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110452

FINAL BASELINE HUMAN HEALTH RISK ASSESSMENT AND SCREENING LEVEL ECOLOGICAL RISK ASSESSMENT LIGHTMAN DRUM COMPANY SITE WINSLOW TOWNSHIP, NEW JERSEY

Prepared for:

Lightman Drum PRP Group

Prepared by:

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February 2009 Project No.: 013-6054

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February 16, 2009 Project No.: 013-6054

United States Environmental Protection Agency
290 Broadway, 19th Floor
New York, New York 10007-1866

Attn.: Ms. Renee Gelblat

RE: FINAL BASELINE HUMAN HEALTH RISK ASSESSMENT AND
SCREENING LEVEL ECOLOGICAL RISK ASSESSMENT
LIGHTMAN DRUM COMPANY SITE, WINSLOW TOWNSHIP, NJ

Dear Ms. Gelblat:

On behalf of the Lightman Yard PRP Group (Group), Golder Associates Inc. (Golder) is pleased to provide this Final Baseline Human Health Risk Assessment and Screening Level Ecological Risk Assessment (RA) for the Lightman Drum Company Site (Site). Three copies have also been sent under separate cover to the New Jersey Department of Environmental Protection and one copy to CDM Federal.

The RA has been revised from the version submitted on October 6, 2008 to address comments provided in USEPA's letter dated January 13, 2009. In most cases, the Agency comments and associated revisions to the RA are self-explanatory. In a few cases some additional explanation is warranted, and is provided below.

General Comment #2: *Please include a vertical profile map of the plume to illustrate that groundwater is not a source of vapors off-site. A figure is not included in the revised document. Please add a profile map as part of the HHRA.*

Response: Figures 11, 12, and 13 provide the necessary vertical profiles.

Specific Comment #6: *EPA Specific Comment No. 30 for Section 10.1.2, regarding inclusion of regulatory letters on threatened and endangered species in the report: These letters were not included in the revised report. Please include these letters or explain that the letters could not be located. Note that during the January 10, 2008 conference call, Golder indicated they would determine if these letters were in Golder's Archive.*

Response: As noted in the RA, it is our understanding that USEPA consulted the United States Fish and Wildlife Service (USFWS) with regards to the potential presence of Federal and State threatened or endangered species or their habitat in the vicinity of the Property. The USFWS identified the potential presence of the federally listed threatened plant species Swamp Pink in the vicinity of the Site and USEPA communicated that information to Golder in a comment to the Remedial Investigation/Feasibility Study Work Plan in a letter dated June 20, 2001. No other regulatory correspondence is available in Golder's files.

Specific Comment #7: *EPA Specific Comment No. 50 for Table 4 Series: 4-methylphenol, 1,2-dichlorobenzene, and 1,2,4-trichlorobenzene do not have toxicity values in the revised risk assessment report. Please include these values*

Response: This comment was discussed on the January 10, 2008 conference call with USEPA risk assessment personnel. In a follow-up e-mail dated January 10, 2008, Chloe Metz of USEPA confirmed the value for 4-Methylphenol (this value was included in Table 5.1) and indicated that values for 1,2-dichlorobenzene or 1,2,4-trichlorobenzene were not available. A recent check of IRIS confirms that this is still the case.

Specific Comment #12: *Table 3.5: The 95% Chebyshev (MVUE) UCL which is 10,896.68 was recommended on the ProUCL output for iron. But a value of 13,898.62 was listed as 95%UCL in Table 3.5. This value of 13,898.62 was 97.5% Chebyshev (MVUE) UCL. Please correct.*

Response: The recommended ProUCL output for Iron for Table 3.5 (on-site groundwater wells) was 11,382.3 ug/L and is included in Table 3.5. The recommended ProUCL output for iron on Table 3.4 (all groundwater wells) was 10,896.68 ug/L and is included in Table 3.4.

Specific Comment #14: *Figure 1: This figure indicates the closest residential well. Please clarify in the text and on the site figure if this is the well at the abandoned house or one that is currently in use.*

Response: Figure 1 does not indicate the closest residential well as it is not believed that any potable wells remain in proximity to the Property. By municipal ordinance, new developments in the vicinity of the Site are required by municipal ordinance to connect to the municipal water supply system, and Winslow Township Ordinance §284-14 specifically requires that all properties located within 200 feet of the municipal water main[1] or within a Groundwater Impact Area established either by the NJDEP, or the Camden County Health Department must connect to the municipal water supply system.

