence of many of the pesticides. There may have been some pesticides which were overlooked due to the presence of the Aroclor in this sample. There were many overlaps between the Aroclor peaks and those of the single component pesticides.

No other problems were detected with any of the samples

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Soil TAL Inorganic and Cyanide Analyses
Samples Collected August 20, 1998
Sample Delivery Group: SS10
Laboratory Reference Numbers:

TSL-SS-10
TSL-SS-11
TSL-SS-12
TSL-SS-13
TSL-SS-14
TSL-SS-15
TSL-SS-16
TSL-SS-16MS
TSL-SS-16MD

Soil samples were received for TAL metals and cyanide analyses by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

- Data Completeness
* - Holding Times
* - Calibration Verification
- CRDL Standards
* - ICP Interference Check Sample
* - Laboratory Control Sample
- Serial Dilutions
* - Laboratory Blanks
- Field Blanks
* - Preparation Blanks
- Matrix Spike
* - Duplicate Analyses
* - Detection Limit Results
* - Linear Range
* - Sample Results

* - Indicates that all criteria were met for this parameter.

Data Validation Summary

The problems with the matrix spike recoveries of chromium (65%) and manganese (69%) should be noted by all end users of the data.

The high percent difference of potassium (13%) in the serial dilution should also be noted.

The concentrations reported for these three analytes should be considered to be estimated values.

The FORM I for sample TSL-SS-13 was not included in the copy of the analytical report submitted for validation. This was received from the laboratory in their 11/16 fax.

No other significant problems were found which would affect the end use of the data.

Nancy J. Potak
November 16, 1998

Holding Times

All samples were analyzed within the required holding times.

CRDL Standards

The recoveries of all CRDL standards were within the 80% to 120% quality assurance limits with the following exception:

Analyte	Initial % Recovery	Final % Recovery
Selenium	138%	(ok)

Selenium was not detected in any of the samples of this delivery group. The high recovery of the initial CRDL standard does not affect the usability of the data and the data were not required to be qualified for the high selenium recoveries.

Initial and Continuing Calibrations

No problems were detected with any of the calibrations associated with this sample delivery group.

Preparation Blank

Several analytes were found in the preparation blanks at concentrations between the absolute value of CRDL and instrument detection limit. The data were not required to be qualified for these low concentrations.

Calibration Blanks

Several analytes were found in the continuing calibration blanks at concentrations between the CRDL and instrument detection limit. The data were not required to be qualified for these low concentrations.

Field Blank

A field blank was not submitted with this sample delivery group.

ICP Interference Check Sample

No problems were detected with the reported ICP Interference Check Sample recoveries.

All of the traditional furnace analytes were included in this standard.

Matrix Spike Recovery

Sample TSL-SS-16 of this sample delivery group was used for the matrix spike. All recoveries were within the 75% - 125% quality assurance limits with the following exceptions:

Analyte	% Rec.	Qualifier
Chromium	65%	35
Manganese	69%	35

The concentrations of these analytes may have been underestimated in the samples of this delivery group. The data for chromium and manganese were flagged with the "J" qualifier and footnoted with #35 in the data validation summary table. The concentrations reported for these two analytes should be considered to be estimated values.

The post digestion recoveries of these two analytes were both within the required quality assurance limits (88% and 84%).

Duplicate Analysis

Sample TSL-SS-16 of this sample delivery group was also used for the matrix duplicate for the full inorganic TCL analyte list. All recoveries which could be calculated were within the acceptable limits.

Laboratory Control Sample

No problems were detected with the recoveries of the soil LCS standard.

Serial Dilutions

Sample TSL-SS-16 of this sample delivery group was also used for the serial dilution. All of the percent differences which could be calculated were less than the 10% assurance limits with the following exception:.

Analyte	% D.	Qualifier
Potassium	13%	51

The potassium data reported for the samples of this delivery group may be associated with some interferences. The potassium data should be considered to be slightly estimated. All of the potassium data were flagged with the "J" qualifier and footnoted with #51 in the data validation summary table.

Instrument Detection Limit

No problems with the instrument detection limits were found.

ICP Linear Ranges

No problems were detected with the linear ranges. The reported concentrations of all samples in this delivery group were within their linear range for each analyte.

Sample Results

The FORM I for sample TSL-SS-13 was not included in the copy of the analytical report submitted for validation. This was received from the laboratory in their 11/16 fax.

No other problems were found with any of the reported sample data.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Soil Volatile Organic Analyses
Samples Collected August 6th through 12th, 1998
Sample Delivery Group: TSLTP8
Laboratory Reference Numbers:

Holding Blank

Received 8/6
Trip Blank
TSP-TP-8

Received 8/7
Trip Blank
TSP-TP-14

Received 8/11
Trip Blank
TSP-TP-31
TSP-TP-33

Received 8/12
Trip Blank
TSP-TP-34
TSP-TP-34DL

Soil samples were received for analyses of the volatile organic TCL analyte list by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

- Data Completeness
* - GC/MS Tuning
* - Holding Times
- Calibrations
* - Laboratory Blanks
- Field Blank
* - Trip Blanks
* - Holding Blank
- System Monitoring Compound Recoveries
- Internal Standard Recoveries
- Matrix Spike / Matrix Spike Duplicate
* - Blank Spike
* - Compound Identification
* - Compound Quantitation
- Instrument Detection Limit

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

Sample TSP-TP-34 was reanalyzed with a medium level analysis due to very high concentrations of toluene (150,000 ug/kg), ethylbenzene (4,600 ug/kg), xylene (44,000 ug/l), chloroethane, 1,1-dichloroethane and 1,2-dichloroethene:

In the medium level analysis, only toluene, ethylbenzene and xylene were detected. Since chloroethane, 1,1-dichloroethane and 1,2-dichloroethene were not detected in the medium level analysis, their concentrations reported in the initial low level analysis should be used for the final reporting, but these concentrations should be considered to be highly estimated. The data for these compounds were flagged with the "J" qualifier and footnoted with the "See Text" notation in the data validation summary table. All of the final data, with the exceptions of toluene, ethylbenzene and xylene should be taken from the initial low level analysis of this sample. The spectra of the non-target compound eluting at 22.17 minutes was not included in the analytical report.

The recovery of the chlorobenzene-d5 internal standard (350%) was way above the 150% quality assurance limit in the initial analysis of sample TSL-TP-34. The compounds which were quantitated against this internal standard were flagged with the "J" qualifier and footnoted with # 90 in the data validation summary table. The data for 1,1,1-trichloroethene (58 ug/kg), trichloroethene (3 ug/kg) and benzene (27 ug/kg) which were found in this sample should be considered to be highly estimated.

The spectra of the non-target compound eluting at 22.17 minutes was not included in the analytical report.

A matrix spike and matrix spike duplicate were not associated with this sample delivery group.

Instrument detection limits were not submitted with this data package.

A field blank was not analyzed with this sample delivery group.

No other significant problems were found with the volatile analyses of these samples which would affect the end use of the data.

Nancy J. Potak
October 30, 1998

Holding Times

All samples were analyzed within the 10 day holding time required by the NYS DEC's ASP program.

Tunes

No problems were detected with any of the tunes associated with the samples of this delivery group.

System Monitoring Compound Recoveries

All system monitoring compound recoveries were within the NYS DEC's ASP quality assurance limits with the one exception of the initial analysis of sample TSP-TP-34

The recoveries of the BFB (128%) and toluene-d8 (15%) were outside of the quality assurance limits (59% - 113% and 84% - 138% respectively).

This sample was reanalyzed with a medium level analysis due to very high concentrations of toluene (150,000 ug/kg), ethylbenzene (4,600 ug/kg), xylene (44,000 ug/l), chloroethane, 1,1-dichloroethane and 1,2-dichloroethene and the concentrations of all the system monitoring compounds were within the required quality assurance limits. The data for the original undiluted analysis of the sample was flagged with the "J" qualifier and footnoted with #83 in the data validation summary table.

Calibrations

The percent RSD of bromoform (31%) was above the 20.% quality assurance limit in the both initial calibrations associated with the analyses of the samples of this delivery group. The data for this compound was flagged with the "J" qualifier and footnoted with #15 in the data validation summary table. This compound was not detected in any of these samples.

The %RSD for 1,1,2,2-tetrachloroethane (22%) was also above the 20.5% quality assurance limit in the initial calibration associated with the medium level analysis of sample TSL-TP-34. The data for this compound was also flagged with the "J" qualifier and footnoted with #15 in the data validation summary table. The percent difference of tetrachloroethane (27%) was also above the 25% quality assurance limit in the continuing calibration associated with the analysis of this sample.

Section D 9.3.5.4 of the NYS DEC ASP Manual states that up to 2 compounds may fail the criteria and still meet the minimum response factor and %RSD requirements. These compounds must have a minimum RRF greater or equal to 0.010 and the %RSD must be less than or equal to 40%. This requirement was satisfied in all of the calibrations of this sample delivery group.

Matrix Spike / Matrix Spike Duplicate

A matrix spike and matrix spike duplicate were not analyzed with this sample delivery group.

Blank Spike

Both low level and medium level soil blank spikes were analyzed with this sample delivery group. All blank spike recoveries were within the required quality assurance limits.

Method Blanks

A low concentration of toluene (180J mg/kg - CRDL 1,200 ug/l) in the method blank associated with the medium level analysis of sample TSL-TP-34. This did not affect the end use of the data since the concentration of toluene in this sample was 150,000 ug/kg.

No compounds were detected in any of the other method blanks associated with the samples of this delivery group.

Trip Blanks

No compounds were detected in any of the four trip blanks associated with this sample delivery group.

Field Blank

A field blank was not collected with this sample delivery group.

Holding Blank

No compounds were detected in the one holding blank associated with the samples of this delivery group.

Internal Standard Areas and Retention Times

The recovery of the chlorobenzene-d5 internal standard (350%) was way above the 150% quality assurance limit in the initial analysis of sample TSL-TP-34. This sample had very high concentration of several analytes and was reanalyzed at a medium level dilution. The compounds which were quantitated against this internal standard were flagged with the "J" qualifier and footnoted with # 90 in the data validation summary table.

No other problems were found with the recoveries or retention times in any of the internal standards associated with the samples of this delivery group.

Instrument Detection Limits

Instrument detection limits were not included with this sample delivery group.

Sample Results

Sample TSP-TP-34

This sample was reanalyzed with a medium level analysis due to very high concentrations of toluene (150,000 ug/kg), ethylbenzene (4,600 ug/kg), xylene (44,000 ug/l), chloroethane, 1,1-dichloroethane and 1,2-dichloroethene.

In the medium level analysis, only toluene, ethylbenzene and xylene were detected. Since chloroethane, 1,1-dichloroethane and 1,2-dichloroethene were not detected in the medium level analysis, their concentrations reported in the initial low level analysis should be used for the final reporting, but these concentrations should be considered to be highly estimated. The data for these compounds were flagged with the "J" qualifier and footnoted with the "See Text" notation in the data validation summary table.

The recovery of the chlorobenzene-d5 internal standard (350%) was way above the 150% quality assurance limit in the initial analysis of sample TSL-TP-34. The compounds which were quantitated against this internal standard were flagged with the "J" qualifier and footnoted with # 90 in the data validation summary table. The data for 1,1,1-trichloroethene (58 ug/kg), trichloroethene (3 ug/kg) and benzene (27 ug/kg) which were found in this sample should be considered to be highly estimated.

All of the final data, with the exceptions of toluene, ethylbenzene and xylene should be taken from the initial low level analysis of this sample.

The problems with the recoveries of the system monitoring compounds in the undiluted analysis should also be noted.

The spectra of the non-target compound eluting at 22.17 minutes was not included in the analytical report.

No other problems were found with the reported results of any of the samples of this delivery group.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Soil Semivolatile Organic Analyses
Samples Collected August 6th through 12th, 1998
Sample Delivery Group: TSLTP8
Laboratory Reference Numbers:

Received 8/6
TSP-TP-8

Received 8/7
TSP-TP-14

Received 8/11
TSP-TP-31
TSP-TP-33

Received 8/12
TSP-TP-34

Soil samples were received for analyses of the Semivolatile organic TCL analyte list by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

- Data Completeness
* - GC/MS Tuning
* - Holding Times
- Calibrations
* - Laboratory Blanks
- Field Blank
* - Surrogate Compound Recoveries
* - Internal Standard Recoveries
- Matrix Spike / Matrix Spike Duplicate
- Blank Spike
* - Compound Identification
* - Compound Quantitation
- Instrument Detection Limit

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

The laboratory's case narrative states that "due to matrix thickness and dark coloration, samples TSL-TP-8 and TSL-TP-34 were analyzed at an initial dilution factor of ten". Also "due to matrix thickness and dark coloration, samples TSL-TP-14, TSL-TP-31 and TSL-TP-33 were analyzed at an initial dilution factor of five".

It should be noted that a matrix spike was not analyzed with this sample delivery group.

The laboratory's case narrative notes that "the MSB was inadvertently spiked with 80 ng of internal standard instead of the required 40 ng.

Instrument detection limits were not submitted with this data package.

A field blank was not analyzed with this sample delivery group.

No other significant problems were found with the Semivolatile analyses of these samples which would affect the end use of the data.

Nancy J. Potak
November 8, 1998

Holding Times

All samples were extracted and analyzed within the holding times required by the NYS DEC's ASP program.

Tunes

No problems were detected with any of the tunes associated with the samples of this delivery group.

Surrogate Compound Recoveries

All surrogate compound recoveries were within the NYS DEC's ASP quality assurance limits.

Calibrations

The percent RSD of benzo(k)fluoranthene (22%) was above the 20% quality assurance limit in the one initial calibration associated with the samples of this delivery group.

The data for this compound was flagged with the "J" qualifier and footnoted with #15 in the data validation summary table.

No problems were detected with the three continuing calibrations.

Section D 9.3.5.4 of the NYS DEC ASP Manual states that up to 4 compounds may fail the criteria and still meet the minimum response factor and %RSD requirements. These compounds must have a minimum RRF greater or equal to 0.010 and the %RSD must be less than or equal to 40%. This requirement was satisfied in all of the calibrations of this sample delivery group.

Matrix Spike / Matrix Spike Duplicate

A matrix spike was not analyzed with this sample delivery group.

Blank Spike

Four blank spikes were analyzed with this sample delivery group.

All blank spike recoveries were within the required quality assurance limits with the two exceptions of the recovery of phenol (91%) in the second blank spike and 2,4-dinitrotoluene (90%) in the third blank spike. These were just above the 90% and 89% quality assurance limits. The slightly high recovery of these compounds do not affect the end use of the data.

The laboratory's case narrative notes that "the MSB was inadvertently spiked with 80 ng of internal standard instead of the required 40 ngs.

Method Blanks

Only three non-target compounds were detected in the one method blank associated with the samples of this delivery group.

The non-target compound, hexadecanoic acid, was also detected in sample TSL-TP-34, but it was not flagged with the "B" qualifier by the laboratory. The "B" qualifier was added in bold in the data validation summary form. The laboratory was not contacted to revise these forms since the change does not significantly affect the end use of the data.

Field Blank

A field blank was not collected with this sample delivery group.

Internal Standard Areas and Retention Times

No problems were found with the recoveries or retention times in any of the internal standards associated with the samples of this delivery group.

Instrument Detection Limits

Instrument detection limits were not included with this sample delivery group.

Sample Results

The laboratory's case narrative states that "due to matrix thickness and dark coloration, samples TSL-TP-8 and TSL-TP-34 were analyzed at an initial dilution factor of ten". Also "due to matrix thickness and dark coloration, samples TSL-TP-14, TSL-TP-31 and TSL-TP-33 were analyzed at an initial dilution factor of five".

No other problems were found with the reported results of any of the samples of this delivery group.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For the Town of Salina Landfill

Soil Pesticide and PCB Analyses
Samples Collected August 6th through 12th, 1998
Sample Delivery Group: TSLTP8
Laboratory Reference Numbers:

Received 8/6
- TSP-TP-8
- TSP-TP-8DL
- TSP-TP-8RE
- TSP-TP-8REDL

Received 8/7
- TSP-TP-14

Received 8/11
- TSP-TP-31
- TSP-TP-33

Received 8/12
- TSP-TP-34

Soil samples were received for analyses of the pesticide and PCB TCL analyte list by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

- Data Completeness
- Holding Times
* - Laboratory Blanks
- Field Blanks
- Surrogate Recoveries
* - Surrogate Retention Times
- Matrix Spike / Matrix Spike Duplicate
* - Blank Spike
* - Calibrations
* - Analyte Resolutions
* - Performance Evaluation Mixtures
* - IND A and IND B Standards
* - Florisil Cartridge Check
- GPC Calibration
* - Compound Identification
- Method Detection Limit

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

The laboratory's case narrative states that "The GPC calibration analyzed on 08/10/98 shows the percent recovery of 4,4'-DDT as below the quality control limits. As a result, samples TSL-TP-8 and associated quality control samples required re-extraction. Samples were re-extracted within holding time; both sets of data are reported".

The re-extractions of sample TSL-TP-8 were not performed within the required 5 day holding time as stated in the laboratory's case narrative. The re-extraction was performed 8 days after the samples were received by the laboratory.

The laboratory's case narrative also states that "due to high concentrations of Aroclor 1248, samples TSL-TP-8 and TSL-TP-8RE were analyzed at initial dilution factors of one hundred; further dilution was required. As a result, all surrogates were diluted from the samples".

No other significant problems were found with the analyses of these samples which would affect the end use of the data.

Nancy J. Potak
December 5, 1998

Holding Times

The laboratory's case narrative states that "The GPC calibration analyzed on 08/10/98 shows the percent recovery of 4,4'-DDT as below the quality control limits. As a result, samples TSL-TP-8 and associated quality control samples required re-extraction. Samples were re-extracted within holding time; both sets of data are reported".

The re-extractions of sample TSL-TP-8 were not performed within the required 5 day holding time as stated in the laboratory's case narrative. The re-extraction was performed 8 days after the samples were received by the laboratory.

The data for these samples were flagged with the "J" qualifier and footnoted with #81 in the data validation summary table.

All other extractions and analyses were performed within the required holding times.

Surrogate Recoveries

All surrogate recoveries were within the required quality assurance limits with the following exceptions:

	TCX 1	TCX 2	DCB 1	DCB 2
TSLTP31			199%	222%

EPA data validation guidelines do not require the data to be qualified for high recoveries of one surrogate compound.

The laboratory's case narrative also states that "due to high concentrations of Aroclor 1248, samples TSL-TP-8 and TSL-TP-8RE were analyzed at initial dilution factors of one hundred; further dilution was required. As a result, all surrogates were diluted from the samples".

Matrix Spike

A matrix spike and matrix spike duplicate were not analyzed with this sample delivery group.

Blank Spike

Three blank spikes were analyzed with this sample delivery group. All recoveries were within the required quality assurance limits.

The first two blank spikes were compared as MS/MSDs. All RPDs were within the required quality assurance limits.

Initial Calibrations

No problems were detected with the initial calibrations.

The percent RSD of each of the single component pesticides must be less than 20%. The percent RSD of the two surrogates must be less than or equal to 30%.

Up to two single compound target compounds per column may exceed the 20% limit for the %RSD, but those compounds must have a percent RSD of less than or equal to 30.0%. All of these requirements were met in the initial calibration.

Analyte Resolution

All percent resolutions were greater than 60% on both the RTX-5 and DB1701 columns.

Performance Evaluation Mixtures

All percent resolutions were greater than 90% on both the DB-608 and DB-1701 columns.

The relative percent difference of the calculated amount and the true amount for each of the single component pesticides and surrogates in the PEMs must be less than or equal to 25%. This requirement was satisfied in all of the PEM standards in this sample delivery group.

The retention times of alpha-BHC, beta-BHC and gamma-BHC were eluting at their upper retention time window in the final PEM standard (PEM03) on the DB17 column.

The chromatograms of the samples which were analyzed near these standards were examined for possible pesticide and PCB's which might have been overlooked. No problems were detected with these chromatograms.

No other problems were found with any of the performance evaluation mixtures.

Continuing Calibrations - IND A & IND B

All percent resolutions were greater than 90% on both the DB-608 and DB-1701 columns.

The relative percent difference of the calculated amount and the true amount for each of the single component pesticides and surrogates in the INDA and INDB standards must be less than or equal to 25%.

The retention times of all four BHCs and aldrin were at the upper limit of their retention time windows in the analysis of both INDA03 and INDB03 on the DB17 column.

The chromatograms of the samples which were analyzed near these standards were examined for possible pesticide and PCB's which might have been overlooked. No problems were detected with these chromatograms.

No other problems were detected with the continuing calibrations.

Surrogate Retention Times

All surrogate retention times were within the required limits for both surrogates and on both columns.

Florisil Cartridge Check

All recoveries were within the 80% - 120% quality assurance limits.

The florisil cartridge check was performed on 2/17/98.

GPC Calibration

The laboratory's case narrative states that "The GPC calibration analyzed on 08/10/98 shows the percent recovery of 4,4'-DDT as below the quality control limits. As a result, samples TSL-TP-8 and associated quality control samples required re-extraction".

No other problems were detected with the GPC calibrations.

Method Blanks

No compounds were detected in any of the method blanks.

Calibration Blanks

No compounds were detected in any of the calibration blanks.

Field Blanks

A field blank was not collected with this sample delivery group.

Instrument Detection Limits

The instrument detection limits were not included with this sample delivery group.

Sample Results

Sample TSL-TP-8 (Lab. #: A8317201)

The laboratory's case narrative states that "The GPC calibration analyzed on 08/10/98 shows the percent recovery of 4,4'-DDT as below the quality control limits. As a result, samples TSL-TP-8 and associated quality control samples required re-extraction. Samples were re-extracted within holding time; both sets of data are reported".

The re-extractions of sample TSL-TP-8 were not performed within the required 5 day holding time as stated in the laboratory's case narrative. The re-extraction was performed 8 days after the samples were received by the laboratory.

The data for these samples were flagged with the "J" qualifier and footnoted with #81 in the data validation summary table.

It is recommended that the concentration of Aroclor 1248 reported from the diluted reanalysis (420,000 ug/kg) be used for the final reporting. The problem with the holding time does not significantly affect the PCB analysis. This is also

the highest Aroclor 1248 concentration with all of the QA parameters within the required quality assurance limits.

The laboratory's case narrative also notes that the presence of Aroclor 1248 was confirmed by GC/MS in sample TSL-TP-8.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
For Frost Street Sites (D002676-32)

Soil TAL Inorganic and Cyanide Analyses
Samples Collected August 6th through 12th, 1998
Sample Delivery Group: TSLTPS
Laboratory Reference Numbers:

Received 8/6
- TSP-TP-8
- TSP-TP-8MS
- TSP-TP-8MD

Received 8/7
- TSP-TP-14

Received 8/11
- TSP-TP-31
- TSP-TP-33

Received 8/12
- TSP-TP-34
- TSP-TP-34MS
- TSP-TP-34MD

Soil samples were received for TAL metals and cyanide analyses by NYS DEC ASP protocols. A complete analytical validation was performed based upon the following parameters:

* - Data Completeness
* - Holding Times
- Calibration Verification
- CRDL Standards
* - ICP Interference Check Sample
* - Laboratory Control Sample
- Serial Dilutions
* - Laboratory Blanks
- Field Blanks
* - Preparation Blanks
- Matrix Spike
- Duplicate Analyses
* - Detection Limit Results
* - Linear Range
* - Sample Results

* - Indicates that all criteria were met for this parameter.

Data Validation Summary

Several problems were found with both the matrix spike recoveries, duplicate analyses and/or serial dilutions for the majority of the inorganic analytes.

The laboratory analyzed two samples for the matrix spike and matrix duplicate (TSP-TP-8 and TSP-TP-34) and four of the five samples were analyzed for a serial dilution.

The laboratory qualified all of the sample data for each quality assurance parameter that was outside of the required quality assurance limits. For example, the chromium data in sample TSP-TP-8 was flagged with the "N" qualifier on the basis of the poor chromium spike recovery in sample TSP-TP-34, even though the matrix spike recovery of chromium in sample TSP-TP-8 was within the required quality assurance limits. The analytes of sample TSP-TP-8 were also qualified with the "*" qualifier for the analytes which were outside of the precision quality assurance in the matrix duplicate of sample TSP-TP-34, even though all of the matrix duplicate analyses were within the quality assurance limits in sample TSP-TP-8 itself.

The sample problem was encountered with the four of the five samples which were analyzed for a serial dilution.

As a result, this make the qualification of the data very confusing. During the data validation, a laboratory's qualifier was removed in the data validation summary table if that sample itself was analyzed for a matrix spike, matrix duplicate, or serial dilution and no problem was found.

The basis for each qualification is noted in detail below.

It is suggested that the inorganic data for this sample delivery group, be examined as a whole and the end users not get too involved in the individual details.

The data should be considered to be estimated based upon the types of problems that were found with the matrix spike recoveries and the duplicate precision. Although many of these were outside the quality assurance limits, they are not unusual in the analysis of soil samples.

Nancy J. Potak
November 16, 1998

Holding Times

All samples were analyzed within the required holding times.

CRDL Standards

Two separate ICP runs were analyzed with this sample delivery group.

Samples TP-8 and TP-14 were analyzed on the first ICP run. The recoveries of all CRDL standards were within the 80% to 120% quality assurance limits in the first ICP run with the following exception:

Analyte	Initial % Recovery	Second % Recovery	Final %Recovery
Lead			123%
Manganese			130%
Zinc	199%	153%	

The concentrations of lead, manganese and zinc in samples TP-8 and TP-14 were much too high to be affected by the high CRDL standard recoveries. The data for these analytes were not required to be qualified in the data validation summary table.

Samples TP-31, TP-33 and TP-34 were analyzed on the second ICP run. The recoveries of all CRDL standards were within the 80% to 120% quality assurance limits in the second ICP run with the following exception:

Analyte	Initial % Recovery	Second % Recovery	Final %Recovery
Cadmium			250%
Copper			143%
Selenium	61%		66%
Thallium	75%	75%	67%

The concentrations of cadmium and copper were too high in these three samples to be affected by the high CRDL standard recoveries of these two analytes.

Selenium and thallium were not detected in any of these three samples and it is possible that very low concentrations of these analytes may have been overlooked. The data for selenium and thallium in these three samples were flagged with the "J" qualifier and footnoted with #21 in the data validation summary table.

Initial and Continuing Calibrations

The percent recovery of the thallium was 112% in the sixth continuing calibration standard. This was above the 110% quality assurance limit. Technically, the analysis should have been haled at this point.

The thallium analysis of sample TP-14 was analyzed immediately prior to this continuing calibration standard. The low concentration of thallium detected in this sample (1.6B mg/kg) may be slightly overestimated or be a false positive. The data for thallium in this sample was flagged with the "J" qualifier and footnoted with #16 in the data validation summary table.

No other problems were detected with any of the calibrations associated with this sample delivery group.

Preparation Blank

Several analytes were found in the preparation blanks at concentrations between the absolute value of CRDL and instrument detection limit. The data were not required to be qualified for these low concentrations.

Calibration Blanks

Several analytes were found in the continuing calibration blanks at concentrations between the CRDL and instrument detection limit. The data were not required to be qualified for these low concentrations.

Field Blank

A field blank was not submitted with this sample delivery group.

ICP Interference Check Sample

No problems were detected with the reported ICP Interference Check Sample recoveries.

All of the traditional furnace analytes were included in this standard.

Matrix Spike Recovery

Two matrix spikes were analyzed with this sample delivery group.

Sample TP-8 of this sample delivery group was used for the matrix spike associated with the digestions of samples TP-8 and TP-14. All recoveries were within the 75% - 125% quality assurance limits with the following exceptions:

Analyte	% Rec.	Qualifier
Antimony	47%	35
Beryllium	69%	35
Cadmium	46%	35
Cobalt	69%	35
Lead	66%	35
Manganese	59%	35
Selenium	73%	35
Silver	56%	35
Thallium	68%	35

The concentrations of these analytes may have been underestimated in these two samples. The data for these analytes were flagged with the "J" qualifier and footnoted with #35 in the data validation summary table. The concentrations reported for these analytes should be considered to be estimated values.

The post digestion recoveries of all of these analytes, with the one exception of silver (65%) were within the required quality assurance limits (ranging from 82% to 93%).

Sample TP-34 of this sample delivery group was used for the matrix spike associated with the digestions of samples TP-31, TP-33 and TP-34. All recoveries were within the 75% - 125% quality assurance limits with the following exceptions:

Analyte	% Rec.	Qualifier
Antimony	55%	35
Cadmium	71%	35
Chromium	73%	35
Lead	53%	35
Manganese	21%	35
Zinc	193	37

The concentrations of these analytes may have been underestimated in these two samples. The data for these analytes were flagged with the "J" qualifier and footnoted with #35, or #37 in the data validation summary table. The concentrations reported for these analytes should be considered to be estimated values.

The post digestion recoveries of all of these analytes were within the required quality assurance limits (ranging from 83% to 92%).

Since two matrix spikes were analyzed with this sample delivery group, the reporting of the qualifiers was somewhat confusing and overlapping between the two sets of digestions. All of the analytes with spike recoveries outside of the quality assurance limits were qualified by the laboratory for all of the samples. They did not take into account the different digestion dates:

Although this is the most conservative way to report the data, chromium and zinc were flagged with the "N" qualifier in sample TP-8 even though the recoveries of both of these analytes were within the required quality assurance limits.

Similarly, beryllium, cobalt, selenium, silver and thallium were flagged with the "N" qualifier by the laboratory even though the recoveries of these analytes were within the required quality assurance limits in the analysis of sample TP-34.

The "N" qualifier was removed from these analytes in the data for each were flagged with the "See Text" notation in the data validation summary table.

For the purposes of the data validation, all of the analytes which were outside of the quality assurance limits in either of the two matrix spikes were flagged with the "N" qualifier in the data validation summary table.

Duplicate Analysis

Two matrix duplicates were analyzed with this sample delivery group.

Sample TP-8 of this sample delivery group was also used for the matrix duplicate for the full inorganic TCL analyte list. All recoveries which could be calculated were within the acceptable limits.

Sample TP-34 of this sample delivery group was used for the matrix duplicate associated with the digestions of samples TP-31, TP-33 and TP-34. All RPDs were within the 20% quality assurance limit with the following exceptions:

Analyte	RPD	Qualifier
Arsenic	27%	45
Cadmium	23%	45
Chromium	40%	45
Iron	23%	45
Lead	51%	45
Manganese	32%	45

The data for these analytes were flagged with the "J" qualifier and footnoted with #45 in the data validation summary table. The concentrations reported for these analytes should be considered to be estimated values.

Since two matrix duplicates were analyzed with this sample delivery group, the reporting of the qualifiers was somewhat confusing and overlapping between the two sets of digestions. All of the analytes with duplicate recoveries outside of the quality assurance limits were qualified by the laboratory for all of the samples. They did not take into account the different digestion dates:

Although this is the most conservative way to report the data, arsenic, cadmium, chromium, iron, lead and manganese were flagged with the "*" qualifier in sample TP-8 even though the RPDs of these analytes were within the required quality assurance limits.

The "*" qualifier was removed from these analytes in the data for each were flagged with the "See Text" notation in the data validation summary table.

For the purposes of the data validation, all of the analytes which were outside of the quality assurance limits in the analysis of sample TP-34, with the one exception of sample TP-8, were flagged with the "N" qualifier in the data validation summary table.

Laboratory Control Sample

Two LCS standards were analyzed with this sample delivery group.

No problems were detected with the recoveries of either soil LCS standards.

Serial Dilutions

A total of four samples were analyzed for serial dilutions in this one sample delivery group.

Sample TP-14 of this sample delivery group was used for the first serial dilution. All of the percent differences which could be calculated less than the 10% assurance limits with the following exception:

Analyte	% D.	Qualifier
Barium	46%	51

Sample TP-33 of this sample delivery group was used for the second serial dilution. All of the percent differences which could be calculated less than the 10% assurance limits with the following exceptions:

Analyte	% D.	Qualifier
Potassium	24%	51

Zinc	79%	51

Sample TP-34 of this sample delivery group was used for the third serial dilution. All of the percent differences which could be calculated less than the 10% assurance limit.

Sample TP-8 of this sample delivery group was used for the fourth serial dilution. All of the percent differences which could be calculated less than the 10% assurance limits with the following exceptions:

Analyte	% D.	Qualifier
Barium	26%	51
Cadmium	21%	51
Vanadium	14%	51

Since four serial dilutions were analyzed with this sample delivery group, the reporting of the qualifiers was somewhat confusing and overlapping. All of the analytes with serial dilution percent differences outside of the quality assurance limits were qualified by the laboratory for all of the samples. They did not take into account the specific serial dilution analyses:

In those samples which were analyzed for a serial dilution, they were flagged with the "J" qualifier and footnoted with #51 only when the serial dilution percent difference was outside of the quality assurance limits for that particular sample. The "E" qualifier was removed from these analytes.

Only sample TP-31 of this sample delivery group was not used in a serial dilution. The data for all of the compounds which were outside of the 10% quality assurance limit were flagged with "J" qualifier and footnoted with #51 in the data validation summary table.

Instrument Detection Limit

No problems with the instrument detection limits were found.

ICP Linear Ranges

No problems were detected with the linear ranges. The reported concentrations of all samples in this delivery group were within their linear range for each analyte.

Sample Results

No problems, aside from those noted above were found with any of the reported sample data.

COMPLIANCE SUMMARY

PROJECT: Town of Salina Landfill
Samples Received 10/1/98
Sample Delivery Group: TSLL6

Date Received	CLP Year		Sample ID	Matrix S/W	VOA Compliance	BNA Compliance	Pest/PCB Compliance	Metals Compliance	Wet Chem Compliance	Page in CLP	Non-Compliance
10/1/98	95	Holding Blank		Water	Yes	NA	NA	NA	NA		
10/1/98	95	TSL-L-1		Water	Yes	Yes	Yes	Yes	NA		
10/1/98	95	TSL-L-2		Water	Yes	Yes	Yes	Yes	NA		
10/1/98	95	TSL-L-6		Water	Yes	Yes	Yes	Yes	NA		
10/1/98	95	TSL-L-6MS		Water	Yes	Yes	Yes	Yes	NA		
10/1/98	95	TSL-L-6MSD		Water	Yes	Yes	Yes	Yes	NA		

COMPLIANCE SUMMARY

PROJECT: Town of Salina Landfill
Samples Collected August 27th and 28th, 1998
Sample Delivery Group: SLSED2

Date Received	CLP Year	Sample ID	Matrix S/W	VOA Compliance	BNA Compliance	Pest/PCB Compliance	Metals Compliance	Wet Chem Compliance	Page in CLP	Non-Compliance
	95	Holding Blank	Water	Yes	NA	NA	NA	NA		
8/27/98	95	TSL-SED-20	Soil	Yes	Yes	Yes - *	Yes	NA		
8/27/98	95	TSL-SED-20DL	Soil	NA	NA	Yes - *	NA	NA		
8/27/98	95	TSL-SED-20MS	Soil	Yes	Yes	Yes - *	Yes	NA		
8/27/98	95	TSL-SED-20MSD	Soil	Yes	Yes	Yes - *	Yes	NA		
8/27/98	95	TSL-SED-20MSDRE	Soil	NA	Yes	NA	NA	NA		
8/27/98	95	TSL-SED-20D	Soil	Yes	Yes	Yes - *	Yes	NA		
8/27/98	95	TSL-SED-20DRE	Soil	NA	Yes	NA	NA	NA		
8/27/98	95	TSL-SED-20DDL	Soil	NA	NA	Yes - *	NA	NA		
8/27/98	95	TSL-SED-21	Soil	Yes	Yes	Yes - *	Yes	NA		
8/27/98	95	TSL-SED-21RE	Soil	NA	Yes	NA	NA	NA		
8/27/98	95	TSL-SED-21DL	Soil	NA	NA	Yes - *	NA	NA		
8/27/98	95	TSL-SED-21D	Soil	Yes	Yes	Yes - *	Yes	NA		
8/27/98	95	TSL-SED-21DDL	Soil	NA	NA	Yes - *	NA	NA		
8/27/98	95	TSL-SED-22	Soil	Yes	Yes	Yes - *	Yes	NA		
8/27/98	95	TSL-SED-22DL	Soil	NA	NA	Yes - *	NA	NA		
8/27/98	95	TSL-SED-22D	Soil	Yes	Yes	Yes - *	Yes	NA		
8/27/98	95	TSL-SED-22DRE	Soil	NA	Yes	NA	NA	NA		
8/27/98	95	TSL-SED-22DDL	Soil	NA	NA	Yes - *	NA	NA		
8/27/98	95	TSL-SED-25	Soil	Yes	Yes	Yes - *	Yes	NA		
8/27/98	95	TSL-SED-25D	Soil	Yes	Yes	Yes - *	Yes	NA		
8/28/98	95	TSL-SED-23	Soil	Yes	Yes	Yes - *	Yes	NA		
8/28/98	95	TSL-SED-23D	Soil	Yes	Yes	Yes - *	Yes	NA		
8/28/98	95	TSL-SED-24	Soil	Yes	Yes	Yes - *	Yes	NA		
8/28/98	95	TSL-SED-24D	Soil	Yes	Yes	Yes - *	Yes	NA		
8/28/98	95	TSL-SED-24DL	Soil	NA	NA	Yes - *	NA	NA		

* - With 12/22 revisions

COMPLIANCE SUMMARY

PROJECT: Town of Salina Landfill
Samples Received August 25th through 28th, 1998
Sample Delivery Group: SLMW10

Date Received	CLP Year	Sample ID	Matrix S/W	VOA Compliance	BNA Compliance	Pest/PCB Compliance	Metals Compliance	Wet Chem Compliance	Page in CLP	Non-Compliance
	95	Holding Blank	Water	Yes - *	NA	NA	NA	NA		
8/25/98	95	TSL-MW-10	Water	Yes - *	Yes - *	Yes - *	Yes - #	See Text		
8/25/98	95	TSL-MW-10DL	Water	Yes - *	Yes - *	NA	NA	NA		
8/26/98	95	Trip Blank	Water	Yes - *	NA	NA	NA	See Text		
8/26/98	95	TSL-MW-12	Water	Yes - *	Yes - *	Yes - *	Yes - #	See Text		
8/26/98	95	TSL-MW-12D	Water	Yes - *	Yes - *	Yes - *	Yes - #	See Text		
8/26/98	95	TSL-MW-3	Water	Yes - *	Yes - *	Yes - *	Yes - #	See Text		
8/26/98	95	TSL-MW-Field Dup	Water	Yes - *	Yes - *	Yes - *	Yes - #	See Text		
8/27/98	95	Trip Blank	Water	Yes - *	NA	NA	NA	NA		
8/27/98	95	Field Blank	Water	Yes - *	Yes - *	Yes - *	Yes - #	See Text		
8/27/98	95	TSL-SW-20	Water	Yes - *	Yes - *	Yes - *	Yes - #	See Text		
8/27/98	95	TSL-SW-20MS	Water	Yes - *	Yes - *	Yes - *	Yes - #	See Text		
8/27/98	95	TSL-SW-20MSD	Water	Yes - *	Yes - *	Yes - *	Yes - #	See Text		
8/27/98	95	TSL-SW-21	Water	Yes - *	Yes - *	Yes - *	Yes - #	See Text		
8/27/98	95	TSL-SW-22	Water	Yes - *	Yes - *	Yes - *	Yes - #	See Text		
8/27/98	95	TSL-SW-25	Water	Yes - *	Yes - *	Yes - *	Yes - #	See Text		
8/28/98	95	TSL-SW-23	Water	Yes - *	Yes - *	Yes - *	Yes - #	See Text		
8/28/98	95	TSL-SW-24	Water	Yes - *	Yes - *	Yes - *	Yes - #	See Text		

* - Copies of Instrument Detection Limits Have Not Yet Been Received. 12/9/98
# - Soluble metals were also analyzed for all of the samples of the delivery group.

COMPLIANCE SUMMARY

PROJECT: Town of Salina Landfill
Samples Collected August 27th and 28th, 1998
Sample Delivery Group: SLSED2

Date Received	CLP Year	Sample ID	Matrix S/W	VOA Compliance	BNA Compliance	Pest/PCB Compliance	Metals Compliance	Wet Chem Compliance	Page in CLP	Non-Compliance
	95	Holding Blank	Water	Yes - *	NA	NA	NA	NA		
8/27/98	95	TSL-SED-20	Soil	Yes - *	Yes - *	Awaiting Revisions	Yes	NA		
8/27/98	95	TSL-SED-20MS	Soil	Yes - *	Yes - *	Awaiting Revisions	Yes	NA		
8/27/98	95	TSL-SED-20MSD	Soil	Yes - *	Yes - *	Awaiting Revisions	Yes	NA		
8/27/98	95	TSL-SED-20MSDRE	Soil	NA	Yes - *	NA	NA	NA		
8/27/98	95	TSL-SED-20D	Soil	Yes - *	Yes - *	Awaiting Revisions	Yes	NA		
8/27/98	95	TSL-SED-20DRE	Soil	NA	Yes - *	NA	NA	NA		
8/27/98	95	TSL-SED-21	Soil	Yes - *	Yes - *	Awaiting Revisions	Yes	NA		
8/27/98	95	TSL-SED-21RE	Soil	NA	Yes - *	NA	NA	NA		
8/27/98	95	TSL-SED-21D	Soil	Yes - *	Yes - *	Awaiting Revisions	Yes	NA		
8/27/98	95	TSL-SED-22	Soil	Yes - *	Yes - *	Awaiting Revisions	Yes	NA		
8/27/98	95	TSL-SED-22D	Soil	Yes - *	Yes - *	Awaiting Revisions	Yes	NA		
8/27/98	95	TSL-SED-22DRE	Soil	NA	Yes - *	NA	NA	NA		
8/27/98	95	TSL-SED-25	Soil	Yes - *	Yes - *	Awaiting Revisions	Yes	NA		
8/27/98	95	TSL-SED-25D	Soil	Yes - *	Yes - *	Awaiting Revisions	Yes	NA		
8/28/98	95	TSL-SED-23	Soil	Yes - *	Yes - *	Awaiting Revisions	Yes	NA		
8/28/98	95	TSL-SED-23D	Soil	Yes - *	Yes - *	Awaiting Revisions	Yes	NA		
8/28/98	95	TSL-SED-24	Soil	Yes - *	Yes - *	Awaiting Revisions	Yes	NA		
8/28/98	95	TSL-SED-24D	Soil	Yes - *	Yes - *	Awaiting Revisions	Yes	NA		

* - Copies of Instrument Detection Limits Have Not Yet Been Received. 12/9/98

COMPLIANCE SUMMARY

PROJECT: Town of Salina Landfill
Samples Collected August 20, 1998
Sample Delivery Group: SS10

Date Received	CLP Year	Sample ID	Matrix S/W	VOA Compliance	BNA Compliance	Pest/PCB Compliance	Metals Compliance	Wet Chem Compliance	Page in CLP	Non-Compliance
8/20/98	95	Holding Blank	Water	Yes - *	NA	NA	NA	NA		
8/20/98	95	TSL-SS-10	Soil	Yes - *	Yes - *	Yes - *	Yes	NA		
8/20/98	95	TSL-SS-11	Soil	Yes - *	Yes - *	Yes - *	Yes	NA		
8/20/98	95	TSL-SS-12	Soil	Yes - *	Yes - *	Yes - *	Yes	NA		
8/20/98	95	TSL-SS-13	Soil	Yes - *	Yes - *	Yes - *	Yes	NA		
8/20/98	95	TSL-SS-14	Soil	Yes - *	Yes - *	Yes - *	Yes	NA		
8/20/98	95	TSL-SS-15	Soil	Yes - *	Yes - *	Yes - *	Yes	NA		
8/20/98	95	TSL-SS-16	Soil	Yes - *	Yes - *	Yes - *	Yes	NA		
8/20/98	95	TSL-SS-16DL	Soil	NA	NA	Yes - *	NA	NA		
8/20/98	95	TSL-SS-16MS	Soil	Yes - *	Yes - *	Yes - *	Yes	NA		
8/20/98	95	TSL-SS-16MSD	Soil	Yes - *	Yes - *	Yes - *	Yes	NA		

* - Copies of Instrument Detection Limits Have Not Yet Been Received. 12/9/98

COMPLIANCE SUMMARY

PROJECT: Town of Salina Landfill
Samples Collected August 27th and 28th, 1998
Sample Delivery Group: TSLTP8

Date Received	CLP Year	Sample ID	Matrix S/W	VOA Compliance	BNA Compliance	Pest/PCB Compliance	Metals Compliance	Wet Chem Compliance	Page in CLP	Non-Compliance
	95	Holding Blank	Water	Yes - *	NA	NA	NA	NA		
8/6/98	95	Trip Blank	Soil	Yes - *	NA	NA	NA	NA		
8/6/98	95	TSP-TP-8	Soil	Yes - *	Yes - *	Yes - *	See Text	NA		
8/6/98	95	TSP-TP-8MS	Soil	NA	NA	NA	See Text	NA		
8/6/98	95	TSP-TP-8MD	Soil	NA	NA	NA	See Text	NA		
8/6/98	95	TSP-TP-8DL	Soil	NA	NA	Yes - *	NA	NA		
8/6/98	95	TSP-TP-8RE	Soil	NA	NA	Yes - *	NA	NA		
8/6/98	95	TSP-TP-8REDL	Soil	NA	NA	Yes - *	NA	NA		
8/7/98	95	Trip Blank	Soil	Yes - *	NA	NA	NA	NA		
8/7/98	95	TSP-TP-14	Soil	Yes - *	Yes - *	Yes - *	See Text	NA		
8/11/98	95	Trip Blank	Soil	Yes - *	NA	NA	NA	NA		
8/11/98	95	TSP-TP-31	Soil	Yes - *	Yes - *	Yes - *	See Text	NA		
8/11/98	95	TSP-TP-33	Soil	Yes - *	Yes - *	Yes - *	See Text	NA		
8/12/98	95	Trip Blank	Soil	Yes - *	NA	NA	NA	NA		
8/12/98	95	TSP-TP-34	Soil	Yes - *	Yes - *	Yes - *	See Text	NA		
8/12/98	95	TSP-TP-34DL	Soil	Yes - *	NA	NA	NA	NA		

* - Copies of Instrument Detection Limits Have Not Yet Been Received. 12/9/98

COMPLIANCE SUMMARY

PROJECT: Town of Salina Landfill
Samples Received August 18th through 25th, 1998
Sample Delivery Group: MW0D

Date Received	CLP Year	Sample ID	Matrix S/W	VOA Compliance	BNA Compliance	Pest/PCB Compliance	Metals Compliance	Wet Chem Compliance	Page in CLP	Non-Compliance
	95	Holding Blank 1	Water	Yes - *	NA	NA	NA	NA		
	95	Holding Blank 2	Water	Yes - *	NA	NA	NA	NA		
8/18/98	95	Trip Blank (10)	Water	Yes - *	NA	NA	NA	NA		
8/18/98	95	TSL-MW-0D	Water	Yes - *	Yes - *	Yes - *	See Text	See Text		
8/18/98	95	TSL-MW-0DMS	Water	NA	NA	NA	See Text	See Text		
8/18/98	95	TSL-MW-0DMD	Water	NA	NA	NA	See Text	See Text		
8/19/98	95	Trip Blank (12)	Water	Yes - *	NA	NA	NA	NA		
8/19/98	95	TSL-MW-6	Water	Yes - *	Yes - *	Yes - *	See Text	See Text		
8/19/98	95	TSL-MW-8	Water	Yes - *	Yes - *	Yes - *	See Text	See Text		
8/19/98	95	Trip Blank	Water	Yes - *	Yes - *	Yes - *	See Text	See Text		
8/19/98	95	TSL-MW-0	Water	Yes - *	Yes - *	Yes - *	See Text	See Text		
8/19/98	95	TSL-MW-9	Water	Yes - *	Yes - *	Yes - *	See Text	See Text		
8/20/98	95	Trip Blank (13)	Water	Yes - *	NA	NA	NA	NA		
8/20/98	95	TSL-MW-7	Water	Yes - *	Yes - *	Yes - *	See Text	See Text		
8/21/98	95	Trip Blank (14)	Water	Yes - *	NA	NA	NA	NA		
8/21/98	95	TSL-MW-5D	Water	Yes - *	Yes - *	Yes - *	See Text	See Text		
8/21/98	95	TSL-MW-5DMS	Water	Yes - *	Yes - *	Yes - *	See Text	See Text		
8/21/98	95	TSL-MW-5DMSD	Water	Yes - *	Yes - *	Yes - *	See Text	See Text		
8/22/98	95	Trip Blank	Water	Yes - *	NA	NA	NA	NA		
8/22/98	95	TSL-MW-15	Water	Yes - *	Yes - *	Yes - *	See Text	See Text		
8/25/98	95	Trip Blank (20)	Water	Yes - *	NA	NA	NA	NA		
8/25/98	95	TSL-MW-1	Water	Yes - *	Yes - *	Yes - *	See Text	See Text		
8/25/98	95	TSL-MW-14	Water	Yes - *	Yes - *	Yes - *	See Text	See Text		
8/25/98	95	TSL-MW-2	Water	Yes - *	Yes - *	Yes - *	See Text	See Text		
8/25/98	95	TSL-MW-4	Water	Yes - *	Yes - *	Yes - *	See Text	See Text		
8/25/98	95	TSL-MW-5	Water	Yes - *	Yes - *	Yes - *	See Text	See Text		

* - Copies of Instrument Detection Limits Have Not Yet Been Received. 12/9/98
# - Soluble metals were also analyzed for all of the samples of the delivery group.

APPENDIX D-2

Data Usability Summary Report

DATA USABILITY SUMMARY REPORT

This data usability summary report covers the analytical results, submitted by Upstate Laboratories Inc. (Upstate), for the field sampling investigation conducted by Clough, Harbour & Associates LLP (CHA) between 17 and 24 August 1999 at the Town of Salina Landfill (NYSDEC Site Number 734036). The analytical results submitted by Upstate, sample designation groups (SDGs) CHA10, CHA12 and report number 23099068 were reviewed by Lawler, Matusky & Skelly Engineers LLP (LMS). The analytical data were examined in regards to the protocol requirements and assessed against the project data quality objectives (DQOs) in preparation of this report. The following items were reviewed:

Custody documentation,
Holding times,
Instrument performances and detection limits,
Data completeness,
Blanks,
Surrogate and internal standard recoveries,
Matrix spike recoveries, duplicate correlation(s),
Control spike/laboratory control samples,
Raw data .

Where final results or related quality control (QC) data did not fall within protocol requirements the reported data have been appropriately qualified. For the most part the data submitted by Upstate met the project DQOs and are appropriate to characterize the levels of environmental contaminants in samples collected at the Town of Salina Landfill site.

A total of two (2) groundwater samples were collected and processed for target analyte list (TAL) metals plus cyanide (TAL metals/CN) and polychlorinated dibenzo-p-dioxins and dibenzofurans (dioxins). Dioxin analyses was performed by Triangle Laboratories Inc. In addition, a single groundwater well sample was processed for target compound list (TCL) volatile organic compounds (VOCs), TCL semivolatile organic compounds (SVOCs), and TCL pesticides/polychlorinated biphenyls (Pest/PCBs). A total of three (3) test pit samples were collected and processed for TCL VOCs, TCL SVOCs, TCL pest/PCBs and TAL metals/CN and % solids. A total of twenty-two (22) surface soil samples were collected and processed for TCL SVOC, TCL pest/PCBs, TAL metals/CN and % solids. A total of six boring samples were collected and processed for TAL metals, and the following conventional parameters; Standard Plate Count and bacteria scan, nitrate-nitrogen, total kjeldahl nitrogen, ammonia-nitrogen and % solids. A single composite worm tissue sample was collected and processed for TCL SVOCs, TCL PCBs, TAL metals and % solids.

Analyses were conducted, in general, in accordance with the New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocol (ASP), October 1995 revision. Samples were

analyzed by NYSDEC ASP Superfund CLP methods for the TCL suite, NYSDEC ASP methods for TAL suite, EPA Superfund for the dioxin analyses, EPA SW-846 for the worm tissue analyses and various EPA methods for the general chemistry.

Groundwater Samples

Volatile Analyses

A single (1) Groundwater samples submitted to Upstate was analyzed for TCL VOCs by NYSDEC ASP Superfund CLP Method 95-1. Where reported concentrations may have been affected by QC failures the data usability is discussed below:

1. As a result of elevated sample analytes, sample MW-10 was re-analyzed at a 500:1 dilution. Sample reanalyses was conducted outside of the NYSDEC ASP holding time of 10 days but was within the technical holding time of 14 days for the method. Sample results are unaffected and useable as reported.

2. Reported results for those analytes whose values are flagged with an "E" qualifier in the initial analyses should be derived from the dilution analysis ("DL") except in those instances when the analyte result in the diluted sample was reported as non detect ("ND"). In these cases the initial analyses should be used and data flagged with a "g" to indicate the result is an estimated value.

3. Trace level (estimated below quantitation level) amounts of methylene chloride and toluene were detected in the laboratory holding blank. Methylene chloride was not detected in the environmental samples and therefore no qualification to the data is needed and results are useable as reported. Toluene was detected in at an elevated concentration (well over five-times the amount detected in the holding blank) in the monitoring well sample submitted for analyses and therefore no data qualification is needed and the toluene results are useable as reported.

4. No sample matrix spikes were processed, and therefore no evaluation of matrix effect has been performed. A matrix spike blank produced acceptable recoveries.

5. The percent deviation of bromomethane in the continuing calibration standard were outside of QC limits and therefore sample results for bromomethane should be considered estimated. Bromomethane, however, was not detected in the environmental sample submitted and therefore no qualification to the data is needed and the results are useable as reported.

6. Surrogate recovery for toluene-d8 in the initial analyses of MW-10 was low, however, recovery in the dilution analysis was acceptable. Recovery results for 1,2-dichloroethane-d4 in the reanalysis was slightly elevated. The laboratory case narrative mistakenly indicated that the recovery results for

1,2-dichloroethane-d4 in the initial analysis and toluene-d8 in the dilution analysis were outside of QC limits. Sample results for the reanalysis should be used preferentially over the initial as discussed in item 2 above. Reported data from the initial analyses should be qualified as estimated and possibly biased low.

7. The instrument detection limit study (IDL) was conducted on 1 August 1999 which was within the NYSDEC 6-months protocol.

In every other respect of data review, no further problems were found and the results of volatile analyses are usable as reported by the laboratory.

Semivolatile Analyses

The groundwater sample submitted to Upstate was analyzed for TCL SVOCs, base/neutral/acid extractables, by NYSDEC ASP Superfund CLP Method 95-2. Where reported concentrations may have been affected by QC failures the data usability is discussed below:

1. Bis(2-ethylhexyl)phthalate was detected in certain of the method blanks at concentrations similar to that detected in the environmental sample. Bis(2-ethylhexyl)phthalate is a common laboratory contaminant and its presence in the samples is not considered representative of environmental conditions. Therefore, sample results for this analyte were edited to non-detect in the data summary tables.

2. Recovery of petntachlorophenol was outside of QC limits in a continuing calibration standard. Pentachlorophenol was not detected in the environmental sample submitted, therefore, data is useable as reported and no qualification is required.

3. No sample matrix spikes were processed, and therefore no evaluation of matrix effect has been performed. Matrix spike blank recoveries for both 4-nitrophenol and pentachlorophenol were elevated indicating reported concentration of these compounds in the environmental sample should be considered estimated possibly biased high. However, neither of these compounds were detected in the groundwater sample submitted and therefore data is useable as reported.

4. As a result of an elevated concentration of 4-methylphenol in the groundwater sample, the sample was re-analyzed at a 2:1 dilution. Reported results for 4-methylphenol, flagged with an "E" qualifier in the initial analyses, should be derived from the dilution analysis ("DL").

5. Surrogate recovery for 2-fluorophenol was outside of QC limits in the initial analyses due to matrix interference, but was within QC limits in the reanalysis at the sample dilution. Sample results derived from the initial analyses should be considered estimated, possibly biased low. Data are

usable to indicate the relative concentration of the compounds in the sample.

6. Instrument detection limit study was conducted on 12 February 1999 which was outside off the 6 months required by NYSDEC ASP.

In every other respect of data review, no further problems were found and the results of semivolatile analyses are usable as reported by the laboratory.

Pesticide/PCB Analyses

The groundwater sample submitted to Upstate was analyzed for TCL Pest/PCBs by NYSDEC ASP Superfund CLP Method 95-3. Where reported concentrations may have been affected by QC failures the data usability is discussed below:

1. Sample MW-10 was extracted within holding time, however, sample analyses was 15 days outside of holding time. Sample results are considered estimated and possibly biased low. Since all results were reported as non-detect, low-level detections may have been missed.

2. Alpha-BHC, dieldrin, and methoxychlor % RSD in the initial calibration were biased high. In addition, alpha-BHC, lindane beta-BHC, endrin ketone, 4,4,-DDT, endrin, and methoxychlor were outside QC limits in the continuing calibration. There were no analytes detected in the sample submitted and the sample results are already considered estimated as a result of the holding time exceedance. No additional qualification of the data is necessary for this QC issue.

3. Beta-BHC was detected below the CRDL in the method blank. Beta-BHC was not detected in the sample submitted for analyses and therefore no additional qualification of the data is necessary for this QC issue.

4. No sample matrix spikes were processed, and therefore no evaluation of matrix effect has been performed. Matrix spike blank recoveries for heptachlor, aldrin, endrin, and 4-4-DDT were elevated indicating a potential bias (high) for environmental sample results. There were no compounds detected in the environmental sample and therefore no additional qualification of the data is needed.

5. Surrogate recoveries (DCB) were below QC limits indicating a potential bias (low) for pesticide results in the environmental sample. However, there were no pesticides detected in the sample submitted for analyses and therefore no additional qualification is required for this QC issue.

6. The laboratory reports that as a result of instrument problems, chromatograms from Channel B for the PCB analyses in hardcopy were not made available and therefore could not be reviewed.

Metals and Cyanide Analyses

Aqueous samples submitted to Upstate were analyzed for TAL metals and cyanide in accordance with methods of NYSDEC ASP 6000/7000 and 335.2, respectively. Where reported concentrations may have been affected by QC failures the data usability is discussed below:

1. Initial calibration verification for potassium and mercury were outside of QC limits and therefore sample results are considered estimated and possibly biased low for these analytes. Since all results were reported as non-detect, low-level detections may have been missed.

2. Low-level concentrations of antimony, iron and aluminum were detected in certain of the method and preparation blanks. Antimony was not detected in samples submitted for analyses and, therefore, data is useable as reported for this analyte. Concentration of aluminum and iron in the environmental samples were orders of magnitude greater than their respective CRDLs indicating that the presence of these compounds at low-levels in the laboratory blank samples did not affect data quality. Data is useable for each of these compounds as reported in the data summary tables.

3. Iron recovery in the matrix spike sample was outside of QC limits due to the presence of iron in the sample at a concentration that was significantly above the spiking concentration. Sample results should be considered as estimated. Data is useable to indicate the approximate concentration of iron in the samples.

4. Duplicate analyses for lead were outside of QC limits as a result of matrix interference. Lead concentrations in both samples are considered estimated. Results are useable to show the approximate concentrations of lead in the samples.

In every other respect of data review, no further problems were found and the results of TAL metal plus cyanide analyses are usable as reported by the laboratory.

Polychlorinated dibenzo-p-dioxins and Dibenzofurans

Aqueous samples submitted to Upstate were forwarded to Triangle for polychlorinated dibenzo-p-dioxin and dibenzofuran analyses by EPA Method 8290. Where reported concentrations may have been affected by QC failures the data usability is discussed below:

There were no problems found with the results of the polychlorinated dibenzo-p-dioxins and dibenzofurans analyses. Data is useable as reported.

Soil Sampling Data

Volatile Analyses

Three test pit soil samples submitted to Upstate were analyzed for TCL VOCs by NYSDEC ASP Superfund CLP Method 95-1. Where reported concentrations may have been affected by QC failures the data usability is discussed below:

1. Acetone and methylene chloride were detected in a laboratory method blank at concentrations that were above the CRDL. Methylene chloride was detected in samples at concentrations that were comparable to the level detected in the laboratory blank sample. The presence of methylene chloride in the environmental samples are not considered to be representative of site conditions and sample results were edited to non-detect in the data summary tables. Acetone is also common laboratory contaminant, however, acetone was detected in each of the environmental samples at concentrations which were greater than 10 times that found in the method blank and therefore its presence should be considered as representative of site conditions.

2. No sample matrix spikes were processed and, therefore, no evaluation of matrix effect has been performed. Matrix spike blank recoveries were within QC limits.

3. Surrogate recoveries for sample TP-47 were biased high. Recoveries of 4-bromofluorobenzene in all three test pit soil samples were elevated and outside of QC limits. Sample results for all detections in this sample should be considered as estimated and possibly biased high.

In every other respect of data review, no further problems were found and the results of volatile analyses are usable as reported by the laboratory.

Semivolatile Analyses

Three subsurface and twenty-two surface soil samples were submitted to Upstate was analyzed for TCL SVOCs, base/neutral/acid extractables, by NYSDEC ASP Superfund CLP Method 95-2. Where reported concentrations may have been affected by QC failures the data usability is discussed below:

1. Samples TP-45T, TP-46T, SS-28, SS-29, and SS-33 had elevated concentrations of sample compounds that exceeded the calibration range, however, samples were not diluted to bring those compounds into range. Therefore, sample results flagged with an "E" in the data summary table are considered estimated. Data is useable to show the approximate concentrations of the affected analytes in the samples.

2. The compounds bis(2-ethylhexyl)phthalate and di-n-butyl phthalate were detected in certain of the method blanks at concentrations below the CRDL. Both of these compounds are common laboratory

contaminants and there presence in a majority of the samples are not considered to be representative of environmental conditions. Concentrations of bis(2-ethylhexyl)phthalate in samples TP-45, TP-46, and TP-47 were greater than 10 times the concentration detected in the corresponding blank. Results for these samples are usable as reported, however, their presence may still be related to laboratory contamination.

3. Recovery of pentachlorophenol in the method blank SA2102RS was elevated and outside of QC limits. Recovery in the second matrix spike blank (SA2107-RS) was within limits. Pentachlorophenol sample results therefore are considered estimated and possibly biased high. Pentachlorophenol, however, was not detected in samples submitted for analyses, therefore, no qualification is necessary and the results are useable as reported.

4. A single MS/MSD was processed with this SDG. The matrix spike/matrix spike duplicate relative percent differened (RPDs) for acenaphthene, pentachlorophenol, and pyrene were outside of QC limits. Sample results for all three of these compounds in SS-34 are considered estimated. Both acenaphthene and pentachlorophenol were not detected in the sample and therefore data qualification was not necessary and the data is useable as reported. Results of the pyrene analyses should be considered estimated and possibly biased high.