If any questions arise during your review of this report, please contact us at (856) 793-2005.

Very truly yours,

GOLDER ASSOCIATES INC.



P. Stephen Finn, C.Eng.
Principal

PSF/bjb
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cc: James DeNoble, NJDEP
Sharon Budney, CDM
Lightman Yard PRP Group

[1] A municipal water main is present along Route 73.

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ACRONYMS

AOC	Administrative Order on Consent
ARAR	Applicable or Relevant and Appropriate Requirements
ARCS	Assessment and Remediation of Contaminated Sediments
ASL	Above Screening Limit
ATSDR	Agency for Toxic Substances and Disease Registry
AUF	Area Use Factor
BCC	Bioaccumulative Chemicals of Concern
BRA	Baseline Risk Assessment
BSL	Below Screening Limit
BTAG	Biological Technical Assistance Group
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
BW	Body Weight
CDI	Chronic Daily Intake
CLP	Contract Laboratory Program
COPC	Chemicals of Potential Concern
COPEC	Chemicals of Potential Ecological Concern
CSF	Cancer Slope Factor
CT	Central Tendency
DAF	Dermal Absorption Factor
EFH	Exposure Factors Handbook
EPC	Exposure Point Concentration
ERAGS	Ecological Risk Assessment Guidance for Superfund
FREQ	Analyte detected in <5% of the samples
FS	Feasibility Study
G	Gamma Distribution
GLI	Great Lakes Initiative
GPM	Gallons per minute
GWQS	Groundwater Quality Standards
HEAST	Health Effects Assessment Summary Tables
HI	Hazard Index
HQ	Hazard Quotient
IGWSCC	Impact to Groundwater Soil Cleanup Criteria
InR	Food Ingestion Rate
IR	Inhalation Rate
IRIS	Integrated Risk Information System
LD50	Median Lethal Dose
LDC	Lightman Drum Company
LEL	Lowest Effect Level
LG	Lognormal Distribution
LOAEL	Lowest Observable Adverse Effects Level
MCL	Maximum Contaminant Level
MOE	Ministry of the Environment
N	Normal Distribution
NAPL	Non-Aqueous Phase Liquid
NCEA	National Center for Environmental Assessment.
ND	Not Detected
NJDEP	New Jersey Department of Environmental Protection
NJDEPSCC	New Jersey Sediment Screening Criteria
NOAEL	No Observable Adverse Effects Level

NOEC	No observable effects concentration
NP	Non-Parametric Distribution
NR	No Recommendation
NRDCSCC	Non-Residential Direct Contact Soil Cleanup Criteria
NUTR	Essential Nutrient
PBT	Persistent Bioaccumulative and Toxic
PCE	Tetrachloroethene
PEF	Particulate Emission Factor
PPRTV	Provisional Peer Reviewed Toxicity Values
PQL	Practical Quantitation Level
PRG	Preliminary Remediation Goal
RAGS	Risk Assessment Guidance for Superfund
RCRA	Resource Conservation and Recovery Act
RfC	Reference concentration
RfD	Reference Dose
RI	Remedial Investigation
RME	Reasonable Maximum Exposure
SAF	Soil to skin adherence factor
SCC	Soil Cleanup Criteria
SLERA	Screening Level Ecological Risk Assessment
SOW	Statement of Work
STSC	Superfund Technical Support Center
SVOC	Semi-Volatile Organic Compound
SWQC	Surface Water Quality Criteria
TAL	Target Analyte List
TBC	To Be Considered
TCE	Trichloroethene
TCL	Target Compound List
TOX	Analyte is a Group A carcinogen for at least one exposure route
TRV	Toxicity Reference Value
UCL	Upper Confidence Limit
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
UST	Underground Storage Tank
VOC	Volatile Organic Compound

1.0 INTRODUCTION

1.1 Background

This Final Baseline Human Health Risk Assessment (BRA) and Screening Level Ecological Risk Assessment (SLERA) has been prepared by Golder Associates Inc. (Golder) on behalf of the Lightman Yard PRP Group (Group), pursuant to the Administrative Order on Consent (AOC) executed by the United States Environmental Protection Agency (USEPA) in November 2000 (USEPA Index No. CERCLA-02-2000-2034), and the approved Remedial Investigation/Feasibility Study (RI/FS) Work Plan (Work Plan) (Golder Associates, July 2002a).