5. Surrogate recoveries in samples SS-21T and SS-34T were all extremely low. Samples were run a second time with similar results. All compounds detected in these samples are considered estimated and may be extremely biased low. All non-detects are rejected. Data qualified as estimated are useable to indicate the approximate level of the compounds in the sample. The data rejected are useable to indicate that elevated concentrations of these compounds are not present in the samples.

6. The surrogate recovery of 2,4,6-tribromophenol in sample SS-23 was slightly below QC limits and recovery of terohenyl-d14 in samples SS-29, SS-31, and SS-38 were slightly elevated. All compound detections in these samples are considered estimated. Data is useable to indicate the approximate level of contaminants in the samples.

In every other respect of data review, no further problems were found and the results of semivolatile analyses are usable as reported by the laboratory.

Pesticide/PCB Analyses

Three subsurface and twenty-two surface soil samples were submitted to Upstate and were analyzed for TCL Pest/PCBs by NYSDEC ASP Superfund CLP Method 95-3. Where reported concentrations may have been affected by QC failures the data usability is discussed below:

1. Samples TP-45, TP-46, and TP-47 were extracted within the required holding time but were analyzed

almost three weeks outside of holding time. All pesticide and PCB results for these samples should be considered as estimated. Data is useable to indicate the approximate level of pesticides and PCBs in the sample. All sample non-detects are also estimated as a result due to the possible loss of sample as a result of the holding time exceedance.

2. Alpha-BHC, dieldrin, and methoxychlor % RSD in the initial calibration were biased high. In addition, alpha-BHC, lindane beta-BHC, endrin ketone, 4,4,-DDT, endrin, and methoxychlor were outside QC limits in the continuing calibration. Sample results for these analytes should be considered estimated, however, there were no compounds detected in the samples submitted and no additional qualification to the data is needed for this QC issue.

3. All MS/MSD recoveries on sample SS-34 were outside of QC limits. Primarily, spike recoveries were elevated with the exception of endrin and dieldrin which did not recover. Matrix blank recovered indicating the system was able to see these compounds. Sample results for these analytes were not detected, however, results are highly questionable due to the lack of recovery and should be used with caution. Sample non-detects have been qualified in the data summary tables.

4. A number of surrogate recoveries were reported as being outside of QC limits in the laboratory report. However, the laboratory employed the EPA CLP limits of 60-150% instead of the ASP criteria of 30-150%. Further review indicated that surrogate recoveries primarily fell within the recommended range with only a few instances were recoveries were elevated. Sample results for these analytes were not detected and therefore no additional qualification to the data is needed for this QC issue.

5. Sample TP-47 was analyzed at a 10:1 dilution. Sample results were all non-detect at an elevated detection limit. No undiluted sample was analyzed. Data is useable to indicate that pest/PCBs were not present in the sample at the elevated detection limit.

Metals and Cyanide Analyses

Three subsurface and twenty-two surface soil samples were submitted to Upstate and were analyzed for TAL metals and cyanide in accordance with methods of NYSDEC ASP 6000/7000 and 335.2, respectively. Where reported concentrations may have been affected by QC failures the data usability is discussed below:

1. Antimony was detected in the initial calibration blank slightly above the CRDL. Antimony was not detected in samples submitted for analyses with the exception of samples TP-45 and TP-46. Concentrations in these samples were elevated enough to have not been affected by the presence of antimony in the blank sample. Data is useable as reported and no qualification is necessary.

2. Low-level concentrations of iron were detected in the continuing calibration blank and preparation blank at concentrations that were below the CRDL. The presence of low-level concentrations of iron in the blanks does not affect data useability and no qualification is necessary.

3. Antimony, arsenic, selenium, and thallium recoveries in the initial matrix spike were biased low but were within criteria in the post digestion spike. No qualification is necessary.

4. Results of the calcium RPD was outside of QC limits. The laboratory case narrative indicated that the lack of precision in the duplicate analyses was a result of matrix interference. Calcium results should therefore be considered estimated and were designated as such in the data summary tables.

In every other respect of data review, no further problems were found and the results of the TAL metal plus cyanide analyses are useable as reported by the laboratory.

Wet Chemistry

The soil boring samples submitted to Upstate was analyzed for nitrate, ammonia, and total Kjeldahl nitrogen. In addition the samples were subjected to a bacterial scan and a standard plate. Where reported concentrations may have been affected by QC failures the data usability is discussed below:

1. Holding times were exceeded for all samples for all tests. All analyses are considered estimated and possibly biased low. Sample analyses that are reported as non-detect are not useable to indicate the lack of the analytes as low-level concentrations may have been lost. Data for these samples are useable to indicate that elevated concentrations are not present in the samples.

2. Matrix spike, matrix spike duplicate and matrix spike blank recoveries were within QC criteria indicating the anaytical sequence was able to detect the target compounds at levels comparable to the spiked concentrations.

Worm Tissue Analyses

Worm samples were submitted for TCL SVOCs, PCBs, and TAL metals by SSP methods 8270 and 8080 and CLP-M. Where reported concentrations may have been affected by QC failures the data usability is discussed below:

1. Low-level concentrations (below CRDL) of bis(2-ethylhexylphthalate) and di-n-butylphthalate were detected in a method blank. Both bis(2-ethylhexylphthalate) and di-n-butylphthalate are common laboratory contaminants. The compound bis(2-ethylhexylphthalate) was not detected in the samples analyzed and therefore no data qualification is required. Di-n-butyl phthalate was detected in the environmental sample at a similar concentration to that detected in the method blank and therefore is

not considered to be representative of the matrix sampled. Sample results for di-n-butylphthalate were therefore edited to non-detect in the data summary tables.

2. Surrogates 2-chlorophenol-d4 and 1,2-dichlorobenzne-d4 were not added. No explanation for this omission was provided by Upstate. Recoveries of the remaining six (6) surrogates were within QC criteria, therefore, no qualification to the data is needed.

3. Analysis for PCBs was performed well outside of holding time. Sample receipt of the worms that would be composited were received by the Upstate on 24 August 1999. The sample was not extracted until 13 October and analyzed on 14 October 1999 some 50-51 days following receipt. Sample results are considered rejected but are useable to indicate that elevated concentrations of PCBs were not detected in the samples.

4. DCB recoveries (surrogate) were biased low for sample PA5293MB and the composite. No PCBs were detected in the sample and therefore no additional qualification will be applied.

5. Matrix spike recoveries for cadmium and mercury were outside QC limits. Cadmium was not detected in the sample however and no qualification is needed. The cncentration for mercury is considered estimated and possibly biased low. Data is useable to indicate the approximate level of mercury in the sample.

6. %RPD in the duplicate analyses for selenium was outside of QC limits. Sample results should be considered estimated. Data is useable to show the relative concentration of selenium in the sample.

In every other respect of data review, no further problems were found and the results of the worm tissue analyses are useable as reported by the laboratory.

APPENDIX E

Supporting Data –
Risk Assessment

APPENDIX E-1

Human Health Statistical Analyses

STATISTICAL EVALUATION
SCREENING FOR NORMALITY
SURFACE SOIL

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

	Sample ID Lab Sample Number Sampling Date
A	Benzo(a)anthracene
B	Benzo(a)pyrene
C	Benzo(b)fluoranthene
D	Dibenz(a,h)anthracene
E	Indeno(1,2,3-cd)pyrene
F	Aroclor 1248
G	Arsenic
H	Beryllium
I	Lead
J	Nickel

Surface

Descriptive Statistics Report

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Database

Summary Section of A

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
27	2001.481	2311.619	444.8713	40	8800	8760

Normality Test Section of A

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.7706001	0.000044			Reject Normality
Anderson-Darling	2.004409	0.000042			Reject Normality
Martinez-Iglewicz	1.82861		1.16351	1.254198	Reject Normality
Kolmogorov-Smirnov	0.192405		0.153	0.167	Reject Normality
D'Agostino Skewness	3.4670	0.000526	1.645	1.960	Reject Normality
D'Agostino Kurtosis	2.4427	0.014579	1.645	1.960	Reject Normality
D'Agostino Omnibus	17.9870	0.000124	4.605	5.991	Reject Normality

Summary Section of B

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
27	2061.778	2491.725	479.5327	40	9500	9460

Normality Test Section of B

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.7607144	0.000031			Reject Normality
Anderson-Darling	2.158933	0.000018			Reject Normality
Martinez-Iglewicz	2.290644		1.16351	1.254198	Reject Normality
Kolmogorov-Smirnov	0.2137375		0.153	0.167	Reject Normality
D'Agostino Skewness	3.5105	0.000447	1.645	1.960	Reject Normality
D'Agostino Kurtosis	2.4519	0.014212	1.645	1.960	Reject Normality
D'Agostino Omnibus	18.3351	0.000104	4.605	5.991	Reject Normality

Summary Section of C

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
27	3180	3651.637	702.7579	60	13900	13840

Normality Test Section of C

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.7903898	0.000094			Reject Normality
Anderson-Darling	1.977971	0.000049			Reject Normality
Martinez-Iglewicz	1.992236		1.16351	1.254198	Reject Normality
Kolmogorov-Smirnov	0.2459221		0.153	0.167	Reject Normality
D'Agostino Skewness	3.1462	0.001654	1.645	1.960	Reject Normality
D'Agostino Kurtosis	1.9911	0.046473	1.645	1.960	Reject Normality
D'Agostino Omnibus	13.8629	0.000977	4.605	5.991	Reject Normality

Summary Section of D

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
27	594.037	436.9492	84.09093	99	1900	1801

Normality Test Section of D

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.789833	0.000092			Reject Normality
Anderson-Darling	1.918612	0.000068			Reject Normality
Martinez-Iglewicz	2.930025		1.16351	1.254198	Reject Normality
Kolmogorov-Smirnov	0.2018794		0.153	0.167	Reject Normality
D'Agostino Skewness	3.4609	0.000538	1.645	1.960	Reject Normality
D'Agostino Kurtosis	2.5686	0.010210	1.645	1.960	Reject Normality
D'Agostino Omnibus	18.5755	0.000093	4.605	5.991	Reject Normality

Summary Section of E

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
27	1604.481	1407.705	270.9129	70	5000	4930

Normality Test Section of E

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.8933225	0.009440			Reject Normality
Anderson-Darling	1.036693	0.010004			Reject Normality
Martinez-Iglewicz	0.9979281		1.16351	1.254198	Accept Normality
Kolmogorov-Smirnov	0.2132355		0.153	0.167	Reject Normality
D'Agostino Skewness	1.5630	0.118041	1.645	1.960	Accept Normality
D'Agostino Kurtosis	-0.4572	0.647560	1.645	1.960	Accept Normality
D'Agostino Omnibus	2.6521	0.265523	4.605	5.991	Accept Normality

Summary Section of F

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
27	664.2593	1673.996	322.1606	34	8400	8366

Normality Test Section of F

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.347223	0.000000			Reject Normality
Anderson-Darling	7.366322	0.000000			Reject Normality
Martinez-Iglewicz	44175.18		1.16351	1.254198	Reject Normality
Kolmogorov-Smirnov	0.4956935		0.153	0.167	Reject Normality
D'Agostino Skewness	5.7023	0.000000	1.645	1.960	Reject Normality
D'Agostino Kurtosis	4.7949	0.000002	1.645	1.960	Reject Normality
D'Agostino Omnibus	55.5077	0.000000	4.605	5.991	Reject Normality

Summary Section of G

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
27	2.92963	1.459667	0.280913	2.1	7	4.9

Normality Test Section of G

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.6321561	0.000001			Reject Normality
Anderson-Darling	4.572785	0.000000			Reject Normality
Martinez-Iglewicz	170.5119		1.16351	1.254198	Reject Normality
Kolmogorov-Smirnov	0.395117		0.153	0.167	Reject Normality
D'Agostino Skewness	3.2999	0.000967	1.645	1.960	Reject Normality
D'Agostino Kurtosis	1.7315	0.083365	1.645	1.960	Accept Normality
D'Agostino Omnibus	13.8876	0.000965	4.605	5.991	Reject Normality

Summary Section of H

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
27	0.5848148	9.838583E-02	1.893436E-02	0.36	0.66	0.3

Normality Test Section of H

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.7003944	0.000004			Reject Normality
Anderson-Darling	3.802558	0.000000			Reject Normality
Martinez-Iglewicz	24.84204		1.16351	1.254198	Reject Normality
Kolmogorov-Smirnov	0.3433915		0.153	0.167	Reject Normality
D'Agostino Skewness	-2.7025	0.006882	1.645	1.960	Reject Normality
D'Agostino Kurtosis	0.3370	0.736127	1.645	1.960	Accept Normality
D'Agostino Omnibus	7.4171	0.024513	4.605	5.991	Reject Normality

Summary Section of I

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
27	145.5111	217.9523	41.94494	8.7	1163.2	1154.5

Normality Test Section of I

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.5075147	0.000000			Reject Normality
Anderson-Darling	3.79795	0.000000			Reject Normality
Martinez-Iglewicz	6.484477		1.16351	1.254198	Reject Normality
Kolmogorov-Smirnov	0.2835907		0.153	0.167	Reject Normality
D'Agostino Skewness	5.6284	0.000000	1.645	1.960	Reject Normality
D'Agostino Kurtosis	4.8317	0.000001	1.645	1.960	Reject Normality
D'Agostino Omnibus	55.0237	0.000000	4.605	5.991	Reject Normality

STATISTICAL EVALUATION
SCREENING FOR NORMALITY
GROUNDWATER

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER

	Sample ID Lab Sample Number Sampling Date
A	1,1,1-Trichloroethane
B	1,1-Dichloroethane
C	1,2-Dichloroethane (total)
D	Benzene
E	Chloroform
F	Chloromethane
G	Toluene
H	Trichloroethene
I	Vinyl Chloride
J	Xylene (total)
K	1,4-Dichlorobenzene
L	Naphthalene
M	Aldrin
N	Aroclor-1248
O	Arsenic
P	Cadmium
Q	Chromium
R	Lead
S	Manganese

Groundwater

Descriptive Statistics Report

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Database

Summary Section of A

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
17	175.6122	676.3033	164.0277	4.452	2800	2795.548

Normality Test Section of A

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.2669056	0.000000			Reject Normality
Anderson-Darling	5.968684	0.000000			Reject Normality
Martinez-Iglewicz	0		1.252524	1.438767	Accept Normality
Kolmogorov-Smirnov	0.5321664		0.19	0.207	Reject Normality
D'Agostino Skewness	5.0579	0.000000	1.645	1.960	Reject Normality
D'Agostino Kurtosis	4.4275	0.000010	1.645	1.960	Reject Normality
D'Agostino Omnibus	45.1849	0.000000	4.605	5.991	Reject Normality

Summary Section of B

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
17	33.23529	84.30753	20.44758	10.41667	360	349.5833

Normality Test Section of B

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.2931963	0.000000			Reject Normality
Anderson-Darling	5.544049	0.000000			Reject Normality
Martinez-Iglewicz	0		1.252524	1.438767	Accept Normality
Kolmogorov-Smirnov	0.5035495		0.19	0.207	Reject Normality
D'Agostino Skewness	5.0468	0.000000	1.645	1.960	Reject Normality
D'Agostino Kurtosis	4.4199	0.000010	1.645	1.960	Reject Normality
D'Agostino Omnibus	45.0059	0.000000	4.605	5.991	Reject Normality

Summary Section of C

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
17	2263.272	9212.108	2234.264	10.41667	38011	38000.58

Normality Test Section of C

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.2648959	0.000000			Reject Normality
Anderson-Darling	5.998444	0.000000			Reject Normality
Martinez-Iglewicz	0		1.252524	1.438767	Accept Normality
Kolmogorov-Smirnov	0.5295469		0.19	0.207	Reject Normality
D'Agostino Skewness	5.0579	0.000000	1.645	1.960	Reject Normality
D'Agostino Kurtosis	4.4276	0.000010	1.645	1.960	Reject Normality
D'Agostino Omnibus	45.1860	0.000000	4.605	5.991	Reject Normality

Summary Section of D

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
17	12.94004	6.632093	1.608519	2.69	29	26.31

Normality Test Section of D

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.8229817	0.004266			Reject Normality
Anderson-Darling	1.663104	0.000289			Reject Normality
Martinez-Iglewicz	0		1.252524	1.438767	Accept Normality
Kolmogorov-Smirnov	0.3540874		0.19	0.207	Reject Normality
D'Agostino Skewness	1.6167	0.105953	1.645	1.960	Accept Normality
D'Agostino Kurtosis	0.8968	0.369802	1.645	1.960	Accept Normality
D'Agostino Omnibus	3.4179	0.181056	4.605	5.991	Accept Normality

Summary Section of E

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
17	18.568	21.52869	5.221474	9.44	94.216	84.776

Normality Test Section of E

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.4604853	0.000001			Reject Normality
Anderson-Darling	4.063968	0.000000			Reject Normality
Martinez-Iglewicz	0		1.252524	1.438767	Accept Normality
Kolmogorov-Smirnov	0.4122233		0.19	0.207	Reject Normality
D'Agostino Skewness	4.3593	0.000013	1.645	1.960	Reject Normality
D'Agostino Kurtosis	3.7756	0.000160	1.645	1.960	Reject Normality
D'Agostino Omnibus	33.2584	0.000000	4.605	5.991	Reject Normality

Summary Section of F

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
17	14.04165	9.368255	2.272135	6.708	47	40.292

Normality Test Section of F

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.5380993	0.000003			Reject Normality
Anderson-Darling	3.284645	0.000000			Reject Normality
Martinez-Iglewicz	0		1.252524	1.438767	Accept Normality
Kolmogorov-Smimov	0.4153067		0.19	0.207	Reject Normality
D'Agostino Skewness	4.2501	0.000021	1.645	1.960	Reject Normality
D'Agostino Kurtosis	3.7582	0.000171	1.645	1.960	Reject Normality
D'Agostino Omnibus	32.1873	0.000000	4.605	5.991	Reject Normality

Summary Section of G

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
17	3596.896	14792.44	3587.694	3.4	61000	60996.6

Normality Test Section of G

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.262495	0.000000			Reject Normality
Anderson-Darling	6.036569	0.000000			Reject Normality
Martinez-Iglewicz	7535749		1.252524	1.438767	Reject Normality
Kolmogorov-Smirnov	0.5367111		0.19	0.207	Reject Normality
D'Agostino Skewness	5.0580	0.000000	1.645	1.960	Reject Normality
D'Agostino Kurtosis	4.4277	0.000010	1.645	1.960	Reject Normality
D'Agostino Omnibus	45.1881	0.000000	4.605	5.991	Reject Normality

Summary Section of H

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
17	44.23102	135.5705	32.88069	1.68	570	568.32

Normality Test Section of H

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.288683	0.000000			Reject Normality
Anderson-Darling	5.653945	0.000000			Reject Normality
Martinez-Iglewicz	0		1.252524	1.438767	Accept Normality
Kolmogorov-Smirnov	0.512103		0.19	0.207	Reject Normality
D'Agostino Skewness	5.0523	0.000000	1.645	1.960	Reject Normality
D'Agostino Kurtosis	4.4238	0.000010	1.645	1.960	Reject Normality
D'Agostino Omnibus	45.0957	0.000000	4.605	5.991	Reject Normality

Summary Section of I

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
17	61.24973	176.4218	42.78857	10.41667	740	729.5833

Normality Test Section of I

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.3226548	0.000000			Reject Normality
Anderson-Darling	5.216093	0.000000			Reject Normality
Martinez-Iglewicz	0		1.252524	1.438767	Accept Normality
Kolmogorov-Smirnov	0.4747879		0.19	0.207	Reject Normality
D'Agostino Skewness	4.9834	0.000001	1.645	1.960	Reject Normality
D'Agostino Kurtosis	4.3721	0.000012	1.645	1.960	Reject Normality
D'Agostino Omnibus	43.9500	0.000000	4.605	5.991	Reject Normality

Summary Section of J

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
17	1063.37	4338.703	1052.29	1.426	17900	17898.57

Normality Test Section of J

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.2631489	0.000000			Reject Normality
Anderson-Darling	6.026759	0.000000			Reject Normality
Martinez-Iglewicz	0		1.252524	1.438767	Accept Normality
Kolmogorov-Smirnov	0.5361973		0.19	0.207	Reject Normality
D'Agostino Skewness	5.0580	0.000000	1.645	1.960	Reject Normality
D'Agostino Kurtosis	4.4277	0.000010	1.645	1.960	Reject Normality
D'Agostino Omnibus	45.1880	0.000000	4.605	5.991	Reject Normality

Summary Section of K

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
17	8.467867	2.369625	0.5747185	2.349057	10	7.650943

Normality Test Section of K

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.571973	0.000006			Reject Normality
Anderson-Darling	3.618749	0.000000			Reject Normality
Martinez-Iglewicz	186.7547		1.252524	1.438767	Reject Normality
Kolmogorov-Smirnov	0.3641353		0.19	0.207	Reject Normality
D'Agostino Skewness	-3.1802	0.001472	1.645	1.960	Reject Normality
D'Agostino Kurtosis	1.9241	0.054347	1.645	1.960	Accept Normality
D'Agostino Omnibus	13.8155	0.001000	4.605	5.991	Reject Normality

Summary Section of L

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
17	9.805297	7.344272	1.781248	1.139423	36	34.86058

Normality Test Section of L

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.5395141	0.000003			Reject Normality
Anderson-Darling	3.344247	0.000000			Reject Normality
Martinez-Iglewicz	2229.036		1.252524	1.438767	Reject Normality
Kolmogorov-Smirnov	0.4306014		0.19	0.207	Reject Normality
D'Agostino Skewness	4.1755	0.000030	1.645	1.960	Reject Normality
D'Agostino Kurtosis	3.8876	0.000101	1.645	1.960	Reject Normality
D'Agostino Omnibus	32.5476	0.000000	4.605	5.991	Reject Normality

Summary Section of M

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
17	4.764706E-02	8.617697E-04	2.090099E-04	0.047	0.05	0.003

Normality Test Section of M

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.7423726	0.000364			Reject Normality
Anderson-Darling	1.774874	0.000154			Reject Normality
Martinez-Iglewicz	0		1.252524	1.438767	Accept Normality
Kolmogorov-Smirnov	0.30304		0.19	0.207	Reject Normality
D'Agostino Skewness	2.5243	0.011594	1.645	1.960	Reject Normality
D'Agostino Kurtosis	1.7681	0.077042	1.645	1.960	Accept Normality
D'Agostino Omnibus	9.4982	0.008659	4.605	5.991	Reject Normality

Summary Section of N

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
17	0.8229412	0.3781495	9.171473E-02	0.05	1.6	1.55

Normality Test Section of N

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.7726541	0.000876			Reject Normality
Anderson-Darling	2.200717	0.000014			Reject Normality
Martinez-Iglewicz	456.3911		1.252524	1.438767	Reject Normality
Kolmogorov-Smirnov	0.3274334		0.19	0.207	Reject Normality
D'Agostino Skewness	-1.1316	0.257814	1.645	1.960	Accept Normality
D'Agostino Kurtosis	0.9651	0.334477	1.645	1.960	Accept Normality
D'Agostino Omnibus	2.2119	0.330889	4.605	5.991	Accept Normality

Summary Section of O

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
17	12.31647	18.09836	4.389498	3.6	73.57	69.97

Normality Test Section of O

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.5412168	0.000003			Reject Normality
Anderson-Darling	3.195426	0.000000			Reject Normality
Martinez-Iglewicz	28.86427		1.252524	1.438767	Reject Normality
Kolmogorov-Smirnov	0.3409091		0.19	0.207	Reject Normality
D'Agostino Skewness	4.1412	0.000035	1.645	1.960	Reject Normality
D'Agostino Kurtosis	3.5319	0.000413	1.645	1.960	Reject Normality
D'Agostino Omnibus	29.6236	0.000000	4.605	5.991	Reject Normality

Summary Section of P

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
17	13.17882	11.61472	2.816984	0.5	34	33.5

Normality Test Section of P

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.8626448	0.016819			Reject Normality
Anderson-Darling	0.914345	0.020026			Reject Normality
Martinez-Iglewicz	1.039172		1.252524	1.438767	Accept Normality
Kolmogorov-Smirnov	0.2346692		0.19	0.207	Reject Normality
D'Agostino Skewness	1.4658	0.142704	1.645	1.960	Accept Normality
D'Agostino Kurtosis	-0.7543	0.450697	1.645	1.960	Accept Normality
D'Agostino Omnibus	2.7175	0.256987	4.605	5.991	Accept Normality

Summary Section of Q

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
17	37.20235	77.95885	18.9078	1.8	309	307.2

Normality Test Section of Q

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.5013864	0.000001			Reject Normality
Anderson-Darling	3.5766	0.000000			Reject Normality
Martinez-Iglewicz	57.07684		1.252524	1.438767	Reject Normality
Kolmogorov-Smirnov	0.4153894		0.19	0.207	Reject Normality
D'Agostino Skewness	4.3090	0.000016	1.645	1.960	Reject Normality
D'Agostino Kurtosis	3.7231	0.000197	1.645	1.960	Reject Normality
D'Agostino Omnibus	32.4286	0.000000	4.605	5.991	Reject Normality

Summary Section of R

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
17	12.48706	13.26285	3.216714	2	52.16	50.16

Normality Test Section of R

Test Name	Test Value	Prob Level	10% Critical Value	5% Critical Value	Decision (5%)
Shapiro-Wilk W	0.7823678	0.001174			Reject Normality
Anderson-Darling	1.202025	0.003920			Reject Normality
Martinez-Iglewicz	2.375627		1.252524	1.438767	Reject Normality
Kolmogorov-Smirnov	0.2310441		0.19	0.207	Reject Normality
D'Agostino Skewness	3.0312	0.002436	1.645	1.960	Reject Normality
D'Agostino Kurtosis	2.4782	0.013206	1.645	1.960	Reject Normality
D'Agostino Omnibus	15.3293	0.000469	4.605	5.991	Reject Normality

95% UCL of Arithmetic Mean
Log-Transformed Data
Surface Soil

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL
(Page 1 of 3)

Sample ID Lab Sample Number Sampling Date	Units	Validated	Validated	Validated	Validated	Validated	Validated	Validated	Validated	Validated	Validated	Validated	Validated	Validated
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL
(Page 2 of 3)

Sample ID Lab Sample Number Sampling Date														
	Validated	Validated	Validated	Validated	Validated	Validated	Validated	Validated	Validated	Validated	Validated	Validated	Validated	Validated
Benzo(a)anthracene	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Benzo(a)pyrene	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Benzo(b)fluoranthene	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Dibenz(a,h)anthracene	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Indeno(1,2,3-cd)pyrene	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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LOG Transformed

Benzo(a)anthracene	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Benzo(a)pyrene	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Benzo(b)fluoranthene	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Dibenz(a,h)anthracene	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Indeno(1,2,3-cd)pyrene	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL
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Sample ID Lab Sample Number Sampling Date	MEAN
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[redacted]	1879.37
[redacted]	3131.481
[redacted]	470.5185
[redacted]	1548.741
[redacted]	493.2963
[redacted]	2.11
[redacted]	136.73

LOG Transformed	NO.	Sq root of n-1	Mean
[redacted]	27	5.10	6.820763
[redacted]	27	5.10	6.770292
[redacted]	27	5.10	7.233218
[redacted]	27	5.10	5.905444
[redacted]	27	5.10	6.707112
[redacted]	27	5.10	4.752499
[redacted]	29	5.29	0.47069
[redacted]	29	5.29	4.274557

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
SURFACE SOIL

Sample ID Lab Sample Number Sampling Date	MEAN
[redacted]	1988.148
	1879.37
	3131.481
	470.5185
	1548.741
	493.2963
	2.11
	136.73

LOG Transformed	NO.	Sq root of n-1	Mean	STDEVP	H-Stat	UCL	Mean + UCL
[redacted]	27	5.10	6.620763	1.410476	3.063	5783.511	7771.659
	27	5.10	6.770292	1.436662	3.107	5894.595	7773.965
	27	5.10	7.233218	1.442348	3.108	9438.523	12570
	27	5.10	5.905444	0.732518	2.182	658.681	1127.2
	27	5.10	6.707112	1.294015	2.166	3274.858	4823.599
	27	5.10	4.752499	1.416693	2.219	585.5357	1076.832
	29	5.29	0.47069	0.673506	2.12	2.630918	4.73609
	29	5.29	4.274557	1.143376	2.667	246.8579	383.5924
[test]	15	3.74	4.38	1.25	3.163	501.6658	

	N	H1 (21)	H2(31)	AVG.	H used
1.14	std				
1.00	STD1	2.564	2.423	2.494	**2.686516**
1.25	STD2	2.923	2.737	2.830	

95% UCL of Arithmetic Mean
Log-Transformed Data
Groundwater

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER
(Page 2 of 2)

		MEAN
5.0	10.0	6.0
5.0	10.0	27.1
5.0	10.0	2258.3
5.0	10.0	6.1
5.0	10.0	11.5
5.0	6.7	8.5
6.9	10.0	6.3
1.7	10.0	39.0
5.0	10.0	55.4
1.4	8.5	1058.7
4.5	3.6	4.9
4.5	1.1	4.3
0.0235	0.0235	0.0
0.47	**0.98**	0.5
1.8	**5.16**	11.4
2.83	31.38	13.0
19.09	18.54	37.2
6.69	52.16	12.3
336.34	341.55	801.9

		NO.	sq root of n-1	Mean	STDEVP
1.609438	2.302585	17	4.000	2.111424	1.480711
1.609438	2.302585	17	4.000	2.0241	1.008453
1.609438	2.302585	17	4.000	2.691058	2.220734
1.609438	2.302585	17	4.000	1.82814	0.521318
1.609438	2.302585	17	4.000	2.032889	0.838706
1.609438	1.903301	17	4.000	1.880851	0.558158
1.934994	2.302585	17	4.000	2.301532	2.210117
0.518794	2.302585	17	4.000	1.953537	1.164805
1.609438	2.302585	17	4.000	2.246498	1.314166
0.354873	2.138653	17	4.000	2.167274	1.977452
1.504077	1.271811	17	4.000	1.585114	0.294951
1.504077	0.130522	17	4.000	1.529496	0.632081
-3.750755	-3.750755	17	4.000	-3.78992	0.209574
-0.755023	-0.020203	17	4.000	-0.85724	0.849861
0.587787	1.640937	17	4.000	1.700529	1.097896
1.040277	3.446171	17	4.000	1.881696	1.491034
2.949165	2.919931	17	4.000	2.348406	1.490734
1.900614	3.954316	17	4.000	1.891291	1.213599
5.818123	5.833494	17	4.000	6.083804	1.19228

TOWN OF SALINA LANDFILL
ANALYTICAL RESULTS
GROUNDWATER
(Page 1 of 2)

MEAN
6.0
27.1
2258.3
6.1
11.5
8.5
6.3
39.0
55.4
1058.7
4.9
4.3
0.0
0.5
11.4
13.0
37.2
12.3
801.9

NO.		sq root of n-1	Mean	STDEVP	H-STAT	UCL	UCL + Mean
	17	4.000	2.111424	1.480711	3.428	87.93921	93.9282
	17	4.000	2.0241	1.008453	2.67	24.67354	51.7324
	17	4.000	2.691058	2.220734	4.77	2453.114	4711.4351
	17	4.000	1.82814	0.521318	2.05	9.311047	15.3619
	17	4.000	2.032889	0.838706	2.43	18.06754	29.5460
	17	4.000	1.880851	0.558158	2.09	10.26006	18.7135
	17	4.000	2.301532	2.210117	4.75	1585.023	1591.2826
	17	4.000	1.953537	1.164805	2.91	32.43762	71.3990
	17	4.000	2.246498	1.314166	3.15	63.11259	118.5045
	17	4.000	2.167274	1.977452	4.33	524.8036	1583.5416
	17	4.000	1.585114	0.294951	1.86	5.846037	10.7066
	17	4.000	1.529496	0.632081	2.18	7.954547	12.2403
	17	4.000	-3.78992	0.209574	1.8	0.025384	0.0484
	17	4.000	-0.85724	0.849861	2.45	1.024733	1.5674
	17	4.000	1.700529	1.097896	2.81	21.63882	33.0259
	17	4.000	1.881696	1.491034	3.46	72.45976	85.4621
	17	4.000	2.348406	1.490734	3.45	115.0433	152.2456
	17	4.000	1.891291	1.213599	2.99	34.29043	46.6010
	17	4.000	6.083804	1.19228	2.95	2151.405	2953.3182

APPENDIX E-2

Human Health Risk Assessment
Intake Calculations

Salina Human Exposure Assessment
Exposure Intake Calculations
updated 12/2000

1. Ingestion of Surface Soils

CS	mg/kg
As	4.74
Pb	384
Benzo(a)anth	7.77
Benzo(a)pyr	7.77
Benzo(b)fluor	12.6
Dibenz(ah)anth	0.96
Indeno(123 cd)pyr	4.8
Aroclor 1248	1.08

IR	mg/day
trespasser(child)	100
trespasser (adult)	50
Const worker	480

EF	day/year
trespasser(child)	56
trespasser (adult)	56
Const worker	120

FI	
	1

ED	years
trespasser(child)	10
trespasser (adult)	9
Const worker	2

BW	kg
trespasser(child)	39.4
trespasser(adult)	70
Const worker	70

AT	days
noncancer(trespasser/child)	3650
noncancer(trespasser/adult)	3285
noncancer(const worker/adult)	730
Cancer	25550

Intake: trespasser(child)/noncancer (mg/kg-day)

As	I =	1.84577E-06

Intake: trespasser(adult)/noncancer (mg/kg-day)

As	I =	5.19452E-07

Intake: construction worker(adult)/noncancer (mg/kg-day)

As	I =	1.06859E-05

Intake: trespasser(child)/cancer (mg/kg-day)

As	I =	2.63681E-07
Pb	I =	NA
Benzo(a)anth	I =	4.32237E-07
Benzo(a)pyr	I =	4.32237E-07
Benzo(b)fluor	I =	7.00925E-07
Dibenz(ah)anth	I =	5.34038E-08
Indeno(123 cd)pyr	I =	2.67019E-07
Aroclor 1248	I =	6.00793E-08

Intake: trespasser(adult)/cancer (mg/kg-day)

As	I =	6.67867E-08
Pb	I =	NA
Benzo(a)anth	I =	1.09479E-07
Benzo(a)pyr	I =	1.09479E-07
Benzo(b)fluor	I =	1.77534E-07
Dibenz(ah)anth	I =	1.35264E-08
Indeno(123 cd)pyr	I =	6.76321E-08
Aroclor 1248	I =	1.52172E-08

Intake: construction worker(adult)/cancer (mg/kg-day)

As	I =	3.05311E-07
Pb	I =	NA
Benzo(a)anth	I =	5.00477E-07
Benzo(a)pyr	I =	5.00477E-07
Benzo(b)fluor	I =	8.11585E-07
Dibenz(ah)anth	I =	6.18351E-08
Indeno(123 cd)pyr	I =	3.09175E-07
Aroclor 1248	I =	6.95644E-08

2. Dermal Contact with Surface Soils

CS	mg/kg
As	4.74
Pb	384
Benzo(a)anth	7.77
Benzo(a)pyr	7.77
Benzo(b)fluor	12.6
Dibenz(ah)anth	0.96
Indeno(123 cd)pyr	4.8
Aroclor 1248	1.08

SA	cm2
trespasser(child)	3380
trespasser (adult)	5560
Const worker	5560

AF	mg/cm2	
	2.7	child
	0.3	adult
ABS	0.03	Arsenic
	0.1	PAHs only
	0.01	other metals
	0.13	benz(a)pyr
	0.14	PCBs

EF	day/year
trespasser(child)	56
trespasser (adult)	56
Const worker	120

ED	years
trespasser(child)	10
trespasser (adult)	9
Const worker	2

BW	kg
trespasser(child)	39.4
trespasser (adult)	70
Const worker	70

AT	days
noncancer(trespasser/child)	3650
noncancer(trespasser/adult)	3285
Const worker	730
Cancer	25550

Intake: trespasser(child)/noncancer (mg/kg-day)

As	I =	5.05335E-06

Intake: trespasser(adult)/noncancer (mg/kg-day)

As	I =	5.19868E-07

Intake: construction worker(adult)/noncancer (mg/kg-day)

As	I =	1.114E-06

Intake: trespasser(child)/cancer (mg/kg-day)

As	I =	7.21907E-07
Pb	I =	na
Benzo(a)anth	I =	3.94459E-06
Benzo(a)pyr	I =	5.12797E-06
Benzo(b)fluor	I =	6.39664E-06
Dibenz(ah)anth	I =	4.87363E-07
Indeno(123 cd)pyr	I =	2.43682E-06
Aroclor 1248	I =	7.67597E-07

Intake: trespasser(adult)/cancer (mg/kg-day)

As	I =	6.68401E-08
Pb	I =	na
Benzo(a)anth	I =	3.65223E-07
Benzo(a)pyr	I =	4.7479E-07
Benzo(b)fluor	I =	5.92254E-07
Dibenz(ah)anth	I =	4.51241E-08
Indeno(123 cd)pyr	I =	2.25621E-07
Aroclor 1248	I =	7.10705E-08

Intake: construction worker(adult)/cancer (mg/kg-day)

As	I =	3.18286E-08
Pb	I =	na
Benzo(a)anth	I =	1.73916E-07
Benzo(a)pyr	I =	2.26091E-07
Benzo(b)fluor	I =	2.82026E-07
Dibenz(ah)anth	I =	2.14877E-08
Indeno(123 cd)pyr	I =	1.07438E-07
Aroclor 1248	I =	3.38431E-08

3. Ingestion of Leachate

CS	mg/l
Benzene	0.0038
Mn	1
1,4 Dichlorobenzene	0.0022
Aroclor 1248	0.001
Chromium	0.126
Lead	0.199

CR	l/hr
	0.05

ET	hr/day
	1

EF	events/yr
trespasser(child)	56
trespasser(adult)	56

ED	years
trespasser(child)	10
trespasser(adult)	9

BW	kg
trespasser(child)	39.4
trespasser(adult)	70

AT	days
noncancer(childtres)	3650
noncancer(adult)	3285
Cancer	25550

Intake: trespasser(child)/noncancer (mg/kg-day)

Benzene	I=	7.39865E-07
Mn	I=	0.000194701

Intake: trespasser(adult)/noncancer (mg/kg-day)

Benzene	I=	4.16438E-07
Mn	I=	0.000109589

Intake: trespasser(child)/cancer (mg/kg-day)

Benzene	I=	1.05695E-07
Mn		NA
1,4 Dichlorobenzene		6.11919E-08
Aroclor 1248		2.78145E-08
Chromium		NA
Lead		NA

Intake: trespasser(adult)/cancer (mg/kg-day)

Benzene	I=	5.35421E-08
Mn		NA
1,4 Dichlorobenzene		3.0998E-08
Aroclor 1248		1.409E-08
Chromium		NA
Lead		NA

4. Dermal Contact with Leachate

CS	mg/l
Benzene	0.0038
Mn	1
1,4 Dichlorobenzene	0.0022
Aroclor 1248	0.001
Chromium	0.126
Lead	0.199

SA	cm2
trespasser(child)	3380
trespasser(adult)	5560

PC	cm/hr	
	0.02	Benzene
	0.001	Mn
	0.087	1,4 DCB
	0.47	Aroclor 1248
	0.001	Cr
	0.001	Pb

ET	hr/day
	1

EF	events/year
	56

ED	years
trespasser(child)	10
trespasser(adult)	9

CF	
	0.001

BW	kg
trespasser(child)	39.4
trespasser(adult)	70

AT	days
noncancer(childtres)	3650
noncancer(adulttres)	3285
Cancer	25550

log PC = -2.72 + 0.71 log Kow - 0.0061MW

benzene log Kow = 2.12 mw=78

1,4 DCB log Kow=3.60 mw=147

Intake: trespasser(child)/noncancer (mg/kg-day)

Benzene	I=	1.0003E-06
Mn	I=	1.31618E-05

Intake: trespasser(adult)/noncancer (mg/kg-day)

Benzene	I=	9.26159E-07
Mn	I=	1.21863E-05

Intake: trespasser(child)/cancer (mg/kg-day)

Benzene	I=	1.429E-07
Mn		na
1,4 Dichlorobenzene		3.59882E-07
Aroclor 1248		8.83722E-07
Chromium		na
Lead		na

Intake: trespasser(adult)/cancer (mg/kg-day)

Benzene	I=	1.19078E-07
Mn		na
1,4 Dichlorobenzene		2.99887E-07
Aroclor 1248		7.36401E-07
Chromium		na
Lead		na

5. Ingestion of Subsurface Soils

CS	mg/kg
As	20.8
Benzo(a)anthracene	8.6
Benzo(a)pyrene	11.7
Benzo(b)fluoranthene	22.2
Dibenz(a,h)anthracene	1.5
Indeno(1,2,3-cd)pyrene	5.2
Arochlor 1248	420
Chromium	4265
Lead	417.9

IR	mg/day
Const worker	480

EF	day/year
Const worker	120

FI	
	1

ED	years
Const worker	2

BW	kg
Const worker	70

AT	days
noncancer(const worker/adult)	730
Cancer	25550

Intake: construction worker(adult)/noncancer (mg/kg-day)

Arsenic	I =	4.68916E-05

Intake: construction worker(adult)/cancer (mg/kg-day)

As	I =	1.33976E-06
Benzo(a)anthracene	I =	5.53939E-07
Benzo(a)pyrene	I =	7.53615E-07
Benzo(b)fluoranthene	I =	1.42994E-06
Dibenz(a,h)anthracene	I =	9.66173E-08
Indeno(1,2,3-cd)pyrene	I =	3.3494E-07
Arochlor 1248	I =	2.70528E-05
Chromium	I =	na
Lead		na

6. Dermal Contact with Subsurface Soils

CS	mg/kg
As	20.8
Benzo(a)anthracene	8.6
Benzo(a)pyrene	11.7
Benzo(b)fluoranthene	22.2
Dibenz(a,h)anthracene	1.5
Indeno(1,2,3-cd)pyrene	5.2
Arochlor 1248	420
Chromium	4265
Lead	417.9

SA	cm2
Const worker	5560

AF	mg/cm2	
	0.3	adult
ABS	0.03	Arsenic
	0.1	PAHs only
	0.01	other metals
	0.13	benz(a)pyr
	0.14	PCBs

EF	day/year
Const worker	120

ED	years
Const worker	2

BW	kg
Const worker	70

AT	days
Const worker	730
Cancer	25550

Intake: construction worker(adult)/noncancer (mg/kg-day)

As	I =	4.88845E-06

Intake: construction worker(adult)/cancer (mg/kg-day)

As	I=	1.3967E-07
Benzo(a)anthracene		1.92494E-07
Benzo(a)pyrene		3.40445E-07
Benzo(b)fluoranthene		4.96903E-07
Dibenz(a,h)anthracene		3.35745E-08
Indeno(1,2,3-cd)pyrene		1.16392E-07
Arochlor 1248		1.31612E-05
Chromium		na
Lead		na

7. Ingestion of Groundwater

CS	mg/l
1,1,1-Trichloroethane	0.0939
1,1-Dichloroethene	0.0517
1,2-Dichloroethene (total)	4.7
Trichloroethene	0.071
Vinyl Chloride	0.118
Benzene	0.015
Chloroethane	0.0295
Chloromethane	0.0187
Toluene	1.59
Xylenes	1.58
1,4-Dichlorobenzene	0.009
Naphthalene	0.0122
Aldrin	0.00001
Arochlor 1248	0.00157
Arsenic	0.033
Cadmium	0.034
Chromium	0.152
Lead	0.0466
Manganese	2.95

CR	l/hr
	0.05

ET	hr/day
	8

EF	events/yr
const worker(adult)	120

ED	years
const worker(adult)	2

BW	kg
const worker(adult)	70

AT	days
noncancer(const worker)	730
Cancer	25550

Intake: const worker(adult)/noncancer (mg/kg-day)

1,1,1-Trichloroethane	I= 0.000176407
1,1-Dichloroethene	9.71272E-05
1,2-Dichloroethene (total)	0.008829746
Trichloroethene	0.000133386
Vinyl Chloride	0.000221683
Benzene	2.818E-05
Chloroethane	5.54207E-05
Chloromethane	NA
Toluene	0.002987084
Xylenes	0.002968297
1,4-Dichlorobenzene	NA
Naphthalene	2.29198E-05
Aldrin	1.87867E-08
Arochlor 1248	NA
Arsenic	6.19961E-05
Cadmium	6.38748E-05
Chromium	NA
Lead	NA
Manganese	0.005542074

Intake: const worker(adult)/cancer (mg/kg-day)

1,1,1-Trichloroethane	I= na
1,1-Dichloroethene	2.77506E-06
1,2-Dichloroethene (total)	na
Trichloroethene	3.81101E-06
Vinyl Chloride	6.3338E-06
Benzene	8.05144E-07
Chloroethane	1.58345E-06
Chloromethane	1.00375E-06
Toluene	na
Xylenes	na
1,4-Dichlorobenzene	4.83086E-07
Naphthalene	na
Aldrin	5.36763E-10
Arochlor 1248	8.42717E-08
Arsenic	1.77132E-06
Cadmium	na
Chromium	na
Lead	na
Manganese	na

APPENDIX E-3

Exposure Intake Calculations

Salina Human Exposure Assessment
Exposure Intake Calculations
updated 5/1/00

1. Ingestion of Surface Soils

CS	mg/kg
Cd	17.3
Hg	10.3
Se	22.8
Zn	1750
B(a)ant	8.8
B(b)fl	14
B(a)P	9.3
Dibenz(ah)anth	0.96

IR	mg/day
trespasser(child)	100
trespasser (adult)	50

FI	
	1

BW	kg
trespasser(child)	39.4
trespasser(adult)	71.8

EF	day/year
trespasser(child)	56
trespasser (adult)	56

ED	years
trespasser(child)	10
trespasser (adult)	9

AT	days
noncancer(trespasser/child)	3650
noncancer(trespasser/adult)	3285
Cancer	25550

Intake: trespasser(child)/noncancer (mg/kg-day)

Cd	I =	6.73667E-06
Hg	I =	4.01085E-06
Se	I =	8.87838E-06
Zn	I =	0.000681455
B(a)ant	I =	3.42674E-06
B(b)fl	I =	5.45164E-06
B(a)P	I =	3.62144E-06
Dibenz(ah)anth	I =	3.73827E-07

Intake: trespasser(adult)/noncancer (mg/kg-day)

Cd	I =	1.84836E-06
Hg	I =	1.10047E-06
Se	I =	2.43599E-06
Zn	I =	0.000186973
B(a)ant	I =	9.40207E-07
B(b)fl	I =	1.49578E-06
B(a)P	I =	9.93628E-07
Dibenz(ah)anth	I =	1.02568E-07

Intake: trespasser(child)/cancer (mg/kg-day)

Cd	I =	9.62381E-07
Hg	I =	5.72978E-07
Se	I =	1.26834E-06
Zn	I =	9.73507E-05
B(a)ant	I =	4.89535E-07
B(b)fl	I =	7.78805E-07
B(a)P	I =	5.17349E-07
Dibenz(ah)anth	I =	5.34038E-08

Intake: trespasser(adult)/cancer (mg/kg-day)

Cd	I =	2.37646E-07
Hg	I =	1.41489E-07
Se	I =	3.13199E-07
Zn	I =	2.40394E-05
B(a)ant	I =	1.20884E-07
B(b)fl	I =	1.92315E-07
B(a)P	I =	1.27752E-07
Dibenz(ah)anth	I =	1.31873E-08

2. Dermal Contact with Surface Soils

CS	mg/kg
Cd	17.3
Hg	10.3
Se	22.8
Zn	1750
B(a)ant	8.8
B(b)fl	14
B(a)P	9.3
Dibenz(ah)anth	0.96

SA	cm2
trespasser(child)	1860
trespasser (adult)	3000

AF	mg/cm2	
	1	
ABS	0.01	inorganics
	0.1	PAHs only

EF	day/year
trespasser(child)	56
trespasser (adult)	56

ED	years
trespasser(child)	10
trespasser (adult)	9

BW	kg
trespasser(child)	39.4
trespasser (adult)	71.8

AT	days
noncancer(trespasser/child)	3650
noncancer(trespasser/adult)	3285
Cancer	25550

Intake: trespasser(child)/noncancer (mg/kg-day)

Cd	I =	1.25302E-06
Hg	I =	7.46018E-07
Se	I =	1.65138E-06
Zn	I =	0.000126751
B(a)ant	I =	6.37374E-06
B(b)fl	I =	1.014E-05
B(a)P	I =	6.73589E-06
Dibenz(ah)anth	I =	6.95317E-07

Intake: trespasser(adult)/noncancer (mg/kg-day)

Cd	I =	1.10902E-06
Hg	I =	6.60282E-07
Se	I =	1.46159E-06
Zn	I =	0.000112184
B(a)ant	I =	5.64124E-06
B(b)fl	I =	8.9747E-06
B(a)P	I =	5.96177E-06
Dibenz(ah)anth	I =	6.15408E-07

Intake: trespasser(child)/cancer (mg/kg-day)

Cd	I =	1.79003E-07
Hg	I =	1.06574E-07
Se	I =	2.35911E-07
Zn	I =	1.81072E-05
B(a)ant	I =	9.10535E-07
B(b)fl	I =	1.44858E-06
B(a)P	I =	9.6227E-07
Dibenz(ah)anth	I =	9.93311E-08

Intake: trespasser(adult)/cancer (mg/kg-day)

Cd	I =	1.42588E-07
Hg	I =	8.48933E-08
Se	I =	1.87919E-07
Zn	I =	1.44236E-05
B(a)ant	I =	7.25302E-07
B(b)fl	I =	1.15389E-06
B(a)P	I =	7.66513E-07
Dibenz(ah)anth	I =	7.91239E-08

3. Ingestion of Sediments

CS	mg/kg
As	25.7
Cd	83.7
Ni	363
B(a)P	7.4
Aroclor 1248	8.1

IR	mg/day
trespasser(child)	100
trespasser (adult)	50

EF	day/year
trespasser(adult/child)	56
trespasser(adult/child)	56

FI
1

ED	years
trespasser(child)	10
trespasser(adult)	9

BW	kg
trespasser(child)	39.4
trespasser(adult)	71.8

AT	days
noncancer(child tres)	3650
noncancer(adult tres)	3285
Cancer	25550

Intake: trespasser(child)/noncancer (mg/kg-day)

As	I =	1.00076E-05
Cd	I =	3.2593E-05
Ni	I =	0.000141353
B(a)P	I =	2.88158E-06
Aroclor 1248	I =	3.15416E-06

Intake: trespasser(adult)/noncancer (mg/kg-day)

As	I =	2.74583E-06
Cd	I =	8.94265E-06
Ni	I =	3.87835E-05
B(a)P	I =	7.90628E-07
Aroclor 1248	I =	8.65418E-07

Intake: trespasser(child)/cancer (mg/kg-day)

As	I =	1.42966E-06
Cd	I =	4.65614E-06
Ni	I =	2.01933E-05
B(a)P	I =	4.11654E-07
Aroclor 1248	I =	4.50595E-07

Intake: trespasser(adult)/cancer (mg/kg-day)

As	I =	3.53035E-07
Cd	I =	1.14977E-06
Ni	I =	4.98645E-06
B(a)P	I =	1.01652E-07
Aroclor 1248	I =	1.11268E-07

4. Dermal Contact with Sediments

CS	mg/kg
As	25.7
Cd	83.7
Ni	363
B(a)P	7.4
Aroclor 1248	8.1

SA	cm2
trespasser(child)	1860
trespasser(adult)	3000

AF	mg/cm2
	1

ABS		
	0.01	inorganics
	0.1	PAH, PCB

EF	day/year
trespasser(child)	56
Trespasser(adult)	56

ED	years
trespasser(child)	10
trespasser(adult)	9

BW	kg
trespasser(child)	39.4
trespasser(adult)	71.8

AT	days
noncancer(childtres)	3650
noncancer(adulttres)	3285
Cancer	25550

Intake: trespasser(child)/noncancer (mg/kg-day)

As	I =	1.86142E-06
Cd	I =	6.0623E-06
Ni	I =	2.62917E-05
B(a)P	I =	5.35974E-06
Aroclor 1248	I =	5.86674E-06

Intake: trespasser(adult)/noncancer (mg/kg-day)

As	I =	1.6475E-06
Cd	I =	5.36559E-06
Ni	I =	2.32701E-05
B(a)P	I =	4.74377E-06
Aroclor 1248	I =	5.19251E-06

Intake: trespasser(child)/cancer (mg/kg-day)

As	I =	2.65918E-07
Cd	I =	8.66043E-07
Ni	I =	3.75596E-06
B(a)P	I =	7.65677E-07
Aroclor 1248	I =	8.38106E-07

Intake: trespasser(adult)/cancer (mg/kg-day)

As	I =	2.11821E-07
Cd	I =	6.89861E-07
Ni	I =	2.99187E-06
B(a)P	I =	6.09913E-07
Aroclor 1248	I =	6.67608E-07

5. Ingestion of Surface Water

CS	mg/l
Aroclor 1248	0.00012

CR	ml/hr
	50

ET	hr/event
	1

EF	events/yr
trespasser(child)	12
trespasser(adult)	12

ED	years
trespasser(child)	10
trespasser(adult)	9

BW	kg
trespasser(child)	39.4
trespasser(adult)	71.8

AT	days
noncancer(childtres)	3650
noncancer(adult)	3285
Cancer	25550

Intake: trespasser(child)/noncancer (mg/kg-day)

Aroclor 1248 I= 5.00661E-06

Intake: trespasser(adult)/noncancer (mg/kg-day)

Aroclor 1248 I= 2.74736E-06

Intake: trespasser(child)/cancer (mg/kg-day)

Aroclor 1248 I= 7.15229E-07

Intake: trespasser(adult)/cancer (mg/kg-day)

Aroclor 1248 I= 3.53232E-07

6. Dermal Contact with Surface Water

CS	mg/l
Aroclor 1248	0.00012

SA	cm2
trespasser(child)	10000
trespasser(adult)	20000

PC	cm/hr
	0.04

log PC = -2.72 + 0.71 log Kow - 0.0061MW
Aroclor 1248: Kow = 21700; MW=288

ET	hr/event
	1

EF	events/year
	12

ED	years
trespasser(child)	10
trespasser(adult)	9

CF
0.001

BW	kg
trespasser(child)	39.4
trespasser(adult)	71.8

AT	days
noncancer(childtres)	3650
noncancer(adulttres)	3285
Cancer	25550

Intake: trespasser(child)/noncancer (mg/kg-day)

Aroclor 1248 I= 4.00528E-08

Intake: trespasser(adult)/noncancer (mg/kg-day)

Aroclor 1248 I= 4.39577E-08

Intake: trespasser(child)/cancer (mg/kg-day)

Aroclor 1248 I= 5.72184E-09

Intake: trespasser(adult)/cancer (mg/kg-day)

Aroclor 1248 I= 5.65171E-09

APPENDIX E-4

Discussion of Contaminants of
Potential Concern
Ecological Risk Assessment

ALUMINUM

DESCRIPTION

Aluminum is a silver-white ductile metal with a somewhat bluish tint (HSDB 2000). Aluminum is found naturally in the earth, always combined with other elements forming compounds such as aluminum chloride, aluminum nitrate, aluminum hydroxide, aluminum chlorohydrate and aluminum sulfate (ATSDR 1999). It is odorless and is a very good conductor of heat and electricity. Aluminum does not vaporize even at high temperatures. Aluminum is used in a variety of industries such as printing ink, aircraft, automobile, jewelry, fireworks, explosives, and medications. Powdered aluminum is used in paints and photographic flashlights (HSDB 2000). Aluminum compounds are used is antacids, deodorants, and as treatment for drinking water (ATSDR 1999).

FATE/TRANSPORT

Aluminum is highly reactive and is not found in its free state in nature (HSDB 2000). It often occurs as silicates such as micas and feldspars. Aluminum exists between the solid and liquid phases by reacting and complexing with water molecules and anions such as chloride, fluoride, sulfate, nitrate, humic materials and clay.

The level of pH has a direct effect on the mobility of aluminum. At a pH of greater than 5.5, aluminum is usually in an undissolved form such as gibbsite. Organic acids are important weathering agents that help to transport aluminum in soil. The effectiveness of organic acids in dissolving aluminum for transport increases between a pH of 3.8 and 5.0. Aluminum is also transported through the atmosphere as a component of soil and other particulate matter. Acid rain mobilizes aluminum and makes it available for plant uptake. Root systems take up aluminum, immobilizing it. It is not evident that aluminum bioconcentrates in plants, as soil concentrations remain higher than plant tissue concentrations (HSDB 2000).

The potential for accumulation of aluminum in aquatic species is a function of water quality. In brook trout, pH has been found to influence the degree of biaccumulation, with more aluminum accumulated at a pH range of 5.6-5.7 versus 6.5-6.6. In smallmouth bass, gill tissue was found to have a higher concentration of aluminum than other tissue. Brook trout show a reduction in whole-body aluminum concentrations as they age from larvae to juveniles. There is no information on biomagnification of aluminum in aquatic food chains (HSDB 2000).

ECOTOXICITY

Animal toxicity studies have found that inhalation of aluminum dust causes respiratory infection in rats and rabbits and aggravates pulmonary tuberculosis. Stamped aluminum powder has been found to cause fibrosis of the lung, whereas aluminum compound particles have been found to be less reactive. LD50 values for ingestion are not available for aluminum because it is not absorbed in substantial quantities by the gut; death occurs

from intestinal blockage due to precipitated aluminum species rather than systemic toxicity (HSDB 2000). 96-hr LC50s for fathead minnows were found to be 4.25 and 4.4 mg/L for aluminum as aluminum nitrate and aluminum sulfate, respectively (Mayer and Ellersieck 1986).

A sixteen week greenhouse study found that 1-year old bare-root northern red oak seedlings planted in varying ranges of chloride-extractable aluminum-treated soil resulted in significant reductions in fine root and foliar biomass production and in fine root branching (HSDB 2000).

Additional information on the ecotoxicity of aluminum can be found in Tables 7-1, 7-3, 7-14, and 7-15.

CARCINOGENICITY

Very little information exists on the carcinogenicity of aluminum. Animal studies indicate that aluminum is not carcinogenic to laboratory animals (ATSDR 1999). Aluminum compounds have been evaluated as non-mutagenic (HSDB 2000).

ANTIMONY

DESCRIPTION

Antimony is a metallic element that exists in several allotropic forms, the most common is metallic in appearance. It is mined in small quantities in the western United States and more extensively in China, France, Italy, Japan and Mexico. Considerable amounts are produced as a by-product in the refining of ores of copper and lead. One notable property of antimony is that, similar to water, it expands when it cools, making it useful in making type metal and castings. Other uses of antimony and antimony compounds include medicinal agents, pigments for glass and porcelain, bronzing of steel, safety matches, and in vulcanizing rubber (Bram and Dickey 1986).

FATE/TRANSPORT

No information was located on the fate and transport of antimony.

ECOTOXICITY

In rabbits fed doses of 5 to 55 mg of metallic antimony every other day for 30, 60, and 90 days, abortions were observed to be frequent (HSDB 2000). Information on the ecotoxicity of antimony in sediment can be found in Table 7-2. No other information on the ecotoxicity of antimony was located.

CARCINOGENICITY

When Wistar rats were exposed to antimony via inhalation, a significantly greater number of neoplastic lesions in the lungs were observed compared to controls. In addition, this metal has been found to be mutagenic in bacteria (HSDB 2000).

ARSENIC

DESCRIPTION

Arsenic is a gray metal-like material usually found in the environment combined with other elements such as oxygen, chlorine, and sulfur in compounds called inorganic arsenic. When arsenic is combined with carbon, it is called organic arsenic. Arsenic compounds tend to be white or colorless powders that do not evaporate. They have no smell and most have no taste (ATSDR 1999).

Arsenic occurs naturally in many kinds of rock, such as ores containing copper or lead. When these ores are heated to extract the copper or lead, the arsenic is released into the air as dust. Smelters collect this dust, purify it, and then use it as a preservative for wood or in insect or weed killers (ATSDR 1999).

FATE/TRANSPORT

Arsenic is not broken down in the environment. Chemical reactions as well as bacteria that live in soil or water can cause arsenic to change form (ATSDR 1999). Most arsenic in the environment exists in soil or rock. Although it does not evaporate, it can be released into the air as dust, when smelters heat ores containing arsenic, when people burn material containing arsenic, or when wind blows soil that contains arsenic into the air. Wind aids in the transport of arsenic, but it will not travel far before it settles back to the ground through wet or dry deposition. Most arsenic compounds will dissolve in water, and in this way, transfer into lakes, rivers, or groundwater through runoff or snowmelt (ATSDR 1999).

Arsenic compounds tend to adsorb to soils or sediments, such as clays, iron oxides, aluminum hydroxides, manganese compounds, and organic material, minimizing the distance that leaching will transport arsenic. Soluble forms of arsenic move with the water, and can be carried long distances via rivers (Callahan et al. 1979). Arsenic bound to sediment may be re-released into water by chemical or biological inter-conversions of arsenic species (ATSDR 1999).

Some fish and shellfish build up arsenic in their tissues, although most of this is in a non-toxic form (ATSDR 1999). Bioconcentration of arsenic occurs in aquatic organisms, primarily algae and lower invertebrates, although biomagnification does not appear to be significant (Callahan et al. 1979).

ECOTOXICITY

Arsenic produces a decline in growth and metabolic rates in microorganisms; the more tolerant species can withstand arsenic levels up to 1000 mg/kg, whereas the most sensitive organisms succumb to levels less than 375 mg/kg (HSDB 2000). In the black sea mussel, an LC50 of 10 mg/L has been calculated (HSDB 2000). Additional information on the ecotoxicity of arsenic can be found in Tables 7-2, 7-3, 7-14, and 7-15.

CARCINOGENICITY

Although information on the carcinogenicity of arsenic in animals is insufficient, it has been shown to be carcinogenic to humans exposed via inhalation (HSDB 2000).

BARIUM

DESCRIPTION

Barium is a silvery-white metal that occurs naturally in compounds. Barium is somewhat malleable, and barium compounds do not burn well (ATSDR 1999). Barium compounds are used in several industries as an aid in drilling for oil/gas, and in paints, bricks, tiles, glass and rubber. Some barium compounds are used to make ceramics, insect and rat poisons, and fuel additives (HSDB 2000).

FATE/TRANSPORT

Barium compounds that do not dissolve well in water may last for a long time in the environment, while those that do dissolve well usually do not persist. Most barium in the environment originates from industrial sources and does not become widely dispersed. Barium may be present in the atmosphere as particulates and is removed from the air via wet and/or dry deposition (ATSDR 1999).

Barium precipitates out of solution as an insoluble salt in aquatic environments. It may adsorb to suspended particulates, settle out of water by sedimentation, or be taken up by aquatic organisms. Barium in soils is either taken up by vegetation or leached through the soil through precipitation. Once in a soil system, barium becomes much less mobile. Fine textured mineral soils and high organic matter soils limit the mobility of barium, while soils higher in chloride tend to leach barium compounds (ATSDR 1999).

Barium has been found to bioconcentrate in marine plants at a rate of 1000 times the level present in the water. Terrestrial plants bioconcentrate very little barium (ATSDR 1999).

ECOTOXICITY

The acute oral LD50 for barium in rats has been determined to be 269 and 277 mg/kg for females and males, respectively. In another study, acute oral LD50s for weanling and adult rats were calculated to be 220 and 132 mg/kg, respectively. Increased offspring mortality was recorded when pregnant female rats were fed 18.3 mg/kg BW-day of barium (ATSDR 1999). Additional information on the ecotoxicity of barium can be found in Tables 7-3, 7-14, and 7-15.

CARCINOGENICITY

Chronic oral exposure studies in rats and mice have not found barium to be carcinogenic (HSBD 2000).

BERYLLIUM

DESCRIPTION

Beryllium is a hard, grayish element that does not occur naturally. It does occur as a chemical component of certain rocks, coal and oil, soil, and volcanic dust. Compounds of beryllium do not have any particular smell. Beryllium ore is converted into alloys, which are used to make electrical and electronic parts or as construction materials for machinery and molds for plastics. Pure beryllium metal has applications in nuclear weapons and reactors, aircraft and space vehicle structures and instruments, x-ray machines, and mirrors.

FATE/TRANSPORT

Beryllium is naturally emitted into the atmosphere by windblown dusts and volcanic particles (U.S. EPA 1987). It naturally enters waterways through the weathering of rocks and soils (U.S. EPA 1980a). Deposition of atmospheric beryllium aerosols from both natural and anthropogenic sources are also a source of beryllium in surface waters and soils.

ECOTOXICITY

The 96-hr TLm for the fathead minnow (*Pimephales promelas*) has been calculated to be 150 ug/L (HSDB 2000). A 5% concentration of beryllium in the diet has not been shown to cause toxicity in rats (HSDB 2000). In a chronic toxicity study by Morgareidge et al. (1975), Wistar albino rats were fed diets containing 5, 50 or 500 mg/kg beryllium as beryllium sulfate tetrahydrate. The rats were administered the beryllium from 4 weeks of age through maturation, mating, gestation and lactation. No signs of toxicity were observed and mortality appeared to be similar in the controls. It was determined that these results suggested that the maximum tolerated dose was not reached.

Additional information on the ecotoxicity of beryllium can be found in Tables 7-3 and 7-15.

CARCINOGENICITY

In laboratory animals, lung cancer in rats and monkeys inhaling beryllium, lung tumors in rats exposed to beryllium via intratracheal instillation, and osteosarcomas in rabbits and possibly mice receiving intravenous or intramedullary injection indicate that beryllium is carcinogenic in laboratory animals (HSDB 2000).

CADMIUM

DESCRIPTION

Cadmium is a naturally occurring element. Although it is considered a metal in its purest form, it is usually found as a mineral combined with other elements such as oxygen (cadmium oxide), chlorine (cadmium chloride), or sulfur (cadmium sulfate, cadmium sulfide). These compounds occur as solids and may dissolve in water but do not evaporate or disappear from the environment. Cadmium does not have a distinctive taste or odor that identifies its presence in air or water (IRIS 1999a). In sufficient concentration, cadmium is toxic to all forms of life (Eisler 1985a). Cadmium is used in many consumer products such as batteries, pigments, metal coatings, and plastics (IRIS 1999a). Concentrations are most likely highest in regions where smelters are in operation or in urban industrialized areas (Eisler 1985a).

FATE/TRANSPORT

Once cadmium enters the environment it does not break down, although it may change form (ASTDR 1999). For the most part, cadmium remains in the form in which it enters the environment for long periods of time. Cadmium in groundwater is likely to remain in the groundwater, although some may bind to soil and some may enter surface water via groundwater springs. Similarly, cadmium that is bound in sediment usually remains in sediment, although some will enter water and be taken up by plants. Cadmium in surface soil is attached to small soil particles and may get into the air and travel an unknown distance before returning to the earth's surface as dust or precipitation. Cadmium in surface soil may also be leached into subsurface soil or into neighboring bodies of water.

Cadmium bioaccumulates in all levels of the food chain. In freshwater and marine animals, cadmium concentrates to hundreds to thousands of times higher than in the water. Bioconcentration in fish depends on the pH and humus content of the water. Bioconcentration factors (BCFs) ranging from 113 to 18,000 have been reported for invertebrates. Fish BCFs for fish have been reported from 3 to 2213. Even though bioaccumulation of cadmium occurs in both plants and animals, the majority of accumulation occurs in the liver and kidneys of vertebrates, not in the muscle tissue (ATSDR 1999).

ECOTOXICITY

Ecotoxicity threshold values for cadmium were found to be 1.0 ug/L for surface water (freshwater), and 1.2 mg/kg for freshwater sediment.

Studies on the effects of cadmium on freshwater biota has found that ambient cadmium water concentrations exceeding 10 ug/L are associated with high mortality, reduced growth, and inhibited reproduction. Mortality was found to increase as exposure time increased, water hardness deceased, and organism age decreased (Eisler 1985a). Dissolved organic material was found to decrease the lethality of cadmium in the water

(Penttinen et al. 1998). A variety of studies on the effects of cadmium in wildlife have been performed. Adult drake mallards *(Anas playtrhynchos)* fed up to 200 mg/kg cadmium for 90 days survived with no loss of body weight (Eisler 1985a). Laying hens also survived with the same level of cadmium in the diet, although egg suppression was apparent once levels of 200 mg/kg were reached (Eisler 1985a).

Daphnia magna exposed to cadmium for 96 hours exhibited LC50 values of 9.9 ug/L (U.S. EPA 1980b). The 96-hr LC50 for striped bass *(Morone saxatilis)* larvae was 1.0 ug/L (Hughes 1973). Two-month old rainbow trout *(Salmo gairdneri)* exposed to cadmium levels of 1.8 ug/L reached 50 percent mortality after 96 hours (Davies 1976).

Sublethal effects of cadmium were studied for freshwater biota. Cadmium concentrations of 0.47 to 5.0 ug/L were associated with decreases in standing crop and growth, inhibition of reproduction, immobilization, and population alterations (Eisler 1985a). Freshwater algae experienced decreasing growth rates at 2.0 ug/L of cadmium (Conway 1978). *Daphnia magna* reached an immobilization threshold after 21 days at a concentration of 2.6 ug/L (Biesinger and Christian 1972).

Additional information on the ecotoxicity of cadmium can be found in Tables 7-2, 7-3, 7-14, and 7-15.

CARCINOGENICITY

Wistar rats were exposed to cadmium chloride via inhalation at concentrations of 12.5, 25, and 50 ug/m^3 for 18 months (IRIS 1999a). Cadmium produced mammory tumors in males, as well as other tumors at multiple sites. Intramuscular administration of cadmium resulted in injection site tumors and distant site tumors with exposure to cadmium metal and chloride, sulfate, oxide and sulfide compounds. Oral administration of cadmium salts was not reported to have and carcinogenic effects.

Sufficient evidence exists to indicate that cadmium compounds cause cancer in laboratory animals, but limited evidence exists to indicate whether cadmium metal is carcinogenic. Ionic cadmium causes genotoxic effects in a variety of types of eukaryotic cells, including human cells (HSDB 2000).

CHROMIUM

DESCRIPTION

Chromium is a naturally occurring element found in rocks, animals, plants, soil and in volcanic dust and gases. Chromium takes several forms in the environment, chromium 0, chromium III, and chromium VI. Chromium III is an essential nutrient required by the human body to enable it to use sugar, protein and fat (ASTDR 1999). Elemental chromium is very stable, but is rarely found in nature (Eisler 1986a). Chromium VI and chromium 0 are created by industrial processes. Chromium 0 is a metal, used for making steel and other alloys. Chromium III is used as brick lining for high temperature industrial furnaces, for making metals and alloys, and for chemical compounds. Chromium compounds produced by the chemical industry are used for chrome plating, dyes and pigments, leather tanning and wood preserving. They are also used in rust and corrosion inhibitors, textiles, and toner for copying machines. Chromium has no distinct odor or taste that identifies its presence in air or water (ATSDR 1999).

FATE/TRANSPORT

Chromium enters the air, water, and soil mostly in the forms of chromium III and chromium VI as a result of both natural processes and human activities. Emissions from burning coal and oil, and steel production allow chromium to escape into the air. Chromium compounds will typically remain airborne for up to 10 days before they either settle back down to the earth or are removed from the air through rain or snow.

Chromium can enter waterways through the discharge of electroplating, leather tanning, and textile industry discharge. Most of the chromium in water binds to soil particles and settles to the bottom, although some does dissolve in the water. Once in water, chromium cannot volatilize in the air, and therefore remains in the water unless transported in windblown sea sprays (ATSDR 1999). Soil levels of chromium increase due to disposal of commercial products containing chromium, coal ash, and chromium waste from industry. Chromium in soil does not dissolve easily in water and attaches strongly to the soil. A small amount will dissolve in water and may be leached to groundwater (ATSDR 1999).

Chromium is not expected to biomagnify in the food chain. The BCF for chromium VI for rainbow trout is around one and is slightly higher in bottom-feeding bivalves, ranging from 86-192. The bioavailability of chromium decreases with the addition of humic acid. There is no indication of biomagnification of chromium in the terrestrial food chain (soil-plant-animal) (ATSDR 1999).

ECOTOXICITY

Ecotoxicity threshold values for chromium are broken down into chromium III and chromium VI. For surface water (freshwater), the ecotoxicity threshold was listed as 180

ug/L for chromium III, and 10 ug/L for chromium VI. Ecotoxicity thresholds for sediment were only reported for chromium III, at 81 mg/kg.

Studies on the effects of chromium on freshwater aquatic organisms found that in general, chromium VI 96-hr LC50 values for freshwater species were between 445 and 2000 ug/L. For chromium III, 96-hr LC50 values were 2000 to 3200 ug/L. Chromium VI has been found to be more toxic to freshwater biota in soft and acidic waters. Younger life stages have been found to be more sensitive than older organisms, and pH has been found to be linked to the ionization of the chromate and hydrochromate ion (Eisler 1986a).

Rotifers exposed to chromium VI for 96 hours exhibited LC50 values of 3100 ug/L at a water hardness value of 25 mg $CaCO_3$/L (Buikema et al. 1974). *Daphnia magna* 24-hour LC50 values were recorded to be 435 ug/L (Jouany et al. 1982). Rainbow trout, *Salmo gairdneri* with a weight of 25 grams experienced 50 percent mortality after 96 hours in chromium concentrations of 20,200 to 65,500 ug/L depending on pH (Van der Putte et al. 1981).

Chromium III LC50 values for mollusks (*Amnicola* sp.) were reported to be 8400 ug/L, for *Daphnia magna* in water hardness of 48 mg $CaCO_3$/L (U.S. EPA 1980c). Juvenile rainbow trout experienced 50 percent mortality after 96 hours at a concentration of 4400 ug/L (Stevens and Chapman 1984), while LC50 concentrations for the fathead minnow ranged from 5070 to 67,400 ug/L depending on water hardness (U.S. EPA 1980c).

Sublethal effects were also studied for freshwater biota. Chromium VI was found to have the highest biological activity. Growth of algae was inhibited at 10.0 ug/L, and reproduction of worms at 12.5 ug/L. At higher concentrations, chromium VI is associated with abnormal enzyme activity, altered blood chemistry, lowered resistance to pathogenic organisms, behavior modification, alterations in population structure and species diversity, and inhibition of photosynthesis. Not all these were irreversible effects. Growth of the common duckweed, *Lemna minor*, was reduced in 14 days when exposed to chromium VI. After 32 days of exposure to 10 ug/L of chromium VI, *Daphnia magna* experienced a reduction in fecundity; chromium III was less detrimental (U.S. EPA 1980c). Long-term exposure to high concentrations of chromium VI resulted in elevated levels in the kidney, liver, and muscle for rainbow trout.

Additional information on the ecotoxicity of chromium can be found in Tables 7-1, 7-2, 7-3, 7-14, and 7-15.

CARCINOGENICITY

Chromium VI was found to be carcinogenic, producing lung tumors after inhalation of aerosols of sodium chromate and pyrolized chromium oxide mixtures in rats (Glaser et al. 1986). Intramusclar injection site tumors, intrapleural implant site tumors, intrabronchial implantation site tumors in Wistar rats and subcutaneous injection site sarcomas in Sprague-Dawley rats were all found after exposure to chromium VI through various

methods (IRIS 1999b). Chromium III was not found to be a carcinogen based on oral and inhalation studies (IARC 1990).

COBALT

DESCRIPTION

Cobalt occurs naturally and is found in most rocks, soil, surface and underground water, plants, and animals. Pure cobalt is a steel gray, shiny, hard metal. It does not dissolve in water in its pure form, but some compounds of cobalt do. Cobalt is used to make porcelain enameling, large appliances, and colored pigments. Vitamin B-12 is a cobalt-containing compound that is essential to human health. Cobalt alloys are used to make artificial body parts, such as hip and knee joints (ATSDR 1999).

Sources of cobalt in the environment are both natural and man-made. Natural sources include soil and natural dust, seawater spray, volcanic eruptions, and forest fires (ATSDR 1999).

FATE/TRANSPORT

Natural cobalt will stay in the air for a few days, but it will stay for years in water and soil. Some cobalt may seep from acid soil into groundwater. Once emitted into the air, cobalt transport depends on particle size, density, and meteorological conditions. Transport from air to soil occurs as a result of dry and wet deposition. Sediment and soil are the final repository for cobalt emitted into the environment. Transport of cobalt in soil depends on its adsorption/desorption (ATSDR 1999). BCFs for cobalt in marine fish and freshwater fish were 100-4000 and 40-1000, respectively (Smith and Carson 1981).

ECOTOXICITY

At a concentration of 10-400 ug/L, cobalt inhibited seed germination in lentils, while at 100-400 ug/L, a reduction in plant growth and leaf chlorophyll a and b were observed. When rats were exposed to repeated daily doses of 30 mg of cobalt powder in the diet for a month, significant mortality of young rats was observed (HSDB 2000). Acute toxicity in some animals has been demonstrated only at very high doses. For example, in chickens, acute toxicity was observed when exposed to 50 mg/kg cobalt in the diet, and in sheep exhibited toxic effects were observed at a dosage of 50 mg/kg BW-day (HSDB 2000).

Additional information on the ecotoxicity of cobalt can be found in Tables 7-1, 7-3, 7-14, and 7-15.

CARCINOGENICITY

Sufficient evidence exists to indicate that cobalt is a carcinogen to animals (HSDB 2000).

COPPER

DESCRIPTION

Copper is a reddish metal that occurs naturally in rock, soil, water, sediment and air. It is an essential element for all living things, occurring naturally in plants and animals. However, at high concentrations, copper is also a toxic metal. Copper is extensively mined and processed in the United States and is found in the United States penny. Other uses include electrical wiring, sheet metal and some water pipes. Copper compounds are commonly used in agriculture to treat plant diseases, like mildew, or for water treatment and as preservatives for wood, leather, and fabrics (ATSDR 1999).

FATE/TRANSPORT

Copper is naturally present in the earth's crust and may be released into the air naturally in large quantities via windblown dust or volcanic eruptions. Metal production, wood production, and coal, oil and gasoline combustion are anthropogenic means by which copper may be released into the environment. Copper is released to the atmosphere in the form of particulate matter or adsorbed to particulate matter. It is removed by gravitational settling, dry deposition, or washout by rain (ATSDR 1999).

Copper in waterways is often the result of leaching or runoff of soil into streams. This can either be the result of natural weathering or disturbed soils. Domestic wastewater is another possible source of copper in waterways. Mining and milling operations also add copper to waterways. Much of the copper discharged into waterways is in particulate matter and settles out, precipitates out, or adsorbs to organic matter. Copper binds to organic matter in estuarine sediment (ATSDR 1999).

ECOTOXICITY

When embryos of the fathead minnow (*Pimephales promelas*) were exposed to total copper concentrations of 0.6, 61, 113, 204, 338, and 621 ug/L from 5 to 10 hr post fertilization through 2 days post-hatch, a decrease in hatching time was observed with increasing copper concentrations. In addition, significant declines in percent survival and percent total hatch were observed at 621 ug/L, and the percentage of embryos with abnormalities was greater at 338 and 621 ug/L . Individuals exposed to copper during early development were then exposed to the same test concentrations for 28 days post-hatch. Again, the percentage of fish surviving decreased and the percentage of larve with abnormalities increased with increasing copper concentrations. Surviving larvae at concentrations from 61 through 621 ug/L showed decreased length and weight compared to controls. The calculated 96-hr LC50 (larval stage) was 250 ug/L, and the 28-day LC50 was approximately 123 ug/L (HSDB 2000).

Additional information on the ecotoxicity of copper can be found in Tables 7-1, 7-2, 7-3, 7-14, and 7-15.

CARCINOGENICITY

Studies of mice administered 1000 mg copper hydroxy-quinoline/kg body weight until age 28 days, followed by 2800 mg/kg copper in their feed for an 50 additional weeks were not found to have statistically significant increases in tumor incidence (IRIS 1999c). The data are inadequate to classify copper as an animal carcinogen (HSDB 2000).

CYANIDE

DESCRIPTION

Cyanide is found in several different forms: colorless cubes, a white granular or crystalline solid, or a white solid in the form of flakes or eggs similar to those of chickens (HSDB 2000). Cyanide is usually found in compounds; it interacts with metals and other organic compounds. Certain types of bacteria, fungi and algae produce cyanide. In plant foods, cyanide is part of naturally occurring sugars or other complex organic compounds (ATSDR 1999).

Most cyanide found in soil and water is a byproduct of industrial processes. Metal mining, organic chemical industries, iron and steel works, and publicly owned waste water treatment works are the major sources of cyanide in water. Other sources include vehicle exhaust, chemical industry releases, municipal waste burning, and use of cyanide-containing pesticides (ATSDR 1999).

FATE/TRANSPORT

In the form of hydrogen cyanide gas, cyanide has a very low degradation rate. The atmosphere is the sink for this compound. Most hydrogen cyanide remains in the lower regions of the atmosphere. Removal of hydrogen cyanide from the atmosphere by wet or dry deposition is negligible, although metal cyanide particles are expected to be removed from the air via wet and/or dry deposition. Cyanide losses from water are attributable to volatilization and sorption. In surface waters, volatilization is a predominant fate process for hydrogen cyanide (ATSDR 1999).

Cyanides are fairly mobile in soil. In soils with low pH and high concentrations of free iron oxides and clays, cyanide has the lowest mobility, and in soils with a high pH, high concentrations of $CaCO_3$, and negatively charged particles, cyanide has the highest mobility. Cyanide is not often detected in groundwater, although in soils in which cyanide levels are high, leaching into groundwater may occur (ATSDR 1999).

Bioconcentration factors for hydrogen cyanide in aquatic organisms were recorded as 0.73 and 1.62. For sodium cyanide, the calculated BCF was found to be 0.47. Metal cyanide complexes have been found to bioaccumulate in aquatic organisms. Silver and copper cyanide complexes were found in fish tissues at concentrations ranging up to 168 and 304 ug/g, respectively. Bioconcentration factors for these compounds in fish tissue are not known. There is no evidence that cyanide biomagnifies in the food chain (ATSDR 1999), probably because of cyanide's high chemical reactivity and rapid biotransformation (Eisler 1991).

ECOTOXICITY

While many chemical forms of cyanide are present in the environment, only free cyanide (i.e., the sum of HCN and CN^-) is the primary toxic agent, regardless of origin. Algae and macrophytes are comparatively tolerant of cyanide, with adverse effects reported at >160 ug/L (Eisler 1991). Freshwater fish species have been found to be the most sensitive aquatic organism, with sublethal effects, including reduced swimming performance and inhibited reproduction, observed in the range of 5.0-7.2 ug/L (Eisler 1991). Acute values range from approximately 50 to 200 ug/L (HSDB 2000). Among invertebrates, adverse nonlethal effects have been documented between 18 and 43 ug/L, and lethal effects between 30 and 100 ug/L (Eisler 1991). LD50s of sodium cyanide for the black vulture, American kestrel, Japanese quail, domestic chicken, eastern screech owl and European starling were 4.8, 4.0, 9.4, 21, 8.6, and 17 mg/kg, respectively (HSDB 2000). The LD50 value for rabbits exposed to potassium cyanide was 0.121 mmol/kg. Death occurred within 3-12 minutes of contamination of the eye. Animals that have eaten cyanogenic plants may experience panting, gasping, and behavioral alarm, as well as salivation, muscle tremors, lacrimation, urination, defecation, sever colic, emesis, prostration, clonic convulsions, mydriasis, and rapid death (HSBD 2000).

Additional information on the ecotoxicity of cyanide can be found in Tables 7-1 and 7-3.

CARCINOGENICITY

There is no evidence that chronic exposure to cyanide results in teratogenic, mutagenic, or carcinogenic effects (Eisler 1991).

IRON

DESCRIPTION

Iron is a silvery-white or gray soft malleable metal. In its powder form it ranges in color from gray to black. Iron is insoluble in water, alkali, alcohol, and ether, but it is soluble in acids. It occurs in nature as four different isotopes and is the second most abundant metal in the earth's crust. Iron is somewhat magnetic, and it will hold its magnetism after hardening. Iron is used in the manufacture of iron and steel castings and alloys with carbon, chromium and other metals. It is also used as a material to increase the density of oil well drilling fluids. Iron is also alloyed with carbon, manganese, chromium, nickel and other elements to form steel (HSDB 2000).

FATE/TRANSPORT

Iron has been found in plants in concentrations ranging from 15 to 2,245 mg/kg. In a study of estuarine waters, iron was found at a level of 106.5 g/L. Neither of these levels were determined to be toxic to wildlife (HSDB 2000).

ECOTOXICITY

Very few studies exist on the toxicity of iron to aquatic organisms and wildlife, since it is an essential trace element required by both plants and animals. Animal toxicity studies report that rust rings were the result of implanting iron particles in guinea pig corneas. As a result, softening of the cornea occurred near the area of the rust ring. The rust ring was also found to be attributable to infiltration of leukocytes in the area affected by the rust ring (HSDB 2000).

Additional information on the ecotoxicity of iron can be found in Tables 7-1, 7-2, and 7-3.

CARCINOGENICITY

No studies on the carcinogenicity of iron were available for review.

LEAD

DESCRIPTION

Lead is a naturally occurring bluish-gray metal found in small amounts in the earth's crust. It has no characteristic taste or smell. Metallic lead does not dissolve in water and does not burn. Most lead used in industry comes from mined "ores", recycled scrap metal or batteries (ATSDR 1999). Other uses of lead include production of ammunition, metal products and ceramic glazes. In recent years, chemicals containing lead, such as gasoline additives, paint, solder, and caulking have been reduced or eliminated in these products due to their harmful effect on humans and animals. Lead is also used for radiation shields to protect against x-rays, and in medical, scientific, and military equipment (ATSDR 1999).

FATE/TRANSPORT

The majority of lead in the atmosphere is released into the air as a result of automobile exhaust. Since the use of leaded gasoline has been limited, the amount of lead released into the atmosphere has decreased. Once lead is released into the atmosphere, it can travel thousands of miles if the particles are small or the compounds volatilize in the air (ATSDR 1999). Lead particles from auto emissions are small, but can grow by coagulation (Chamberlain et al. 1979). Lead is removed from the atmosphere by wet or dry deposition (Lannefors et al. 1983).

Lead is also released into the soil through human activity, such as landfills and leaded paint. Landfills contain waste from lead ore mining, ammunition manufacturing, and from other industrial activities such as battery production. Once lead deposits on soil, it usually sticks to soil particles. The accumulation of lead in most soils is a function of the rate of deposition from the atmosphere (ATSDR 1999).

Lead enters surface water when soil particles are eroded by rainwater (ATSDR 1999). The amount of lead that remains in solution in surface water depends on pH and salt content. Soft water holds much more lead in solution than hard water (U.S. EPA 1986a). River water can carry lead either as sorbed ions or surface coatings on sediment mineral particles, or it may be carried as a part of suspended living or nonliving organic matter in water (Getz et al. 1977). Leaching of lead into groundwater only occurs when the water is highly acidic (ATSDR 1999).

Chemicals containing lead may be broken down by sunlight, air, and water to other forms of lead. Lead compounds in water may combine with different chemicals depending on the acidity and temperature of the water. The lead atom itself cannot be broken down (ATSDR 1999). Bioconcentration factors for intestinal lipids have been measured to be 17,300 at days 10 and 12, and 540 at day 14 (Wong et al. 1981).

ECOTOXICITY

Ecotoxicity values for lead were found to be 2.5 ug/L for surface water (freshwater) and 47 mg/kg for freshwater sediment.

Daphnia magna exposed to 10 ug/L for 19 days experienced 50% reproductive impairment (Berglind et al. 1985). Rainbow trout *(Salmo gairdneri),* weighing 1 gram and exposed to 3.5 ug /L reach a 50% lethal concentration (LC50) after 72 hours. Larger rainbow trout (20 grams) exposed to 24 ug/L experienced some death by day 8.

Extensive testing has been done on the lethal and sub-lethal effects of lead on selected species of birds, mammals, and aquatic life. Mallards, *(Anas platyrhynchos)* given one oral dose of No. 6 lead shot (4.0 g) experienced 50 percent mortality in 20 days (Longcore et al. 1974). Rock doves *(Columba livia)* given 6.25 mg lead (as lead acetate)/kg body weight daily for 64 weeks experienced anemia, elevation in erythrocyte porphyrin, and kidney pathology. Residues (in mg/kg fresh weight) were calculated to be 603 in kidney, 501 in bone, 8 in liver, 2 in brain, 4.4. in blood, 0.8 in sciatic nerve, and 0.1 in crop (Anders et al. 1982).

Lead testing on dogs *(Canis familiaris)* resulted in anorexia and convulsions after being fed 3 mg of lead per kg of body weight daily, as lead carbonate (Clark 1979). Rabbits (*Lepus* sp.) experienced a general increase in blood levels when given between 0.03 and 3.0 mg Pb/kg body weight for 6 days (Barth et al. 1973). Mice (*Mus* sp.) given concentrations of lead between 0.05 to 2.2 mg/kg body weight daily 3 to 5 days after mating experienced effects such as a reduction in success of implanted ova, and a reduction in the frequency of pregnancy (Clark 1979).

Additional information on the ecotoxicity of lead can be found in Tables 7-1, 7-3, 7-14, and 7-15.

CARCINOGENICITY

The EPA reported that when taken orally, lead has been found to be a carcinogen to humans and laboratory animals. The most characteristic cancer response is bilateral renal carcinoma (IRIS 1999d).

MANGANESE

DESCRIPTION

Manganese is a pink-gray metal. It is lustrous, hard and brittle and is found in many types of rock. It does not occur naturally in its pure form, but is combined in solid compounds (ATSDR 1999). Manganese is used in the manufacture of ceramics, matches, glass dyes, and welding rods. It is a component of steel, steel alloys, cast iron, and is a scavenging agent in metal production (HSDB 2000). Manganese compounds are also used in the production of batteries, pesticides, fertilizer and dietary supplements (ATSDR 1999).

FATE/TRANSPORT

Elemental manganese and manganese compounds may exist in the air as particulates, which settle out due to gravity. Wet deposition may also occur, but is not as dominant as dry deposition (ATSDR 1999).

Manganese is transported in rivers as suspended sediments or bound to suspended particles in the water. The solubility of manganese is dependent on the specific chemical form and the chemistry of the water (ATSDR 1999).

The ability of manganese to be transported through soil is dependent on the cation exchange capacity and organic composition of the soil. Adsorption can be highly variable. At lower levels, manganese may be "fixed" by the clays in the soil. In this situation it will not be readily available for solution. At higher concentrations, manganese may be desorbed by ion exchange mechanisms with other ions in solution (ATSDR 1999).

Bioconcentration of manganese can be significant at lower trophic levels. Bioconcentraion factors for manganese have been reported as follows: 2500-6300 for phytoplankton, 300-5500 for marine algae, 800-830 for intertidal mussels, and 35-930 for coastal fish. Lower organisms tend to have higher bioconcentration factors than higher organisms, suggesting that biomagnification is not significant (ATSDR 1999).

ECOTOXICITY

In the aquatic environment, ions of manganese are rarely found at concentrations exceeding 1 mg/L, and reported tolerance values of aquatic organisms range from 1.5 to over 1000 mg/L. Therefore, manganese is rarely a problem in freshwaters. Permanganates have been reported to be lethal to fish at concentrations ranging from 2.2 to 4.1 mg/L, but these compounds are not persistent because they rapidly oxidize organic matter and are therefore rendered nontoxic (U.S. EPA 1986b). No adverse effects were noted in Japanese quail fed 5000 mg/kg manganese in the diet for 75 days (Laskey and Edens 1985). Rats fed 3500 mg/kg Mn in the diet exhibited reduced fertility (Laskey et

al. 1982), and those fed 1050 mg/kg in the diet exhibited delayed reproductive development (Gray and Laskey 1980).

Additional information on the ecotoxicity of manganese can be found in Tables 7-3, 7-14, and 7-15.

CARCINOGENICITY

Animal carcinogenicity data for manganese is inadequate (HSDB 2000).

MERCURY

DESCRIPTION

Mercury is an element that occurs in nature in several different forms. In elemental form, it is a shiny, silver-white, odorless liquid. At room temperature, pure mercury will form mercury vapor, a colorless, odorless gas. Mercury will combine with other elements such as chlorine, sulfur or oxygen, to form mercury salts. Organic mercury is formed when mercury chemically bonds with carbon (ATSDR 1999). Mercury and its compounds have not been found to have a normal metabolic function (Eisler 1987a). Hazardous waste sites have reported both methylmercury and phenylmercury, which exist as salts, similar to inorganic mercury compounds. Methylmercury is produced by microorganisms in the environment (ATSDR 1999). The most common mercury compounds found in the environment are metallic mercury, mercuric sulfide, mercuric chloride and methylmercury. The mercury portion of these forms does not break down into other chemicals; however, the form of mercury can be changed slowly by microorganisms and natural processes (ATSDR 1999). Mercury is mined as mercuric sulfide. It is also used industrially to produce chlorine gas and caustic soda and in thermometers, barometers, batteries, and electrical switches (ATSDR 1999).

FATE/TRANSPORT

Mercury exists in three states: liquid, gas, and particulates. Metallic mercury exists at room temperature in the liquid form, but readily vaporizes. Over 95% of the mercury found in the atmosphere is elemental mercury, a gas that is subject to long-range global transport. Gaseous mercury has been documented to remain in the air from six days to 2 years. Particulate mercury shows a regional or local distribution pattern. Although it is found in the atmosphere, it has a shorter residence time and is removed from the atmosphere by dry or wet deposition. Metallic mercury released in vapor form into the atmosphere can be transported long distances before being deposited on land or water surfaces. In addition to wet and dry deposition, mercury may be removed for the atmosphere by sorption of the vapor form to soil or water surfaces (ATSDR 1999).

In soil and surface waters, mercury can exist as mercuric (Hg^{+2}) or mercurous (Hg^{+1}) mercury. Mercuric mercury is the predominant form of mercury found in surface water. Volatile forms of mercury (metallic mercury and dimethylmercury) tend to evaporate into the atmosphere. Solid forms partition to particulates in the soil or water column and are transported downward to the sediments in the water column. Methylmercury is strongly bound to organic matter in water and may be transported in runoff from contaminated water bodies to other surface waters and soils. Small amounts of mercury are able to move from groundwater to overlying lakes. In these situations, maximum concentrations are found near the sediment/water interface. Surface runoff is an important mechanism for moving mercury from soil to water, particularly in soils with high humic content, due to the especially strong sorption capacity of humic materials (ATSDR 1999).

Methylmercury is soluble, mobile and quickly enters the aquatic food chain. This organic form of mercury is accumulated more readily into the biological tissue than inorganic forms. In surface water, methylmercury is rapidly accumulated by aquatic organisms; concentrations in carnivorous fish at the top of freshwater food chains are biomagnified on the order of 10,000 to 100,000 times the concentrations found in ambient waters. Biomagnification is influenced by water pH, with greater biomagnification occurring in low pH waters. Biomagnification factors in food webs of Lakes Ontario and Michigan were lowest for amphipods (1.1) and highest for fish feeding on plankton (10.4-11.8). Aquatic macrophytes have been found to bioconcentrate methylmercury in almost direct proportion to the mercury concentration in the water (ATSDR 1999).

ECOTOXICITY

Ecotoxicity values for mercury were found to be 1.3 ug/L for inorganic mercury and 0.003 ug/L for methyl mercury in surface water (freshwater). For mercury in freshwater sediment, ecotoxicity values were reported for inorganic mercury only, at 0.15 mg/kg.

Testing of aquatic organisms has shown that toxic concentrations of mercury salts ranged from less than 0.1 ug/L to more than 200 ug/L (Eisler 1987a). Toxicity was found to be higher at elevated temperatures (Armstrong 1979). Signs of acute mercury poisoning in fish include flaring of gill covers, increased frequency of respiratory movements, loss of equilibrium, and sluggishness (Armstrong 1979).

Lethal concentration values were recorded for both inorganic and organic mercury exposure. Fifty percent mortality was reached in 96 hours for *Daphnia magna* exposed to 5.0 ug/L of inorganic mercury. Ninety-six hour LC50 values for rainbow trout *(Salmo gairdneri)* juveniles were reported at mercury levels of 155.0-200.0 ug/L (U.S. EPA 1980d). For the tree frog (*Hyla* spp.), the 96-hr LC50 was between 2.4 and 2.8 ug/L (Birge et al. 1979a). Organic mercury LC100 values for adult flatworms *(Dugesia dorotocephala)* were reported to be at 500.0 ug/L over a five day period (Best et al. 1981). For *Daphnia magna,* LC50 values were found to be 0.9-3.2 ug/L over a lifetime exposure (U.S. EPA 1980d). Reproduction was inhibited among aquatic organisms at water concentrations of 0.03 to 1.6 ug/L (Best et al. 1981).

Additional information on the ecotoxicity of mercury can be found in Tables 7-2, 7-3, 7-14, and 7-15.

CARCINOGENICIY

Mercury is known to be a mutagen, teratogen, and carcinogen (Best et al. 1981).

NICKEL

DESCRIPTION

Nickel is a hard, silvery-white metal which is often alloyed with iron, copper, chromium or zinc to form metal mixtures. The alloys of these metal mixtures are then used to make coins and jewelry and in industry for making valves and heat exchangers. In the environment, nickel is found in the earth's crust, in all soil, and is emitted from volcanoes. Naturally occurring nickel is found primarily combined with oxygen or sulfur as oxides or sulfides. These compounds tend to dissolve easily in water and are usually green in color (ATSDR 1999).

FATE/TRANSPORT

Nickel is released into the atmosphere during nickel mining and by industries that make alloys or nickel compounds or industries that use nickel and its compounds. These industries may also discharge nickel into wastewater. Nickel is also released into the atmosphere by oil-burning power plants, coal-burning power plants, and trash incinerators. The nickel that is released into the air through these processes is attached to small particles of dust that settle to the ground or are taken out of the air in rain. The removal of nickel from the atmosphere can take longer than a month, depending on particle size (ATSDR 1999).

Nickel is a natural constituent in soil. It is strongly attached to particles containing iron or manganese. Under acidic conditions, nickel is more mobile in soil and may seep into groundwater. Nickel can be transported into streams and waterways in runoff either from natural weathering or from disturbed soil (ATSDR 1999).

Nickel does not appear to concentrate in fish. Studies have also shown that it does not accumulate in plants growing on land that has been treated with nickel-containing sludge or in small animals living on that land (ATSDR 1999).

ECOTOXICITY

Ecotoxicity values for nickel were reported as 160 ug/L for surface water (freshwater), and 21 mg/kg for freshwater sediment. Additional information on the ecotoxicity of nickel can be found in Tables 7-1, 7-2, 7-3, 7-14, and 7-15.

CARCINOGENICITY

Carcinogenicity testing of nickel subsulfide found that after 108 weeks of exposure through inhalation, fewer than 5% of 467 rats remained alive. The lungs were the major organ affected by the nickel subsulfide treatment. Hyperplasia, metaplasia, adenomas, and adenocarcinomas were found in the bronchiolar and alveolar regions of the lung (IRIS 1999e). Nickel carbonyl administered by inhalation has been found to be carcinogenic in animals in the lung. Squamous-cell carcinoma, clear-cell carcinoma, and

papillary bronchial adenomas were among the cancers found in animals expose to differing regimes of nickel carbonyl (IRIS 1999e).

SELENIUM

DESCRIPTION

Selenium occurs naturally in the environment. In its purest form, it is a metallic gray or black hexagonal shaped crystal, but it is mostly found in the environment combined with other substances such as sodium selenite, sodium selenate, and selenium sulfide. Selenium sulfide is a compound used in anti-dandruff shampoos. Selenium dioxide is industrially produced. When dissolved in water, it becomes selenius acid, which is used to clean the metal parts of guns. Other uses of selenium include: plastics, paints, vitamin and mineral supplements, fungicides and some types of glass. Selenium is an essential nutrient for humans and animals (ATSDR 1999).

FATE/TRANSPORT

Burning coal and producing fly ash is one mechanism by which selenium can enter the environment. Selenium compounds introduced into the atmosphere can be removed by wet or dry deposition (ATSDR 1999).

Selenium compounds found in surface water are typically the salts of selenic and selenious acids. Sodium selenate is one of the most mobile selenium compounds in the environment because it is unable to adsorb onto particles of soil. Plants take up selenium compounds from the water in soil and change them to organic selenium compounds such as selenomethionine (ATSDR 1999).

The transport of selenium through soils is dependent on pH and Eh. Selenium sulfides and heavy metal selenides are found in soils with low pH and high organic matter. In soils with high pH, selenates are the dominant type of selenium found (ATSDR 1999).

Bioaccumulation of selenium has been found in both aquatic and plant species. Bioconcentration factors of 105 to 1850 and bioaccumulation factors of 1746 to 3975 have been calculated for selenium in freshwater. Studies have also show some biomagnification of selenium under natural conditions in the aquatic environment (ATSDR 1999).

ECOTOXICITY

Selenium has been found to cause interference with genetic processing in *Drosophila melanogaster*. In cattle and sheep that have ingested seleniferous weeds, rapid or weak pulse, dyspnea, bloating, colic, ployuria, prostration and death due to respiratory failure have been reported. Selenium has also been found to be transmitted in the fetus in utero, causing congenital malformations in foals and lambs (HSDB 2000).

Aquatic ecotoxicity values for selenium have been reported as follows:

Test Species	96-hr LC50 (ug/L)	Reference
Apeltes quadracus	17,350	HSDB 2000
Menidia menidia	9725	HSDB 2000
Acartia clausi	1740	HSDB 2000
Callinectes sapidus	4600	HSDB 2000
Ictalurus punctatus	13,600	HSDB 2000
Daphnia magna	710	HSDB 2000
Hyallela azteca	340	HSDB 2000
Snail, Physa species	24,000	HSDB 2000
Tanytarsus dissimilis	42,400	HSDB 2000
Anabaena variabilis	15,000-17,000	Eisler 1985b
Xenous laevis (embryo)	4000	Eisler 1985b

The minimum lethal dose of selenium administered orally was 3.3 mg/kg body weight for horses and mules, 11 mg/kg body weight for cattle, and 15 mg/kg body weight for swine (Eisler 1985b). Among birds, chickens are extremely sensitive to selenium poisoning. Reduced egg hatchability has been reported for birds at dietary concentrations as low as 10 mg/kg in food (Eisler 1985b).

Additional information on the ecotoxicity of selenium can be found in Tables 7-3, 7-14, and 7-15.

CARCINOGENICITY

Evidence of selenium's carcinogenicity to animals has been reported as inadequate (HSDB 2000). In rats, selenium did not induce neoplasia (Eisler 1985b).

SILVER

DESCRIPTION

Silver is a rare element that occurs naturally in the environment as a soft silver-colored metal. It also occurs in powdery white or dark gray to black compounds. Silver is used to make jewelry, silverware, electronic equipment, and dental fillings in its metallic form. Silver compounds are also used to make photographs, which is the major source of silver that is released into the environment (ATSDR 1999).

FATE/TRANSPORT

Silver is released into the atmosphere as an aerosol. Mining operations emit large particles that settle near the source while particles emitted from smelting, power plants and solid waste incinerators are smaller and are likely to be transported away from the source of release. Silver particles will eventually be deposited by precipitation. In water, the major forms of silver are as the monovalent ion in the form of sulfate, bicarbonate or sulfate salts; as part of more complex ions with chlorides and sulfates; and as an integral part of, or adsorbed onto, particulate matter (Boyle 1968). The mobility of silver in solids is affected by drainage, oxidation-reduction potential and pH conditions, and the presence of organic matter (Boyle 1968).

In a study of bioconcentration and bioaccumulation of silver thiosulfate complexes in 10-week exposures, bioconcentration indices were 96-150 for algae, 12.2-26 for *Daphnia,* 5.9-8.5 for mussels, and 1.8-28 for fish. Bioaccumulation factors were 9-26 for *Daphnia,* 6.6-9.8 for mussels, and 4.0-6.2 for fish (Terhaar et al. 1977).

ECOTOXICITY

Concentrations ranging from 1.2 to 4.9 ug/L of silver have been shown to be lethal to sensitive species of aquatic animals and plants. Sensitive aquatic plants have been shown to grow poorly after exposure to 3.3-8.2 ug/L for 5 days; a concentration of 130 ug/L was found to be lethal. Adverse effects to phytoplankton were observed at 0.3 to 0.6 ug/L. The lowest chronic values for fish, Daphnids, and aquatic plants have been calculated to be 0.12, 2.6, and 30 ug/L, respectively. The lowest EC20s for fish and invertebrates have been calculated to be 0.2 and < 0.56 ug/L, respectively. In invertebrates, exposure concentrations from 5 to 10 ug/L resulted in reduced reproduction. 24-hr LC50s for two rotifers (*Brachionus calyciflorus* and *B. plicatilis*) were 7.5 and 120 ug/L, respectively. 48-hr LC50s for three water fleas (*Ceriodaphnia reticulata*, *Daphnia pulex*, and *Simocephalus vetulus*) were 11, 14, and 15 ug/L, respectively. The 96-hr LC50 for opposum shrimp was 0.249 ug/L. Rainbow trout eggs exposed continuously to concentrations as low as 0.17 ug/L exhibited increased embryotoxicity and resultant fry had a reduced growth rate. The 96-hr LC50s for four species of fish (sheepshead minnow, bluegill, rainbow trout, and fathead minnow) were 58, 64, 51.4, and 36.25 ug/L, respectively. Silver is harmful to poultry at a concentration of 100 mg/L in drinking

water, and some sensitive mammals can be adversely affected at concentrations as low as 250 ug/L (Irwin 1997).

Additional information on the ecotoxicity of silver can be found in Tables 7-2, 7-3, 7-14, and 7-15.

CARCINOGENICITY

Studies have found that colloidal silver injected into rats resulted in tumors in 8 out of 26 rats that survived longer than 14 months. In 6 of the 8, the tumor was at the site of the injection (IRIS 1999f). However, the data is inadequate to classify silver as an animal carcinogen (HSDB 2000).

THALLIUM

DESCRIPTION

Thallium is a bluish-white metal that is very soft and inelastic. It has no taste or odor and is insoluble in water (HSDB 2000). It is widely distributed within the earth's crust and is found in its pure form or combined with other metals, forming alloys. It is also found combined with bromine, chlorine, fluorine and iodine to form salts. Thallium is used mostly in the electronic industry, specifically in semiconductors and in the creation of electronic devices, switches and closures. The rest of the thallium imports were used in cardiac imaging and the manufacture of highly refractive optical glass. Domestic production of thallium ceased in 1981. Thallium compounds were at one time used as a pesticide for rodents and insects, but the use of thallium as a pesticide was banned in 1972 due to ill effects on humans. Thallium is no longer produced in the United States. All thallium used in industry is imported or comes from existing stores (ATSDR 1999).

FATE/TRANSPORT

Thallium that enters the atmosphere as a result of human activity will be found in the atmosphere as an oxide, hydroxide, sulfate or sulfide. Some compounds of thallium in the atmosphere are soluble in water and therefore may be removed from the atmosphere by wet deposition. Thallium may be adsorbed onto sediments, although adsorption constants for thallium vary and cannot be predicted (ATSDR 1999).

Thallium may be bioconcentrated by organisms from water. Experimental bioconcentration factors (BCFs) for thallium were reported as 18.2 for clams and 11.7 for muscles. For muscle tissue of Atlantic salmon, BCFs ranged from 27 to 1430. Since thallium is adsorbed by plants from the water in soil, it can then enter the terrestrial food chain (ATSDR 1999).

ECOTOXICITY

Most studies of the effects of thallium on aquatic organisms have used soluble monovalent thallium compounds. The lowest thallium concentration reported to affect aquatic species is 8 ug/L, which caused a reduction in growth of aquatic plants. Invertebrates are often affected at lower concentrations than fish (96-h LC50 values are 2.2 mg L/L for daphnids and 120 mg/L for a freshwater fish). The lowest LC50 value, reported after exposure for about 40 days, was 40 ug/L for fish. Many cases of thallium intoxication of wildlife have been caused by its large scale application as a rodenticide. In seed eating animals and predators, the CNS and/or the gastrointestinal tract are most severely affected. These effects can also be observed in farm animals. In addition, thallium causes a loss of dorsal feathers in ducks, salivation from the nose and mouth of cattle, and reduced growth in broilers, laying hens, sheep and steers (HSDB 2000).

Additional information on the ecotoxicity of thallium can be found in Tables 7-3 and 7-15.

CARCINOGENICITY

No studies on the carcinogenicity of thallium were available for review.

VANADIUM

DESCRIPTION

Vanadium has been described as a light gray or white lustrous powder, a bright white metal, a gray-white metal, and as steel gray with a bluish tinge (HSDB 2000). Pure vanadium is soft and ductile and does not varnish in air (HSDB 2000). Vanadium is insoluble in water, but soluble in nitric, hydrofluoric and concentrated sulfuric acids (HSDB 2000).

Vanadium is found in petroleum and other naturally occurring hydrocarbons (HSDB 2000). It is used as an addition to iron/steel alloys, in the production of aerospace titanium alloys, and in producing rust resistant springs and high-speed tool steels (HSDB 2000).

FATE/TRANSPORT

Vanadium compounds are widely distributed throughout the earth's crust. Vanadium generally enters the atmosphere as an aerosol as a result of both natural and man-made sources. Natural sources of vanadium typically produce mineral particles, while man-made sources release vanadium in the form of simple or complex vanadium oxides. Large particles from natural sources tend to settle out of the atmosphere near their source. Smaller particles from man-made sources such as oil-fueled power plants, will be transported further from the source. Eventually, all vanadium in the atmosphere will be transferred to soil and water on the earth's surface through wet and/or dry deposition. These particles are eventually adsorbed to hydroxides or associated with organic compounds and are deposited on the seabed (ATSDR 1999).

Vanadium is transported in water either by solution or suspension. After entering the ocean, vanadium is deposited on the seabed. Some marine organisms such as sea squirts bioconcentrate vanadium and can attain body concentrations of 10,000 times greater than the surrounding ambient sea water (ATSDR 1999).

In soil, the form of vanadium present is dependent on the parent rock. Ferric oxides and solid bitumens constitute the main carriers of vanadium in the sedimentation process. The pH of the soil determines the mobility of vanadium within the soil. In neutral or alkaline soils, vanadium is fairly mobile; in acid soils, mobility decreases (ATSDR 1999).

Marine plants and invertebrates have been found to contain higher concentrations of vanadium than terrestrial species. Among terrestrial plants, bioconcentration tends to occur among the lower plant phyla, and is not as prevalent among higher seed-producing phyla. In animal species, the highest levels of vanadium are found in liver and skeletal tissues. There is no data available regarding biomagnification of vanadium within the food chain, though studies on humans suggest it is unlikely (ATSDR 1999).

ECOTOXICITY

Vanadium can stimulate the growth of green algae at low levels (170 ug/L), but higher concentrations may be detrimental. For the worm (*Nereis diversicolor*), mussel (*Mytilus galloprovineialis*), and the crab (*Carcinas maenas*), 96-hr LC50s for vanadium were 10, 35 and 65 mg/L, respectively. The 96-h LC50 for rainbow trout fingerlings ranged from 6.4 to 21.8 mg/L. Small amounts of aqueous vanadium (10-20 mg/L) have detrimental effects on most plants (WHO 1988). Vanadium compounds have been reported to decrease immune resistance and allergic reactivity in mammals, reduce growth rates in chicks, and increase lipid peroxidation in kidneys when injected into rats or mice (HSDB 2000). In birds, a diet containing as low as 20 mg/kg vanadium has been shown to decrease egg production (Toussant and Latshaw 1994) and 30 mg/kg has been shown to decrease growth (Romoser et al. 1961). In rats fed 2.1 mg/kg BW-day of vanadium as sodium metvanadate for 60 days, decreased reproduction was observed.

Additional information on the ecotoxicity of vanadium can be found in Tables 7-1, 7-3, 7-14, and 7-15.

CARCINOGENICITY

There is no information to support that vanadium compounds are either carcinogenic or mutagenic.

ZINC

DESCRIPTION

Zinc is one of the most common elements in the earth's crust. Zinc is found in the air, soil, and water and is present in all foods. Pure elemental (metallic) zinc is a bluish-white shiny metal. Zinc combines to form compounds with elements such as chlorine, oxygen and sulfur. Zinc compounds have many uses in industry. Zinc sulfide and zinc oxide are used to make white paints and ceramics. Zinc oxide is also used in making rubber. Zinc acetate, zinc chloride, and zinc sulfate are used in preserving wood and in manufacturing and dyeing fabrics. Zinc compounds are also used by the drug industry as ingredients in some common products, such as sun blocks, diaper rash ointments, deodorants, athlete's foot preparations, acne and poison ivy preparations, and antidandruff shampoos.

FATE/TRANSPORT

Zinc enters the air through both natural processes and human activities. Mining, purifying of zinc, lead and cadmium ores, steel production, coal burning, and burning of wastes are human activities that enable zinc to enter the environment. In the air, zinc is present only in fine dust particles and eventually settles over land and water. Rain and snow aid in removing zinc from the air. Most zinc in bodies of water settles on the bottom. Waste streams from zinc and other metal manufacturing and zinc chemical industries, domestic wastewater, and run-off from soil can discharge zinc into waterways.

Zinc enters soil mainly from disposal of zinc wastes from metal manufacturing industries and coal ash from electric utilities. Most of the zinc in soil is bound to the soil and does not dissolve in water. If soil conditions permit, zinc may be able to reach the groundwater through leaching (ATSDR 1999).

Zinc may be taken up by animals eating soil or drinking water containing zinc. Zinc is known to bioaccumulate through the foodchain (ATSDR 1999).

ECOTOXICITY

The ecotoxicity threshold value for zinc in surface water (freshwater) is reported as 100 ug/L. For freshwater sediment, the value is reported as 150 mg/kg.

Additional information on the ecotoxicity of zinc can be found in Tables 7-1, 7-2, 7-3, 7-14, and 7-15.

CARCINOGENICITY

No data on the carcinogenicity of zinc could be located.

ACETONE

DESCRIPTION

Acetone is a chemical found naturally in the environment, although it is also produced industrially. It is a colorless liquid with a distinct smell and taste (ATSDR 1999). It has been described as having a fruity odor, with a pungent, sweet taste. Acetone occurs naturally as a metabolic byproduct of plants and animals (HSDB 2000). Acetone is used to make other chemicals that in turn are used to make plastics, fibers and drugs (ATSDR 1999). It is also used as a solvent for fats, oils, waxes, resins, rubbers, plastics pharmaceuticals and rubber cements (HSDB 2000).

FATE/TRANSPORT

Acetone occurs in nature as a byproduct of plant and animal metabolism. It also is released into the air by volcanoes and forest fires (HSDB 2000). In the atmosphere, acetone exists exclusively as a vapor (ATSDR 1999). Its atmospheric half-life is long, estimated at 71 days (HSDB 2000). This allows acetone to travel long distances. Wet deposition removes some acetone from the atmosphere. In soil, acetone is expected to be highly mobile, since it does not readily adsorb to particles in the presence of soil water or humid conditions (ATSDR 1999). In water, acetone does not adsorb onto any suspended solids. Volatilization from water surfaces is expected to be an important fate process for acetone. Volatilization half-lives in a shallow stream were found to range from 8 to 18 hours (HSDB 2000).

Acetone is transported primarily through volatilization and leaching. In water-saturated soil, the rate of leaching will be high because the adsorption rate is very low; the low retention ability of the soil will enable acetone to leach into the groundwater. Acetone that does adsorb to soil particles may be volatilized back into the atmosphere. In very dry soil, volatilization is high due to the high vapor pressure of acetone. Bioconcentration in aquatic organisms is expected to be minimal. There were no data available regarding the transport of acetone from soil to plants (ATSDR 1999).

ECOTOXICITY

In a study of male mice and rats exposed to acetone for varying time periods, animals breathing acetone took 9 hours to recover from a 5 min exposure. Mice exposed to acetone vapor (46,000 ppm) died within 1 hour. The 96-hr LC50 value for *Pimephales promelas* exposed to acetone was 8120 mg/L. For *Daphnia magna*, the 24- to 48-hr LC50 value was 10mg/L, and for brine shrimp the LC50 value was 2100 mg/L (HSDB 2000).

CARCINOGENICITY

No animal carcinogenicity data is available for acetone (HSDB 2000).

BIS(2-ETHYLHEXYL)PHTHALATE (BEHP)

DESCRIPTION

Bis(2-ethylhexyl)phthalate (BEHP) is the primary plasticizer used in PVC. It is easy to process and can be formulated to yield a broad range of physical properties.

FATE/TRANSPORT

BEHP has a high sorption coefficient and low water solubility, which limits migration in groundwater. It is resistant to biodegradation, hydrolysis, and volatilization. BEHP in the subsurface soil is expected to partition between the soil and water and be transported to the groundwater. This process is expected to be slow with continued sorption to the soils in the saturated zone.

BEHP has been found to be biodegradable in both aerobic and anaerobic conditions, although aerobic conditions resulted in faster rates of degradation. BEHP is persistent. Biodegradation is not an important fate process and will only occur under ideal conditions (Arthur D. Little, Inc. 1985).

ECOTOXICITY

Ecotoxicity values for BEHP were found for surface water and were reported as 32 ug/L. Depressed reproduction occurred in the water flea, *Daphnia magna*, at a concentration of 3, 10, and 30 ug/L. In the Atlantic cod (*Gadus morhua*), the synthesis of steroid hormones was affected by concentrations as low as 1 mg/L. 96-hr LC50s for fish range from > 32 to > 770 ug/L. The 48-hr LC50 for *Daphnia magna* has been reported to be as low as 1 mg/L. For the midge *Chironomus plumosus*, the 48-hr LC50 was calculated to be > 18 mg/L, and the 28-day LC50 for brine shrimp was > 1 mg/L (HSDB 2000).

Oral LD50s for rats, mice, rabbits, and Guinea pigs were calculated to be > 25 g/kg, > 30 g/kg, 33.9 g/kg, and 26.3 g/kg, respectively. At high dose levels, DEHP impairs fertility in the male rat and mouse by causing degeneration of the seminiferous tubules in the rat and by depleting gonadal zinc in both mouse and rat. At concentrations of 0.2, 0.4, and 1.0 percent weight in the diets of pregnant mice, an increased incidence of fetal resorptions was reported. In addition, major malformations included neural tube defects with intrauterine growth retardation and delayed ossification (HSDB 2000).

Additional information on the ecotoxicity of BEHP can be found in Table 7-2.

CARCINOGENICITY

There is sufficient evidence that BEHP is carcinogenic in laboratory animals (HSDB 2000).

CHLOROBENZENE

DESCRIPTION

Chlorobenzene is a colorless liquid with an almond-like odor. The compound does not occur widely in nature, but is manufactured for used as a solvent and is used in the production of other chemicals (ATSDR 1999).

FATE/TRANSPORT

Chlorobenzene is volatile and is only soluble up to 500 mg/L in water. The air plays an important part in the transport of chlorobenzene in the environment. Chlorobenzene adsorbs moderately to soil and persists for several months. Chlorobenzene in the air persists for about 3.5 days, and in water for less than 1 day (ASTDR 1999).

ECOTOXICITY

Goldfish *(Carassius auratus)* eggs exposed to chlorobenzene for 96 hours experienced 50% mortality when exposure levels ranged between 2370 to 3480 ug/L, depending on other controlling factors (Birge et al. 1979b). When exposed to chlorobenzene for eight days, LC50 values dropped to a range of 880-1040 ug/L (Birge et al. 1979b). Birge et al. (1979b) also studied largemouth bass *(Micropterus salmoides)*. They found that 84-hour LC50 values ranged from 340-390 ug/L, while over a 7.5 day period, they dropped to 50-60 ug/L. The fathead minnow *(Pimephales promelas)* was the most resistant to chlorobenzene. Over a ninety-six hour period, LC50 values were reported to be 16,900 ug/L (Geiger et al. 1990).

Additional information on the ecotoxicity of chlorobenzene can be found in Table 7-1.

CARCINOGENICITY

A 1985 NTP study on the effects of chlorobenzene on rats and mice found no chlorobenzene-related clinical toxicity and no significant increase in site-specific tumors or neoplastic pathology in any mouse or rat group (NTP 1985).

POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)

DESCRIPTION

Polynuclear aromatic hydrocarbons (PAHs) consist of a group of chemicals generally formed during incomplete combustion of coal, oil, gas, wood, garbage, and other organic substances including tobacco and charbroiled meat (ASTDR 1999). Although there are more than 100 different PAHs, many of which occur naturally as complex mixtures, some PAHs have also been manufactured as individual compounds for research. PAHs are also found in crude oil, coal tar pitch, creosote, and roofing tar. In the environment, they occur in air, water, sediment, and soil. PAHs at hazardous waste sites generally occur as products of incomplete combustion, disposal, and/or leakage from storage containers.

The ATSDR considers PAHs as a group and includes 17 PAHs in their profile, including acenaphthene, acenaphthylene, anthracene, benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[e]pyrene, benzo[j]fluoranthene, benzo[g,h,i]perylene, chrysene, dibenzo[a,h]anthracene, fluoranthene, fluorene, indeno[1,2,3-c,d]pyrene, phenanthrene, and pyrene. ATSDR (1999) indicates that these 17 PAHs are included in this profile because: (1) more information is available on these than on the others; (2) they are suspected to be more harmful than some of the others, and they exhibit harmful effects that are representative of the PAHs; (3) of all the PAHs analyzed, these were the PAHs identified at the highest concentrations at NPL hazardous waste sites. An additional three PAHs were identified as COPCs for this risk assessment. These PAHs include dibenzofuran, 2-methylnaphthalene, and naphthalene.

FATE/TRANSPORT

The movement of PAHs in the environment depends on properties such as how easily they dissolve in water and how easily they evaporate into the air (ATSDR 1999). PAHs in general do not easily dissolve in water. They are present in air as vapors or stuck to the surfaces of small solid particles. They can travel long distances before they return to earth in rainfall or particle settling. Some PAHs evaporate into the atmosphere from surface waters, but most stick to solid particles and settle to the bottoms of rivers or lakes. In soils, PAHs are most likely to stick tightly to particles. Some PAHs evaporate from surface soils to air. Certain PAHs in soils also migrate into underground water supplies.

Because of their low solubility and high affinity for organic carbon, PAHs in aquatic systems are primarily found sorbed to particles that either have settled to the bottom or are suspended in the water column. It has been estimated that two-thirds of PAHs in aquatic systems are associated with particles and only about one-third are present in dissolved form (Eisler 1987b). In surface water, PAHs can volatilize, photolyze, oxidize, biodegrade, bind to suspended particles or sediments, or accumulate in aquatic organisms (with bioconcentration factors ranging from 10-10,000).

Transport and partitioning of PAHs in the environment are determined to a large extent by physicochemical properties such as water solubility, vapor pressure, Henry's law constant, octanol-water partition coefficient (Kow), and organic carbon partition coefficient (Koc). In general, PAHs have low water solubilities. The Henry's Law constant is the partition coefficient that expresses the ratio of the chemical's concentrations in air and water at equilibrium and is used as an indicator of a chemical's potential to volatilize. The Koc value represents a PAH's tendency to adsorb to organic carbon in soil or sediment. The Kow is used to estimate the potential for an organic chemical to move from water into lipid and has been correlated with bioconcentration in aquatic organisms.

PAH compounds tend to be removed from the water column by volatilization to the atmosphere, by binding to suspended particles or sediments, or by being accumulated by or sorbed onto aquatic biota (ATSDR 1999). Half-lives for volatilization of benz[a]anthracene and benzo[a]pyrene (high molecular weight PAHs) from water have been estimated to be greater than 100 hours (Southworth 1979). Southworth (1979) stated that lower molecular weight PAHs could be substantially removed by volatilization if suitable conditions (high temperature, low depth, high wind) were present. Even for PAHs susceptible to volatilization, other processes, such as adsorption, photolysis, or biodegradation may become more important than volatilization in slow-moving, deep waters.

Sorption of PAHs to soil and sediments increases with increasing organic carbon content and surface area of the sorbent particles. In sediments, PAHs can biodegrade or accumulate in aquatic organisms. PAHs in soil can volatilize, undergo abiotic degradation (photolysis and oxidation), biodegrade, or accumulate in plants and animals. PAHs in soil can also enter groundwater and be transported with groundwater. PAHs in soils may break down to longer-lasting products by reacting with sunlight and other chemicals in the air, generally over a period of days to weeks. Biological breakdown in soil and sediments generally takes weeks to months and is caused primarily by the actions of microorganisms.

The ultimate fate of PAHs released to the environment is sorption to soils followed by gradual biodegradation. Other processes such as volatilization, hydrolysis, and photolysis have minimal impact on the fate of PAHs. PAHs accumulate in plants and animals and this tendency increases with increased molecular weight of the PAH.

PAHs have a wide range of volatilities and therefore are distributed in the atmosphere between the gas and particle phases (ATSDR 1999). Most PAHs in the atmosphere are associated with particulates (ATSDR 1999). The processes that transform and degrade PAHs in the atmosphere include photolysis and reaction with NOX, N_2O_5, OH, ozone, sulfur dioxide, and peroxyacetyl nitrate.

The two types of chemical reactions that appear to be the predominant mode of transformation of PAHS are: reactions between PAHs adsorbed on particle surfaces and oxidant gases like NO_2, O_3, and SO_3 that do not appear to be influenced by exposure to

UV irradiation; and photooxidation of PAHs irradiated under solar radiation or simulated sunlight, producing a variety of oxidized derivatives, such as quinones, ketones, or acids. Kamens et al. (1990) estimate that, even in highly polluted air, photolysis is the most important factor in the decay of particle-sorbed PAHs in the atmosphere, followed by reaction with NO_2, N_2O_5, and HNO_3.

Compounds adsorbed to particles are more resistant to photochemical reactions than pure compounds (ATSDR 1999). Butler and Crossley (1981) estimated half-lives for degradation of the following PAHs adsorbed to soot particles and exposed to sunlight in air containing 10 ppm nitrogen oxides: benzo[a]pyrene–7 days; benzo[g,h,i]perylene–8 days; benzo[a]anthracene–11 days; pyrene–14 days; chrysene–26 days; fluoranthene–27 days; and phenanthrene–30 days. However, Thomas et al. (1968) reported that benzo[a]pyrene adsorbed on soot was readily photooxidized, with 60% of the compound destroyed within the first 40 minutes of exposure to sunlight.

The most important processes contributing to the degradation of PAHs in water are photooxidation, chemical oxidation, and biodegradation by aquatic microorganisms. The rate and extent of photodegradation vary widely among the PAHs. Based on half-life data, photolysis in water may be an important fate process for acenaphthene, acenaphthylene, anthracene, pyrene, benzo[a]pyrene, and benzo[a]anthracene. PAHs in water can be chemically oxidized by chlorination and ozonation. Pyrene was the most rapidly degraded PAH. Benzo[a]anthracene, benzo[a]pyrene, and perylene were also highly degraded. Indeno[1,2,3-c,d]pyrene and benzo[g,h,i]pyrene were intermediate with respect to relative degradation. Benzo[k]fluoranthene and fluoranthene were the most slowly degraded of the compounds tested. The PAH-related byproducts resulting from chlorination are not fully known. Some may be more toxic in their transformed state. In water, ozonation is generally slower and less efficient than chlorination in degrading PAHs (Neff 1979).

In general, PAHs can be significantly metabolized under oxygenated conditions. However, under anoxic conditions, degradation will be extremely slow (Neff 1979). Concentrations of dissolved oxygen greater than 0.7 mg/L are adequate for biotransformation and the presence of a minimal concentration of PAHs is required for biodegradation to proceed (Borden et al. 1989). Other factors that increase rates of PAH biodegradation are higher water temperature (summer versus winter) and the presence of adapted microorganisms. Some PAHs are partially or completely degraded by some species of aquatic bacteria and fungi.

Microbial metabolism is the major process for degradation of PAHs in soil environments. Photolysis, hydrolysis, and oxidation generally are not considered to be important processes for the degradation of PAHs in soils. Although the pathways of microbial degradation are well known for anthracene, benzo[a]pyrene, and phenanthrene; degradation pathways for other PAHs are largely unknown (Sims and Overcash 1983). Metabolism of PAHs by bacteria includes formation of cis-dihydrodiols through dioxetane intermediates, whereas in fungi (and mammalian systems) trans-dihydrodiols are produced through arene oxide intermediates (Sims and Overcash 1983).

The rate of biodegradation may also be altered by the degree of contamination. At hazardous waste sites, half-lives may be longer since other contaminants at the site may be toxic to degrading microorganisms. Bossert and Bartha (1986) reported reduced biodegradation of PAHs in soil containing a chemical toxic to microorganisms.

The rate and extent of biodegradation of PAHs in soil are affected by environmental factors, the organic content, structure and particle size of the soil, characteristics of the microbial population, the presence of contaminants such as metals and cyanides that are toxic to microorganisms, and the physical and chemical properties of the PAHs (Wilson and Jones 1993). Based on experimental results, the estimated half-lives (days) of the PAHs in soil were: naphthalene, 2.1-2.2; anthracene, 50-134; phenanthrene, 16-35; fluoranthene, 268-377; pyrene, 199-260; chrysene, 371-387; benzo[a]anthracene, 162-261, benzo[b]fluoranthene, 211-294; benzo[a]pyrene, 229-309; dibenzo[a,h]anthracene, 361-420; dibenzo[a,i]pyrene, 232-361; and indeno[1,2,3-c,d]pyrene, 288-289 (Park et al. 1990). Environmental factors that may influence that rate of PAH degradation in soil include temperature, pH, oxygen concentration, PAH concentrations and contamination history of soil, soil type, moisture, nutrients, and other substances that may act as substrate co-metabolites (Sims and Overcash 1983). The size and composition of microbial populations in turn can be affected by these factors. Sorption of PAHs to organic matter and soil particulates also influences bioavailability, and hence, biotransformation potential. Sorption of PAHs by soil organic matter may limit biodegradation of compounds that would otherwise rapidly undergo metabolism.

ECOTOXICITY

Once sorbed, the biodegradation of PAHs is primarily due to microbial activity. PAHs with low molecular weights such as naphthalene and acenaphthene, rapidly biodegrade. PAHs of higher molecular weights such as benzo[a]anthracene, chrysene, benzo[a]pyrene, and fluoranthene are much more resistant to biodegradation (Arthur D. Little, Inc. 1985).

PAHs can accumulate in aquatic organisms from water, sediments, and food. In fish and crustaceans, BCFs have generally been reported in the range of 10-10,000 (Eisler 1987b). In general, bioconcentration was greater for the higher molecular weight compounds than for the lower molecular weight compounds. Fish and crustaceans readily assimilate PAHs from contaminated food, whereas mollusks and polychaete worms have limited assimilation (Eisler 1987b).

Biomagnification (a systematic increase in tissue concentration going up the food chain) has not been reported because of the tendency of many aquatic organisms to eliminate these compounds rapidly (Eisler 1987b). In general, PAHs obtained from the diet contribute to total tissue concentrations only to a limited extent. Decreasing PAH concentrations were found with increasing trophic level, probably as a result of the selective biotransformation capacity of the organisms for different PAHs. Some animals

demonstrate the ability to metabolize PAHs; however, the resulting metabolites may also be toxic.

Biotransformation by the mixed function oxidize (MFO) system in the fish liver can result in the formation of carcinogenic and mutagenic intermediates; exposure to PAHs has been linked to the development of tumors in fish (Eisler 1987b). The availability of fish to metabolize PAHs may explain why benzo[a]pyrene frequently is not detected or is found only at very low levels in fish from environments heavily contaminated with PAHs. The breakdown products (polyhydroxy compounds) are eliminated in feces (via bile) and urine. Although fish and most crustaceans evaluated to date have the MFO systems required for biotransformation of PAHs, some aquatic invertebrates are unable to metabolize PAHs efficiently. Half-lives for elimination of PAHs in fish ranged from > 2 days to 9 days (Niimi 1987).

PAHs may accumulate in terrestrial animals through the food chain or by ingestion of soil. The environmental fate of creosote coal tar distillate (which contained 21% phenanthrene and 9% acenaphthene) was studied in a terrestrial microcosm containing soil, rye grass, insects, snails, mealworm larvae, earthworms and voles (Gile et al. 1982). Average surface soil concentrations (measured on an unspecified day) were 0.60 mg/kg (phenanthrene) and 1.19 mg/kg (acenaphthene). The following phenanthrene concentrations were measured: snail–3.27 mg/kg; pill bugs–1.72 mg/kg; and earthworm–18.30 mg/kg. The acenaphthene concentrations measured were as follows: snail–11.2 mg/kg (day 37); pill bugs-0.99 mg/kg (day 75); and earthworm–71.9 mg/kg (days 72-75). The whole body concentration in the vole analyzed for phenanthrene was 7.20 mg/kg; in the vole analyzed for acenaphthene, it was 37.0 mg/kg. The authors found that these compounds were not metabolized in this system. Whole body concentrations in the vole exceeded soil concentrations by a factor of 12 for phenanthrene and 31 for acenaphthene; however, most of the radiolabeled acenaphthene was found as bound residues in the gastrointestinal tract of the animal and therefore was not accumulated.

Some terrestrial plants can take up PAHs from soil by the roots or from the air via the foliage; uptake rates are dependent on the concentration, solubility, and molecular weight of the PAHs and on the plant species (Edwards 1983). Mosses and lichens have been used to monitor atmospheric deposition of PAHs (Thomas et al. 1984). About 30-70% of atmospheric PAHs (indeno[1,2,3-cd]pyrene, fluoranthene, and benzo[a]pyrene) deposited in the forest were sorbed onto tree foliage (i.e., leaves and needles) and then deposited as falling litter (Matzner 1984). ATSDR (1999) reported that atmospheric deposition on leaves often greatly exceeds uptake from soil by roots as a route of PAH accumulation.

The uptake of PAHs from soil to plants and the subsequent biomagnification is generally quite low (Sims and Overcash 1983). Ratios of PAH concentrations in vegetation to those in soil have been reported to range from 0.001 to 0.18 for total PAHs and from 0.002 to 0.33 for benzo[a]pyrene (Edwards 1983). In a study of PAH uptake from cropland soils conducted in the United Kingdom, elevated concentrations of PAHs in soils were not correlated with concentrations in plant tissues (Wild et al. 1992). The authors concluded that the PAH concentrations in above ground plant parts were not

strongly related to soil PAH levels but were probably the result of atmospheric deposition, and the presence of PAHs in root crop tissues was probably due to absorption of the compounds to root surfaces.

Additional information on the ecotoxicity of PAHs can be found in Tables 7-2 and 7-3.

CARCINOGENICITY

One commonly studied PAH, benzo(a)pyrene (BaP), has been found to cause tumors and death in mice, rats, and hamsters fed or gavaged 0.15 mg/kg (Brune et al. 1981). Intraperitoneal and subcutaneous injections of BaP caused increased injection site tumors and respiratory and digestive tract tumors.

1,2,4-TRICHLOROBENZENE

DESCRIPTION

1,2,4-Trichlorobenzene is used as a solvent in chemical manufacturing, as a dye carrier, in wood preservatives, degreasing agents, and other cleaners, in dielectric fluid, synthetic transformer oils, lubricants, heat-transfer media, insecticides, and was previously used as a soil treatment for termite control. It is also an impurity in the manufacture of monochlorobenzene (HSDB 2000).

FATE/TRANSPORT

With a vapor pressure of 0.46 mm Hg at 25 °C, 1,2,4-trichlorobenzene is expected to exist primarily as a vapor. Once in the atmosphere, it has an estimated atmospheric half-life of 30 days, as it will degrade by reacting with hydroxyl radicals. In soils, 1,2,4-trichlorobenzene generally has low mobility based on a Koc ranging from 3.1 to 5.0. Biodegradation rates in soils and sediments are expected to be slow, and volatilization from moist soils is not expected to be significant. In water, 1,2,4-trichlorobenzene will adsorb strongly to sediment particles. Estimated volatilization half-lives from water range from 5 to 135 hours. Bioconcentration factors range from 120 to 2,400 in fish (HSDB 2000).

ECOTOXICITY

In the aquatic environment, the lowest concentration of 1,2,4-trichlorobenzene that caused adverse effects was 0.04 mg/L for mollusks, 0.4 mg/L for arthropods, and 4 mg/L for annelids. In experimental aquaria, the average number of species was significantly lower than the control at 4 mg/L. In sediment, the lowest concentration that adversely affected mollusks and echinoderms was 100 mg/kg, and for arthropods and annelids, it was 1000 mg/kg. Average numbers of species were lower than controls at a sediment concentration of 100 mg/kg or greater (HSDB 2000). LC50s for fish are as follows (HSDB 2000):

Test Species	24-hr LC50 (mg/L)	48-hr LC50 (mg/L)	96-hr LC50 (mg/L)	14-day LC50 (mg/L)
Rainbow trout	---	1.95	---	---
Bluegill sunfish	109	13	3.36	---
Sheepshead minnow	> 46.8	> 46.8	21.4	---
Guppy	---	---	---	2.4
Fathead minnow	---	---	2.99	---

In Rhesus monkeys, single oral doses of 90 mg/kg or higher were toxic, and doses of 173.6 mg/kg were lethal within 20-30 days. No adverse effects were observed in rats, rabbits, and dogs exposed to 30 mg/kg for 44 days. Oral LD50s were 756 and 766 mg/kg for rats and mice, respectively (HSDB 2000).

Additional information on the ecotoxicity of 1,2,4-trichlorobenzene can be found in Table 7-2.

CARCINOGENICITY

The three isomers of trichlorobenzene were not found to be mutagenic in an Ames assay (HSDB 2000).

1,4-DICHLOROBENZENE

DESCRIPTION

1,4-Dichlorobenzene has been used as an insecticidal fumigant, moth repellant, germicide, space odorant, and in the manufacture of dyes, intermediates, pharmaceuticals, and agricultural. It has an odor similar to mothballs and has been used as a deodorant for garbage, restrooms, and pig stalls and may have had minor use as an extreme-pressure lubricant. It does not exist naturally in the environment (HSDB 2000).

FATE/TRANSPORT

1,4-Dichlorobenzene exists almost solely as a vapor in the ambient atmosphere, where it has a half-life of 50 days due to reaction with photochemically-produced hydroxyl radicals. Due its calculated log Koc values, which range from 2.5-4.8, it is expected to adsorb to soil particles, resulting in a low mobility in soils (HSDB 2000). However, sorption is likely to be reversible, resulting in the potential of this contaminant to leach into the groundwater (ATSDR 1999). In dry conditions, volatilization from soils is expected to be an important fate process. Biodegradation is not expected to be significant, with biodegradation half-lives of one year or longer. In the aquatic environment, 1,4-dichlorobenzene will adsorb to sediment particles (HSDB 2000). It is also slightly soluble in water and will volatilize from surface waters (ATSDR 1999), with volatilization half-lives of 4 and 120 hours for rivers and lakes, respectively (HSDB 2000) and 10 to 18 days for coastal seawater (ATSDR 1999). Bioconcentration factors (BCFs) ranging from 60 (HSDB 1999) to 1800 (ATSDR 2000) have been measured in fish. The high Kow for this contaminant also suggests that it will bioaccumulate; however, no information on the ability of this chemical to biomagnify in the food chain could be found (ATSDR 1999).

ECOTOXICITY

Acute and chronic toxicity to freshwater life has been exhibited at concentrations as low as 1,120 and 763 ug/L, respectively. Acute toxicity to saltwater life has been shown at 1,970 ug/L. LC50 values measure in aquatic organisms are as follows (HSDB 2000):

Test Species	**24-hr LC50 (mg/L)**	**48-hr LC50 (mg/L)**	**96-hr LC50 (mg/L)**	**14-day LC50 (mg/L)**	**Reference**
Bluegill sunfish	4.54	4.3	4.25	---	HSDB 2000
Sheepshead minnow	7.5 - 10	7.17	7.4	---	HSDB 2000
Guppy	---	---	---	4.0	HSDB 2000
Fathead minnow	35.4	35.4	33.7	---	HSDB 2000
Grass shrimp	---	129	69	---	HSDB 2000
Mysid shrimp	---	---	1.99	---	U.S. EPA 1978

Using *Daphnia magna*, a 48-hour EC50 value of 11.0 mg/L has been reported (U.S. EPA 1978). A freshwater algae (*Selenastrum capricornutum*) was tested for the effects of 1,4-dichlorobenzene on chlorophyll a and cell numbers, and 96-hr EC50 values were 98.1 and 96.7 mg/L, respectively. For a marine algae (*Skeletonema costatum*), EC50 values were 54.8 and 59.1 mg/L, respectively (U.S. EPA 1978). When Peking ducks were fed 5000 mg/kg of 1,4-dichlorobenzene in their diet, retarded growth and 30 percent mortality was observed after 28 days (Hollingsworth et al. 1956). Oral LD50s in rats, mice, and rabbits have been calculated to be 500, 2950, and 2830 mg/kg, respectively. Rabbits exposed to 1,4-dichlorobenzene for 83 days at 770 to 800 mg/kg in food exhibited tremors, weakness, and death (HSDB 2000).

Additional information on the ecotoxicity of 1,4-dichlorobenzene can be found in Tables 7-1, 7-2, and 7-3.

CARCINOGENICITY

1,4-Dichlorobenzene has been shown to cause cancer in laboratory animals (HSDB 2000; ATSDR 1999).

2-CHLOROPHENOL

DESCRIPTION

2-Chlorophenol ranges from colorless to a yellow brown liquid and has an upleasant, penetrating odor. It is used as a disinfectant/bacteriocide/germicide for animal pathogenic bacteria and in households, commercial, industrial, and institutional premises. It is also an intermediate in the production of higher clorinated phenols, and is also used as a solvent for polyester fibers, in the manufacture of organic dyes and catechols, and in the extraction of sulfur and nitrogen compounds from coal (HSDB 2000).

FATE/TRANSPORT

2-Chlorophenol will exist almost solely as a vapor in the ambient atmosphere, where it has a half-life of 1.6 days due to reaction with photochemically-produced hydroxyl radicals. Koc values have been calculated to be 51 in clay loam soil, 398 in soil, 3981 in coarse sediment, and 5012 in fine sediment. Therefore, its mobility in soils will range from low to high. In dry conditions, volatilization from soils is expected to be an important fate process, while in moist soil, volatilization is not expected to be significant. Biodegradation has been shown to occur, with 67% degraded after 10 days. Complete removal was observed in 13 to 36 days in die-away tests using unacclimated river water, and 15 days in acclimated water. In the aquatic environment, 2-chlorophenol will adsorb to sediment particles. It will also volatilize from surface waters, with volatilization half-lives of 74 and 544 days for a model river and lake, respectively. Hydrolysis is not expected to be an important fate process since it contains no hydrolyzable functional groups. It will exist in water in a partially dissociated state, which may affect is transport and reactivity in the environment. A bioconcentration factor (BCF) of 214 in bluegill sunfish has been measured, indicating that this contaminant will bioaccumulate in organisms, but no information could be found on its ability to biomagnify in the food chain (HSDB 2000).

ECOTOXICITY

When algae (*Chlorella pyrenoidosa*) was exposed to 2-chlorophenol, complete destruction of chlrophyll was observed, with an EC50 of 500 mg/L. An acute oral LD50 for the redwinged blackbird was calculated to be > 113 mg/kg. Aquatic LC50s are listed below (HSDB 2000):

Test Species	**96-hr LC50 (mg/L)**
Daphnia magna	2.58
Goldfish	12.37
Fathead minnow	11.63
Guppy	20.17
Bluegill sunfish	6.59

In rats exposed to 500 mg/kg in food, litter sizes were reduced, especially in groups exposed prenatally, and the number of stillborn pups increased. Oral LD50s for rats and mice have been calculated to be 670 mg/kg (HSDB 2000).

Additional information on the ecotoxicity of 2-chlorophenol can be found in Table 7-2.

CARCINOGENICITY

No information on the carcinogenicity of 2-chlorophenol could be located.

4-CHLOROANILINE

DESCRIPTION

4-Chloroaniline exists in the form of colorless crystals with a slightly sweetish odor that is characteristic of amines. It is used as an intermediate in the manufacture of dyes, pharmaceuticals, and agricultural chemicals (HSDB 2000).

FATE/TRANSPORT

When 4-chloroaniline comes in contact with soil, it rapidly combines with soil components forming covalent bonds and polymers. As a result, it exhibits low mobility in soil. Some 4-chloroaniline will volatilize from soil. In water, volatilization will occur, with a measured half-life in one study of 35.7 days. Photooxidation can also occur, with a half-life of 0.4 hours, and rapid chemical reactions with humic materials and clay. Studies on the biodegradability of 4-chloroaniline are conflicting, ranging from no degradation in 28 days to 100% degradation in 22 days after a 14-day acclimation period. In the atmosphere, direct photolysis as well as reaction with hydroxyl radicals will occur. Uptake by plants is low, but a 24-hr BCF for green algae was found to be 3.08 (dry weight) and 2.42 (wet weight). Average BCFs in whole body carp ranged from 0.8 to 1.7. In Zebrafish, a BCF of 8.1 was obtained after a 24 hour exposure. For golden orfe, the log BCF was < 1.3 after 3 days. These results indicate a low propensity for this chemical to bioaccumulate and biomagnify in the food chain (HSDB 2000).

ECOTOXICITY

A 96-hr LC50 of 2.4 mg/L was calculated for bluegill sunfish, and a 48-hr EC50 (immobilization) was calculated to be 43 mg/L for early 4th instar midge larvae. For *Daphnia*, 24-hr EC50 values range from 0.008 – 38 mg/L, while concentrations of 0.0427 to 1.35 mg/L showed significantly reduced reproduction. A multigenerational study conducted using zebrafish (*Brachydanio rerio*) indicated that at sexual maturity, over 90% of the F1 fish raise in 1 mg/L had spinal abnormalities and abnormal abdominal swellings. In addition, significantly fewer eggs were produced by F1 fish exposed to a concentration as low as 0.04 mg/L, and egg viability was reduced at 1 mg/L. The F2 generation exhibited similar effects. In mammals, rat oral LD50s ranging from 200 – 480 mg/kg body weight have been calculated (HSDB 2000).

CARCINOGENICITY

4-Chloroaniline has shown clear evidence of carcinogenic activity in laboratory animals (HSDB 2000).

4-NITROPHENOL

DESCRIPTION

4-Nitrophenol is a colorless to light yellow solid with very little odor. It is a man-made chemical with no known source in nature and is used mainly to manufacture drugs, dyes, fungicides, and to darken leather (ATSDR 1999). It is also emitted in exhaust from gasoline and diesel engines and is a photooxidation and/or degradation product of other organic compounds (HSDB 2000).

FATE/TRANSPORT

4-Nitrophenol will exist solely as a vapor in the ambient atmosphere, where it will react with photochemically-produced hydroxyl radicals. The half-life for this reaction is estimated to be approximately 4 days. When exposed to light over a 17-day period, 39% had mineralized, suggesting that photodegradation may be an important fate process. In soil, 4-nitrophenol is expected to have high mobility based on its low log Koc value of 1.7. Volatilization from moist soils is not expected. In the aquatic environment, 4-nitrophenol is not expected to adsorb to sediment particles or organic matter, and it is not expected to volatilize significantly. With a pKa of 7.15, it will partially exist in its ionized form. Photolysis half-lives in water have been measured to be 5.7, 6.7, and 13.7 days at pH 5, 7, and 9, respectively. Biodegradation results have been conflicting, with rates ranging from 0% to 100%. In an acidic soil, the biodegradation half-life was measured to be 2.5 days, and in a basic soil, it was 10.2 days. In water, the biodegradation half-life has been measured to be 18 hours and 6.8 days under aerobic and anaerobic conditions, respectively. Bioconcentration factors (BCFs) were calculated to be 2 to 8 for carp, 58 for golden orfe, and 79 for fathead minnows, indicating a low to moderate potential for this contaminant to bioaccumulate (HSDB 2000). No information was available on the propensity of this contaminant to biomagnify in the food chain.

ECOTOXICITY

4-Nitrophenol is the most toxic of the mononitrophenols. The maximum acceptable toxic concentration (MATC) for sheepshead minnows is greater than 10 mg/L but less than 16 mg/L (HSDB 2000). A concentration of greater than or equal to10 mg/L was chronically toxic to *Daphnia magna*. When algae (*Chorella pyrenoidosa*) was exposed to 25 mg/L for 3 days, inhibition of chlorophyll synthesis was observed. When goldfish were exposed to 8 mg/L for 8 hours, 42% mortality was observed. Shrimp (*Crangon septemspinosa*) and soft shell clam (*Mya arenaria*) were exposed to 4-nitrophenol for 96 hours, and the concentrations that caused onset of cell multiplication inhibition for these two organisms were 26.4 and 29.4 mg/L, respectively. For two species of algae, *Microcystis aeruginosa* and *Scenedesmus quardricauda*, similar toxicity thresholds after 8 days of exposure were 6 and 7.4 mg/L, respectively. For another algal species, *Chlorella vulgaris*, 50% growth inhibition was observed at 6.95 mg/L after 80 hours of exposure (HSDB 2000).

LC50s for some other aquatic organisms are as follows (HSDB 2000):

Test Species	24-hr LC50 (mg/L)	48-hr LC50 (mg/L)	72-hr LC50 (mg/L)	96-hr LC50 (mg/L)
Bluegill sunfish	8.28	---	---	---
Daphnia magna	35	---	---	---
Fathead minnow	64.6	54.4	44.1	41.0

Pregnant mice exposed to 400 mg/kg BW/day via gavage on days 6-13 of gestation resulted in 18% mortality in mothers, but no toxic effects were observed in offspring. Oral LD50s have been reported to be 620 mg/kg in rats and 380 mg/kg in mice (HSDB 2000). In rabbits given single gavage doses ranging from 182 and 322 mg/kg, three deaths out of eight females were reported; the lowest lethal dosage was 220 mg/kg (ATSDR 1999).

CARCINOGENCITY

No studies were located on the cancer effects of 4-nitrophenol following oral exposure. 4-Nitrophenol tested positive in DNA repair-deficient bacterial tests, but showed negative host-mediated mutagenic activity in mice using *Salmonella typhimurium* and *Serratia marcescens* as indicator organisms (HSDB 2000).

CARBAZOLE

DESCRIPTION

Carbazole exists in the form of white crystals, plates, or leaves. It is an important intermediate in the manufacture of many dyes. It is also used in making photographic plates sensitive to ultraviolet light, as a reagent for lignin, carbohydrates, and formaldehyde, and it is found in anthracene oils. Carbazole is released into the atmosphere from waste incineration, tobacco smoke, aluminum manufacturing, and combustion of rubber, petroleum, coal, and wood (HSDB 2000).

FATE/TRANSPORT

In the atmosphere, carbazole that is in the vapor phase degrades rapidly by photochemically-produced hydroxyl radicals, with an estimated half-life of 3 hours. Physical removal from the atmosphere via wet and dry deposition is important. In soil, when carbazole is adsorbed to soil particles, photolysis may be limited. Biodegradation is an important fate process in soil given a sufficient degrading microbial community, with a biodegradation half-life ranging from 4.3 minutes to 6.2 hours in screening studies. In the aquatic environment, volatilization is not an important fate process. Biodegradation and photolysis of carbazole in water will be important given sufficient degrading bacteria and sunlight. However, adsorption to sediment and other organic particles may occur, which may limit the rate of photolysis. Carbazole has not been shown to bioconcentrate and therefore is not expected to biomagnify in the food chain (HSDB 2000).

ECOTOXICITY

Very little information on the ecotoxicity of carbazole was found in the literature. An oral LD50 for rats was calculated to be greater than 5000 mg/kg (HSDB 2000).

CARCINOGENICITY

Carbazole was not mutagenic to *Salmonella typhimurium*. Limited evidence exists on the carcinogenicity of carbazole in animals (HSDB 2000).

PHENOL

DESCRIPTION

Phenol exists as a colorless to light pink crystalline mass or as separate, needleshaped crystals. It has a distinct aromatic, sickeningly sweet and acrid odor (HSDB 2000). Phenol is primarily a man-made chemical, although it is sometimes found in animal wastes and organic matter. Its major use is in the manufacture of plastics, although it is also used to make caprolactam, and bisphenol A. It is also used in slimicides, as a disinfectant, and in medical products. Phenol is commonly found in materials from landfills and hazardous waste sites (ATSDR 1999). It is also released by wood stoves, in vehicle exhaust, and other anthropogenic processes (HSDB 2000).

FATE/TRANSPORT

In the atmosphere, phenol occurs as a vapor and reacts with photochemically-produced hydroxyl radicals, with an estimated half-life of approximately 15 hours. At night, it reacts with nitrate radicals with a half-life of 12 minutes. Phenol is also readily removed from the atmosphere by wet deposition. In soil and water, phenol rapidly biodegrades in sewage, soil, freshwater and seawater. In soil, biodegradation half-lives of under 5 days have been calculated. As a result, groundwater is rarely contaminated with phenol. In water, biodegradation half-lives are on the order of hours to days. With a pKa of 9.994, phenol will be partially dissociated in water at higher pHs. Phenol does not bioconcentrate in aquatic organisms and therefore is not expected to biomagnify in the food chain (HSDB 2000).

ECOTOXICITY

A variety of toxicity studies have been performed that indicate that phenol is toxic to aquatic organisms. After 30 minutes of exposure, the TDL0 for the minnow was calculated to be 79 ug/L. For two species of algae (*Scenedesmus quadricauda* and *Microcystis aeruginosa*), the toxicity thresholds (cell multiplication inhibition test) were calculated to be 7.5 and 4.6 mg/L, respectively. In two protozoans (*Vorticella campanula* and *Paramecium caudatum*), the perturbation levels were calculated to be 3 and 10 mg/L, respectively (HSDB 2000).

For *Daphnia magna*, 25- to 50-hr TLm's ranged from 7 to 100 mg/L. For bluegill sunfish, the 25- to 50-hr TLm's were greater than 15 mg/L.

Additional TLm's were calculated for a variety of fish and invertebrates. These TLm's are listed in the table on the following page (HSDB 2000):

Test Species	24-hr TLm (mg/L)	48-hr TLm (mg/L)	96-hr TLm (mg/L)
Brine shrimp	---	56	---
Caddisfly	61	---	0.001
Mosquito fish	22.7	---	56
Bluegill sunfish	19	---	5.7-20
Roach	15	---	---
Fathead minnow	---	28-41	24-36
Goldfish	49.9	49.1	44.5
American oyster egg	---	58.25	---
Hard clam egg	---	52.63	---

LC50's were also calculated for four species of fish and one invertebrate. These LC50s are listed in the table below (HSDB 2000):

Test Species	24-hr LC50 (mg/L)	48-hr LC50 (mg/L)	72-hr LC50 (mg/L)	96-hr LC50 (mg/L)
Brown shrimp	40	30	30	25
Rainbow trout	5.6-11.3	---	---	---
Snakehead fish	---	46	---	---
Fathead minnow	> 50	---	33	32
Goldfish	60-200	---	---	---

In mammals, oral LD50s have been calculated to be 530, 100, and 500 mg/kg for rats, dogs, and cats, respectively (HSDB 2000). When 280 mg/kg BW-day of phenol was administered to pregnant mice, growth retardation, decreased prenatal viability, abnormal structural development, and an increased incidence of cleft palate was observed in the fetuses (ATSDR 1999).

CARCINOGENICITY

Although experiments with *Drosophila* have shown phenol to be highly mutagenic, there is inadequate evidence for the carcinogenicity of phenol in experimental animals (HSDB 2000).

PCBs

DESCRIPTION

PCBs are a group of synthetic organic chemicals that contain 209 individual chlorinated biphenyl compounds (known as congeners) with varying harmful effects (ATSDR 1999). There are no known natural sources of PCBs in the environment. PCBs are either oily liquids or solids and are colorless to light yellow in color. They have no known smell or taste. An important property of PCBs is their general inertness. They resist both acids and alkalis, and have thermal stability, making them useful in a wide variety of applications, including dielectric fluids in transformers and capacitors, heat transfer fluids, and lubricants (ATSDR 1999). Because they don't burn easily and are good insulating materials, PCBs have been used widely as coolants and lubricants in transformers, capacitors, and other electrical equipment. The manufacture of PCBs stopped in the United States in October 1977, because of evidence that PCBs build up in the environment and cause harmful effects. Consumer products that may contain PCBs are old fluorescent lighting fixtures, electrical devices or appliances containing PCB capacitors, old microscope oil, and hydraulic fluids. PCBs enter the environment as mixtures containing a variety of individual components and impurities. Some commercial PCB mixtures are known in the United States by their industrial trade name, Aroclor (ATSDR 1999). The name, Aroclor 1254, for example, means that the molecule contains 12 carbon atoms (the first 2 digits) and approximately 54% chlorine by weight (second 2 digits). (The exception to this code is Aroclor 1016, which contains 12 carbon atoms and mono-through hexachlorinated homologs with an average chlorine content of 41%.) Seven PCB mixtures, including Aroclor 1016, 1221, 1232, 1242, 1248, 1254, 1260, 1262, and 1268, are the most common PCBs.

TRANSPORT/FATE

PCBs enter the air, water, and soil during their manufacture and disposal. PCBs also enter the environment from accidental spills and leaks during their transport, or from leaks or fires in transformers, capacitors, or other products containing PCBs (ATSDR 1999). Currently, PCBs can be released into the environment from poorly maintained hazardous waste sites that contain PCBs, illegal or improper dumping of PCB wastes, such as transformer fluids, leaks or releases from electrical transformers containing PCBs, and disposal of PCB-containing consumer products into municipal or other landfills not designed to handle hazardous waste. PCBs are also released into the environment by the burning of organic wastes in municipal and industrial incinerators. PCBs are combustible liquids, and the products of combustion may be more hazardous than the material itself. By-products of combustion include hydrogen chloride, polychlorinated dibenzodioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) (NFPA 1994).

PCBs in the atmosphere can be carried long distances, and they are physically removed by wet and dry deposition (ATSDR 1999). Dry deposition of PCBs occurs as a result of gravitational settling of particulates and as a result of impaction of vapor phase PCBs on

terrestrial or aquatic surfaces. Wet deposition of PCBs occurs during rain, snow, and fog. PCBs are persistent in the atmosphere and can undergo long-range transport from the equatorial zone to high-latitude polar regions. In the atmosphere, the vapor-phase reaction of PCBs with hydroxyl radicals may be the dominant transformation process. Removal of vapor-phase PCBs from the atmosphere, however, occurs mainly by photolysis. Removal of particulate-phase PCBs occurs by wet and dry deposition.

The tendency of PCBs to adsorb to airborne particulates increases as the degree of chlorination increases. Holson et al. (1991) reported that PCBs associated with particulates represented a significant fraction of the total PCB dry deposition flux, even though PCBs in ambient air were present primarily in the vapor phase. The fact that PCBs have been detected in remote locations indicates that these compounds can be transported long distances.

Recently, Gunkel et al. (1995) report that in addition to atmospheric deposition, runoff, and leaching from hazardous waste sites, a current source of PCBs in water is the disposal of engine oil into highway and street drains which carry PCBs into storm drains and ultimately into surface water. PCBs, particularly the lower chlorinated congeners, may also enter groundwater through leaching of land-applied sewage sludge to soils containing low organic matter or through leaching from soils at hazardous waste sites (Griffin and Chou 1981). Since PCBs are no longer produced in the United States, accidental leaks and spills from old transformers and capacitors containing PCBs, and releases from contaminated soils in landfills and hazardous waste sites are likely to be the greatest sources of PCB wastes requiring remediation.

A small amount of the PCBs may remain dissolved in water, but most tends to stick to organic particles and sediments. The more volatile PCBs in water partially evaporate and then return by rainfall, snow, or settling of dust particles. This cycle can be repeated many times. PCBs in water concentrate in fish and marine mammals (seals, porpoises, and whales) and can reach levels hundreds of thousands times higher than the levels in water. Extremely small amounts of PCBs can remain in water for years. The loss of PCBs from lakes is primarily due to volatilization and sedimentation, while the contribution of outflow to the loss of PCBs from lakes is comparatively low (ATSDR 1999).

PCBs bind strongly to soil and sediments and may remain there for several years. PCBs will not typically travel deep into the soil with rainwater. However, PCBs from some waste landfills have been found in groundwater. PCBs partially evaporate from solid surfaces to air. In general, the breakdown of PCBs in the water and soil occurs over many years, or even decades. Sediments containing PCBs at the bottom of a large body of water such as a lake, river, or ocean generally act as a reservoir from which PCBs may be released in small amounts.

Experimental and monitoring data have shown that PCB concentrations are higher in sediment and suspended matter than in the associated water column, although 75% of PCBs in the water column of Lake Superior exist in the dissolved phase, while 25% exist

in the suspended particulate phase (ATSDR 1999). Based on their water solubilities and octanol-water partition coefficients (Kow), the less chlorinated components of the Aroclors will sorb less strongly than the more highly chlorinated components.

Although adsorption and subsequent sedimentation may immobilize PCBs for relatively long periods of time in aquatic systems, redissolution of PCBs (due to volatilization from water and subsequent release of PCBs from the sediments) into the water column has been shown to occur in the environment (ATSDR 1999). The substantial quantities of PCBs contained in aquatic sediments can, therefore, act as an environmental reservoir from which PCBs may be released slowly over a long period of time. Environmental redistribution from aquatic sediments should be most significant for the PCBs contained in the top layers of the sediments. PCB concentrations in the lower layers of sediment may be unavailable for redistribution.

The low water solubility, high octanol-water partition coefficients, and strong adsorption to soils and sediment indicate that leaching should not occur extensively in soil under most conditions (ATSDR 1999). The tendency to leach will be greatest among the least chlorinated congeners. Since the adsorption of PCBs in soil is proportional to soil organic carbon content, leaching is expected to be greatest from soils with low organic carbon content. The presence of organic solvents in landfills and hazardous waste sites may cause significant leaching (Griffin and Chou 1981).

Certain benthic organisms, such as crabs, clams, sandworms, and grass shrimp accumulate PCBs from water at the water/sediment interface (the concentration of PCBs is generally higher at this interface than in the general body of water) and via intake of phytoplankton and zooplankton, which contain higher levels of PCBs than the surrounding water. Therefore, the estimated bioconcentration factor (BCF) in such cases may not be a good indicator of the experimental bioaccumulation measured in the field. Another reason for the difference between estimated BCFs and experimentally measured bioaccumulation values is the ability of some aquatic organisms to metabolize and eliminate PCBs from their bodies. According to a summary of experimentally measured BCFs of Aroclor 1248 in aquatic species (fish and invertebrates), BCF values ranged from 52,000 to 120,000 (Leifer et al. 1983), as indicated in the table below:

Test Species	**BCF**
Scud *G. pseudolimnaeus*	108,000
Fathead minnow (female) *P. promelas*	120,000
Channel catfish *Ictalurus punctatus*	56,400
Bluegill *Lepomis macrochirus*	52,000

These extremely high BCF values suggest that bioaccumulation of PCBs by aquatic species and their transfer to higher level consumers through consumption of contaminated fish and shellfish is an important exposure pathway.

Bioaccumulation of PCBs in aquatic animals may also depend on the water zone in which the animals predominantly reside and feed (ATSDR 1999). When airborne PCBs are deposited onto the water surface, they become enriched in the surface microlayer. The levels of PCBs in the surface microlayer are many times higher than in deeper water. As a result, bioaccumulation by some fish are orders of magnitude higher in this zone. Since the concentration of PCBs in sediments is several orders of magnitude higher than in water, the bioaccumulation of PCBs in bottom-feeding species is also expected to be high. Depuration (loss) of accumulated PCB residues from the tissues is slow, and as a result, PCBs tend to remain stored in lipids (where PCBs are soluble). Therefore, greater bioaccumulation will occur in the fatty tissues than in the muscle or whole body of aquatic organisms.

There is evidence that PCBs will biomagnify within aquatic food chains as indicated by the PCB concentrations detected in higher trophic levels of aquatic organisms (ATSDR 1999). Food chain biomagnification also occurs in several species of fish-consuming birds (Mackay 1989). Evidence of biomagnification of PCBs in the aquatic food chain has also been provided by the experimental finding that the concentrations of PCBs in common and Forster's terns, both of which are primarily piscivores, are higher than PCB concentrations in tree swallows and red- winged blackbirds, both of which are insectivores (Ankley et al. 1993). The biomagnification of PCBs in the terrestrial food chain has been shown to occur by way of accumulation of PCBs from soil/plant to earthworm, from earthworm to bird (Hebert et al. 1994), and from oak leaves to caterpillars to birds (Winter and Streit 1992). While total PCBs were not detected in soil or plants, the range in concentrations (wet weight) observed were: 14.8-18.6 ug/kg in earthworms; not detected-208.8 ug/kg in mammals; 39.2-68.3 ug/kg in starlings; 71.5-157.2 ug/kg in robins; and 56.0-219.9 ug/kg in kestrels (Hebert et al. 1994). In addition, the authors reported that the sum of PCBs in pooled egg samples ranged from 0.066 to 0.477 mg/kg for kestrels and 0.032-0.061 mg/kg for bluebirds. A concentration of 5.298 mg/kg was detected in a single pooled egg sample from herring gulls, a piscivorus species. Juvenile birds have received PCBs from the mother bird via egg transfer and from the caterpillars that were their primary food source (Winter and Streit 1992).

Accumulation of PCBs in terrestrial vegetation can occur in the following ways: uptake from soil through the roots and translocation to the aerial parts of plants; deposition of atmospheric particulates on aerial plant surfaces; or uptake of airborne vapors by aerial plant parts. The BCF for plant uptake of PCBs from soil is estimated to be < 0.02 (O'Connor et al. 1990), indicating that translocation from soil via the roots to aerial plant parts is not an important transport process for PCBs. In the O'Connor study, the BCF in carrot peels was slightly higher than in other plant parts (roots and tops), possibly due to adsorption from soil. Soil properties, especially organic content, are determining factors in the fate of chemicals in soil/plant systems because chemicals that are strongly sorbed to soil are less available for root uptake from soil liquids. The uptake of PCBs from soil by terrestrial plants was also observed to be negligible by some investigators. Studies on translocation and metabolism of PCBs by terrestrial plants have demonstrated a lack of active transport or metabolism of PCBs in two plant systems.

ECOTOXICITY

Ecotoxicity values for PCBs were reported as 0.19 ug/L for surface water (freshwater) and 0.023 mg/kg for surface sediments. LC50 values of sensitive species of freshwater and marine organisms subjected to various Aroclors varied from 0.1 to 10.0 ug/L during exposure of 7 to 38 days. In general, toxicity increased with increasing exposure; crustaceans and younger developmental stages were the most sensitive groups tested, and lower chlorinated biphenyls were more toxic than higher chlorinated biphenyls. In most toxicity tests, mortality patterns in PCB-exposed fish did not stabilize within 30 days (Johnson and Finley 1980). Rainbow trout (*Salmo gairdneri*) exposed to Aroclor 1248 for five days were reported to have an LC50 value of 67 ug/L (Johnson and Finley 1980). Those exposed to Aroclor 1260 for 20 days experienced 50% mortality at a concentration of 21 ug/L (NAS 1979).

Birds were found to be more resistant to acutely toxic effects of PCBs than mammals. LD50 values for various species of birds varied from 604 to more than 6000 mg/kg in the diet. In mallards, LD50s were greater than 2000 mg/kg body weight administered orally. Signs of PCB poisoning among birds included morbidity, tremors, beak pointed upwards, and muscular incoordination. At necropsy, the liver frequently contained hemorrhagic areas and the gastrointestinal tract was filled with blackish fluid (Stickel et al. 1984). Lethal doses of Aroclor 1248 and 1260 for the mallard (*Anas platyrhynchos*) were found to be 2798 mg/kg and 1975 mg/kg in the diet, respectively (Heath et al. 1972).

Rats were tested for lethal doses to determine PCB tolerance. Aroclors 1248 and 1260 were both administered in one dose. LD50s were 0.8-11.0 mg/kg body weight for Aroclor 1248, and 1.3-10.0 mg/kg body weight for Aroclor 1260 (U.S. EPA 1980e, NAS 1979).

In general, plants have been found to be insensitive to most organochlorine substances. In contrast to this theory, McNaught et al. (1984) demonstrated a 0.005 ug/L threshold for the inhibition of photosynthesis by a hexachlorobiphenyl using a natural phytoplankton community. Powers et al. (1982) observed reduced photosynthesis when adsorbed PCBs (Aroclor 1254) on clay sediments were available to phytoplankton.

PCBs are reported to have only low teratogenic potential for causing gross malformations (Welsch 1983). Carlson and Duby (1973) and Tumasonis et al. (1973) found visible malformations in chickens using Aroclor 1242 and 1254. In studies with monkeys and rabbits, abnormal skull formation and delayed growth in fetuses has been observed (Eisler 1986b), and cleft palates have been observed in mice (Watanabe and Sugahara 1981, Marks et al. 1981). The reproductive cycle of the chicken was found to be the most affected by PCBs, with egg production and hatchability the most often reported disfunction.

Thyroid effects have been reported for the rainbow trout (Leatherland and Sonstegard 1979). Behavioral avoidance (Hansen et al. 1974), impaired structural development (Mauck et al. 1978), liver changes (Hacking et al. 1977), testicular abnormalities

(Sangalang et al. 1981), and enzyme induction (Willis et al. 1980, Addison et al. 1982, Melancon and Lech 1983) have been observed in other species.

Rats fed food containing large amounts of PCBs for a short duration had mild liver damage, and some died. Animals that ate smaller amounts of PCBs in their food over several weeks or months had many serious health effects, including liver, stomach, and thyroid gland injuries. They also had anemia, acne, and damaged reproduction. These effects have also been reported in monkeys, as well as in the offspring of animals that ate PCBs. Liver, kidney, and skin damage occurred in rabbits following repeated skin exposure, and that a single exposure to a large amount of PCBs on the skin caused death in rabbits and mice. Inhalation of PCBs over several months also caused liver and kidney damage in rats and other animals, but the levels necessary to produce these effects were very high. Rats that ate certain PCB mixtures throughout their lives developed cancer in their livers (Eisler 1986b).

CARCINOGENICITY

There is little evidence to show that PCBs are carcinogenic, although they are typically characterized as potential carcinogens (U.S. EPA 1980e).

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APPENDIX E-5

Physical Properties of COPCs

APPENDIX E-3
PHYSICAL PROPERTIES OF COPCs FOR THE ECOLOGICAL RISK ASSESSMENT
TOWN OF SALINA LANDFILL

COPC	Water Solubility (mg/L at 25°C) unless indicated otherwise	Koc	Kd	Henry's Law Constant (atm-m³/mole)	Vapor Pressure (mm Hg) unless indicated otherwise	Log Kow
VOLATILE ORGANIC COMPOUNDS						
Halogenated Hydrocarbons						
Chlorobenzene	471.7	125.9	1.133	3.93×10^{-3}	8.8 (20 °C)	2.84
Ketones						
Acetone	1,000,000	2.2	0.02	2.06×10^{-5}	270 (20 °C)	1.00
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)						
PAHs						
Acenaphthene	3.42	6,026	54.20	2.34×10^{-4}	0.001 to 0.01 (20 °C)	4.33
Acenaphthylene	3.93	1,4	0.013	1.45×10^{-3}	0.029 (20 °C)	4.07
Anthracene	0.076	4.15	0.039	1.77×10^{-5}	1.7×10^{-5} (25 °C)	4.45
Benzo(a)pyrene	0.0038	93,566	842	0.0126	5.0×10^{-9} (25 °C)	6.04
Benzo(b)fluoranthene	0.0012	549,541	4,946	1.2×10^{-5}	1.0×10^{-11} to 1.0×10^{-10} (20 °C)	6.57
Benzo(g,h,i)perylene	0.00026	NA	NA	2.66×10^{-7}	1.0×10^{-10} (25 °C)	6.63
Benzo(k)fluoranthene	0.00055	7,762,471	69,862	0.00104	9.59×10^{-11} (20 °C)	6.84
Benzo(a)anthracene	0.014	45,670	411	6.6×10^{-7}	5.0×10^{-9} (20 °C)	5.61
Chrysene	0.002	245,471	2,209	1.0×10^{-6}	1.0×10^{-12} to 1.0×10^{-9} (20 °C)	5.61
Dibenz(a,h)anthracene	0.0005	6.52	0.059	7.3×10^{-11}	1.0×10^{-10} (20 °C)	6.84
Dibenzofuran	4.22	NA	NA	NA	0.0044 (25 °C)	4.12
Fluoranthene	0.26	125,893	1,133	6.5×10^{-6}	1.0×10^{-4} to 1.0×10^{-9} (20 °C)	5.33
Fluorene	1.98	5,012	45.1	1.17×10^{-4}	0.001 to 0.01 (20 °C)	4.18
Indeno(1,2,3-cd)pyrene	0.62	30,902,954	278,127	6.86×10^{-9}	1.0×10^{-10} (20 °C)	7.66
2-Methylnaphthalene	NA	NA	NA	NA	0.0681 (25 °C)	3.86
Napthalene	31 (20 °C)	NA	NA	4.6×10^{-4}	0.01 kPa	3.29
Phenanthrene	1 29	19,498	175	3.9×10^{-5}	6.8×10^{-4} (20 °C)	4.46
Pyrene	0.14	12,872	116	5.04×10^{-6}	6.85×10^{-7} (20 °C)	5.32
Phthalates						
bis(2-Ethylhexyl)phthalate	0.3	8,464.10	76.177	2.5×10^{-7}	2.0×10^{-7} (20°C)	8.73
Phenols						
Phenol	93,000	39-91	NA	4.57×10^{-7}	0.3513 (25 °C)	1.46
2-Chlorophenol	11,400	398	NA	5.59×10^{-7}	2.53 (25 °C)	2.15
4-Nitrophenol	16,000	50	NA	1.3×10^{-9}	0.005 (20°C)	1.91
Benzene Derivatives						
1,2,4-Trichlorobenzene	31.3	1259-100000	NA	2.3×10^{-3}	0.46 (25 °C)	4.02
1,4-Dichlorobenzene	76.0	273-390	NA	3.1×10^{-3}	1.74 (25 °C)	3.44
Other SVOCs						
Carbazole	Insoluble	637	NA	8.65×10^{-8}	1.37×10^{-6} (25 °C)	NA
4-Chloroaniline	3.9 g/L	NA	NA	NA	0.027 (25 °C)	1.83

APPENDIX E-3
PHYSICAL PROPERTIES OF COPCs FOR THE ECOLOGICAL RISK ASSESSMENT
TOWN OF SALINA LANDFILL

COPC	Water Solubility (mg/L at 25°C) unless indicated otherwise	Koc	Kd	Henry's Law Constant (atm-m³/mole)	Vapor Pressure (mm Hg) unless indicated otherwise	Log Kow
PCBs						
PCB-1248	0.054	21,736.19	195.626	3.5×10^{-3}	4.94×10^{-4} (25 °C)	5.75
PCB-1260	0.0027 (20 °C)	2,630.268	23,672.412	7.1×10^{-4}	4.05×10^{-5} (25 °C)	7.14
INORGANICS						
Aluminum	Insoluble	NA	NA	NA	1.0 (1284 °C)	NA
Antimony	Insoluble	NA	2-550	NA	1.0 (886 °C)	NA
Arsenic	Insoluble	NA	NA	NA	1.0 (392 °C)	NA
Barium	Decomposes	NA	NA	NA	10.0 (1049 °C)	NA
Beryllium	Insoluble in Cold Water Slightly Soluble in Hot Water	NA	70-8000	NA	10.0 (1860 °C)	NA
Cadmium	Insoluble	NA	NA	NA	1.0 (394 °C)	NA
Chromium	Insoluble	NA	NA	NA	1.0 (1616 °C)	NA
Cobalt	Insoluble	NA	NA	NA	0 (20 °C)	NA
Copper	Insoluble	NA	NA	NA	1.0 (1628 °C)	NA
Cyanide	48g/100mL (10 °C) 82g/100mL (35 °C)	NA	NA	NA	1.0 (817 °C)	NA
Iron	Insoluble	NA	NA	NA	1.0 (1787 °C)	NA
Lead	Insoluble	NA	NA	NA	1.77 (1.0 °C)	NA
Manganese	Decomposes	NA	NA	NA	1.0 (1292 °C)	NA
Mercury	0.01	NA	NA	NA	0.002 (25 oC)	NA
Nickel	1.1 (37 °C)	NA	NA	NA	1.0 (1,810 °C)	NA
Selenium	Insoluble	NA	NA	NA	>0.001(20 °C)	NA
Silver	Insoluble	NA	150-1800	NA	100 (1,865 °C)	NA
Thallium	Insoluble	NA	0-1500	NA	1.41×10^{-23} (25 °C)	NA
Vanadium	Insoluble	NA	50-1000	NA	0.0234 (1916 °C)	NA
Zinc	Insoluble	NA	NA	NA	1.0 (487 °C)	NA

NA - Not Available

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APPENDIX E-6

Potential Receptor Species

AMERICAN ROBIN

Description

The American robin (*Turdus migratorius*) belongs to the Order Passeriformes, Family Muscicapidae, Subfamily Turdinae The American robin is a common, medium-sized bird that occurs throughout most of the continental United States and in Mexico and Central America (USEPA 1993). Robins overwinter in southern states, including Gulf Coast States and the Carolinas (Peterson 1947). The breeding range of the robin has expanded in recent times with the increasing area covered by lawns and other open habitats (USEPA 1993). The sexes are similar in size and appearance (USEPA 1993). The American robin is about 9-11 in. long with a 14¾ - 16½ in. wingspan. They have a gray back and wings with a rusty/brick red breast. Their head and tail are blackish in males and slightly lighter in females. Juvenile robins have a speckled breast, and they are mature at one year (Peterson 1947). Adult mean body weights are reported to be about 77.3 to 86.2 g (USEPA 1993).

Habitat and Life History

Breeding habitats of the American robin include moist forests, swamps, open woodlands, orchards, parks and lawns (USEPA 1993). Preferred feeding habitats includes grassy fields, orchards, lawns, gardens forest edges, and cut-over woods (Terres 1980). During the nonbreeding season, robins prefer moist woods or fruit-bearing trees and shrubs, and in the fall, flocks of migratory robins are often found along forest edges or clearings where fruits are most plentiful (USEPA 1993).

Robins forage on the ground searching for prey in open areas, along habitat edges, or along edges of streams; they also forage above ground searching in shrubs and the lower branches of trees. On the ground, robins feed by running, pausing, and seizing prey over lawns, golf courses and meadows (DeGraaf and Rudis 1986). Robins primarily consume earthworms, although they also eat beetles, weevils, grasshoppers, cicadas, ants, termites, cutworms, caterpillars, and butterflies. Robins also eat fruits, bayberries, grapes, juneberries, pokeberries, and other vegetative matter (Terres 1980). In a given area, robins often show food preferences: a population in central New York seemed to prefer northern arrowwood and spice bush fruits over most other plants (Wheelwright 1986). Overall, about 60% of the diet is vegetable matter and 40% is animal matter (DeGraaf and Rudis 1986). However, during and preceding the breeding season, the diet

of the American robin consists mainly of invertebrates, especially in the eastern United States, where the diet in the spring was found to consist of 93% invertebrates (USEPA 1993).

Karasov and Levey (1990) estimated the metabolizable energy coefficient (MEC) (i.e., the proportion of food energy that is actually assimilated) for robins eating a mixed fruit diet to be only 55 percent, perhaps because of the low retention time of the digested matter in the gut (USEPA 1993). In contrast, Levey and Karazov (1989) report that when eating insects, robins (as well as other bird species) exhibit a higher digestive efficiency of approximately 70 percent (USEPA 1993).

Males arrive on the breeding grounds before females to establish territories; females pair with established males, usually for the duration of the breeding season (USEPA 1993). Breeding occurs in open woodlands, woodland edges, fields, orchards, and shaded residential areas (DeGraaf and Rudis 1986). They nest in trees and shrubs with the nest about 1.5 to 6 m above the ground. The nest itself is a deep cup of mud, grasses, and sticks lined with fine grasses and other material. Egg dates range from March 23 to July 19, in New York (Bull 1998). Clutch sizes range from 2 to 7, usually 3 or 4, with two broods per year (DeGraaf and Rudis 1986, Terres 1980). Incubation lasts 11 to 14 days. Predation is often a major source of mortality for both eggs and nestlings. Approximately half of the adult birds survive from year to year (Henny 1972). The average longevity of a robin that survives to its first January is from 1.3 to 1.4 years (Farner 1949).

Mean territory sizes vary from 0.275 –1.05 acres (0.11 to 0.42 ha) with a slightly larger foraging territory of up to 2 acres (0.81 ha) (USEPA 1993). Densities have been calculated to be 132 per 100 acres in urban areas, 56 per 100 acres in edge and shrub habitats, and 14 per 100 acres in second growth woods (DeGraaf and Rudis 1986).

Exposure Profile

For this risk assessment, a body weight of 77.3 g was selected as a conservative assumption, since this was the lowest of the mean body weights reported by USEPA (1993) for adults. Similarly, the largest reported mean food ingestion rate of 1.52 g/g-day and the only reported water ingestion rate of 0.14 g/g-day were selected (USEPA 1993). Soil ingestion rates for the American robin were not available in the literature. The only worm-eating bird for which a soil ingestion rate was available was the American

woodcock, for which the soil ingestion rate was calculated to be 10.4% (Beyer et al. 1994). Therefore, this soil ingestion rate was assumed for the American robin. The smallest reported mean home range of 0.275 acre (0.11 ha) (USEPA 1993) was conservatively estimated to be (USEPA 1993). Since this is less than the estimated area of the site, the Area Use Factor (AUF) for the American robin was assumed to be one. A diet consisting of 100% earthworms was assumed for this ecological risk assessment.

NORTHERN SHORT-TAILED SHREW

Description

The Northern short-tailed shrew (*Blarina brevicauda*) is a member of the Order Insectivora, Family Soricidae (USEPA 1993). Shrews are small insectivorous mammals that inhabit most regions of the United States and are found throughout New York (Whitaker and Hamilton 1998). The short- tailed shrew is the largest member of the genus with some individuals weighing over 22 g (USEPA 1993). Whitaker and Hamilton (1998) reported average male total lengths of 115 mm, tail lengths of 23 mm, and weights of 17.5 g. Females are slightly smaller, with total lengths averaging 111.5 mm, tails averaging 22.3-mm, and weights averaging 16.3 g (Whitaker and Hamilton 1998).

Habitat and Life History

Short-tailed shrews are found in a variety of habitats that have abundant vegetation for cover and moist soils to prevent dehydration. They use both timbered and fairly open habitats of deciduous, mixed, and, less often, coniferous forests with moist loose humus. They especially prefer stream banks, grass and sedge marshes, brush piles, stone walls, and meadows with tall rank grasses and sedges (DeGraaf and Rudis 1986).

Shrews burrow through leaf litter and loose soils and under rocks and logs in search of food. They have high metabolic rates and can eat approximately their body weight in food each day. The short-tailed shrew is primarily carnivorous (Hamilton 1941). They are considered primarily vermivorous and insectivorous, but some also eat small birds and mammals (Whitaker and Hamilton 1998). Shrews feed principally on soil invertebrates. Earthworms are the dominant food item, followed by slugs, snails, lepidopterous larvae, and other insects. Spiders, centipedes, and to a lesser extent small salamanders, mice, plants, and an occasional bird are consumed (Hamilton, 1941; Whitaker and Ferraro

1963). Shrews are able to prey on small vertebrates because they produce a poison secretion in their salivary glands that is transmitted during biting (USEPA 1993).

The short-tailed shrew stores food, especially in the autumn and winter (USEPA 1993). Robinson and Brodie (1982) found that short-tailed shrews cached most (86.6 percent) of the prey they captured; only 9.4 percent were consumed immediately (USEPA 1993). Short-tailed shrews consume approximately 40 percent more food in winter than in summer. The shrew must consume water to compensate for its high evaporative water loss, despite the fact that it obtains water from both food and metabolic oxidation. The short-tailed shrew's digestive efficiency is about 90 percent (USEPA 1993).

The short-tailed shrew probably breeds all year, including limited breeding in winter even in the northern portions of its range. There are two peak breeding periods, in the spring and in the late summer or early fall. The home ranges of short-tailed shrews in summer overlap both within and between sexes, although females with young do exhibit some territoriality (USEPA 1993). Short-tailed shrews inhabit round, underground nests and maintain underground runways, usually in the top 10 cm of soil, but sometimes as deep as 50 cm (Hamilton 1931). They construct a bulky nest of leaves and grass below debris, stumps, and logs. Four to six young are born from early spring to late September; three to four litters are produced per year. Gestation is about 21 to 22 days. Newborns are naked with eyes and ears closed. Their length at 2 days is 31 mm and they weigh 1.3 g. They are half grown at 30 days. They do not breed during their first year. Nomadic shrews are either young of the year or adults moving to areas with more abundant prey (Platt 1976).

Populations are quite variable; some years shrews are very abundant and other years they are scarce. Population densities vary by habitat and season (Getz 1989). In east-central Illinois, population densities were higher in bluegrass than in tall grass or alfalfa (Getz 1989). In all three of these habitats, the short-tailed shrew exhibited annual abundance cycles, with peak densities ranging from 2.5 to 45 shrews per hectare, depending on the habitat (Getz 1989). Peak abundance occurred from July to October (12.9/ha average for all three habitats), apparently just following peak precipitation levels (Getz 1989). Whitaker and Hamilton (1998) found population densities to vary from 1.6 to 121 per ha (1-50 per acre). In New York, the home range is less than 0.25 ha (0.62 acre). Platt (1976) found home ranges in New York ranged from 0.03 to 0.22 ha (0.07 to 0.54 acre). Merritt (1987) found home ranges of 0.5 to 1 acre (0.202 to 0.405 ha). Winter, nonbreeding home ranges can vary from 0.03 to 0.07 ha (0.074 to 0.173 acre) during high

prey densities to 1 to 2.2 ha (2.47 to 5.44 acres) during low prey densities with a minimum of territory overlap (USEPA 1993). In the summer, ranges of opposite sex animals overlap, but same sex individuals do not; females with young exclude all others from their area (USEPA 1993).

Short-tailed shrews are an important component of the diet of many owls and are also prey for other raptors, fox, weasels, and other carnivorous mammals (Burt and Grossenheider 1980). Shrews rarely live more than 1 year. Winter mortality rates of up to 90 percent have been reported for the short-tailed shrew. However, mortality rates in winter may be closer to 70 percent, which is similar to the average monthly mortality rate he found for sub-adult animals. Several litters, averaging four to five pups, are born each year (USEPA 1993).

Exposure Profile

For this risk assessment, a body weight of 15.0 g was assumed, since this was the lowest of the mean body weights reported by USEPA (1993) for breeding adults. The highest mean food ingestion rate of 0.0093 kg/day was calculated by multiplying the highest reported mean food ingestion rate of 0.62 g/g-day (USEPA 1993) by a body weight of 15.0 g, and this food ingestion rate was selected for this risk assessment. The only reported water ingestion rate of 0.223 g/g-day was also selected (USEPA 1993). A soil ingestion rate for the short-tailed shrew of 13% was reported by Talmage and Walton (1993), so this soil ingestion rate was used in the ecological risk assessment.. The home range of the short-tailed shrew was conservatively estimated to be 0.07 acres (0.03 ha) (Platt 1976), since this represented the lowest individual reported home range, and the only reported mean home range was well above the individual reported home ranges (USEPA 1993). Since this is much less than the estimated area of the site, the Area Use Factor (AUF) for the short-tailed shrew was assumed to be one. Although only about 31% of the diet of the short-tailed shrew is earthworms, with other prey species including slugs, snails, insects, animal and plant matter, the diet was assumed to be 100% earthworms for the purposes of this ecological risk assessment.

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