The BRA is the third of a series of submittals used to develop the complete Baseline Human Health Risk Assessment for the Site. The first submittal, the Memorandum on Exposure Scenarios and Assumptions, which included Risk Assessment Guidance for Superfund (RAGS) Part D Tables 1 and 4, was previously submitted to USEPA and the New Jersey Department of Environmental Protection (NJDEP) on September 23, 2002 (Golder, 2002b). The second submittal, the Interim Report on the Baseline Human Health Risk Assessment, was submitted to USEPA and the NJDEP on July 29, 2005 (Golder, 2005a). The complete BRA and SLERA were originally submitted on January 8, 2007 (Golder, 2007a), and addressed Agency review comments on previous submittals dated January 23, 2003 and March 15, 2006. A Revised BRA and SLERA addressing Agency comments was submitted on October 6, 2008, and this Final version addresses further Agency comments dated January 13, 2009.

1.2 Risk Assessment Process

Human Health

The risk assessment methods described in this report are based on USEPA's Risk Assessment Guidance for Superfund (RAGS) and on specific USEPA Region II policies provided by the USEPA. Application of these guidelines and policies provides a consistent process for evaluating and documenting potential human health impacts associated with environmental exposures. Risk assessments incorporate a number of assumptions and forms of extrapolation that cannot be verified by traditional scientific means, especially with regard to carcinogenic effects. This approach is conservative (i.e. health protective) and is used by regulatory officials to place an upper bound on risk in order to ensure maximum health protection in the absence of complete experimental information. Risk assessments are not intended to provide a solid line between "safe" and "unsafe" levels of exposure. A substantial margin of safety is built into toxicity

values, thereby providing a high degree of certainty that the levels derived as "acceptable" by regulatory agencies will cause no adverse health effects in the potentially exposed population. Consequently, exposures may exceed the estimated acceptable dose level without a significant increase in risk.

It must also be emphasized that the potential risks estimated using these risk assessment methods are not absolute, i.e., the risk estimates cannot be used to predict the actual number of individuals who might experience health consequences as a result of exposure. Furthermore, the risk estimates developed herein do not relate to absolute individual risks but indicate risk to similarly exposed populations. Many individual risk factors such as occupational exposures, smoking habits, age, diet, gender, exposures to other environmental sources, and inherent genetic susceptibility influence the probability of developing a specific health effect.

Current risk assessment approaches provide a systematic method that allows public health policy makers to establish the relative risks posed by various environmental substances and potential exposure pathways. Further discussions of uncertainties in the risk assessment process and the assumptions adopted in light of these uncertainties are presented in Section 9 of this report.

Ecological

The Screening Level Ecological Risk Assessment (SLERA) portion of this report was prepared in accordance with USEPA's *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments.* (ERAGS) (USEPA 1997a). The objective of the SLERA is to identify, qualitatively and quantitatively (where appropriate), the potential current and future environmental risks associated with the Site that would exist if no action is taken. Pursuant to USEPA guidance, conservative assumptions were used in this SLERA to assess which contaminants and exposure pathways present at the Site may present ecological risks and therefore warrant additional evaluation. Such additional evaluation would entail the development of a Baseline Ecological Risk Assessment.

1.3 Report Organization

The BRA consists of all relevant[1] standard Risk Assessment Guidance for Superfund (RAGS) Part D Tables 1 through 9 and explanatory text. The RAGS Part D tables presented herein summarize the selection of pathways and chemicals of potential concern (COPCs), the intake exposure parameters, chemical toxicity data (carcinogenic and non-carcinogenic), and estimates of potential risks from all pathways and COPCs. The methods used to formulate the tables are described in the following sections:

Section 1: Introduction, provides general background information on the project and the risk assessment process.

Section 2: Conceptual Site Model, provides a description of the Site history and current conditions, including the nature and extent of contamination.

Section 3: Selection of Exposure Receptors and Pathways, discusses exposure scenarios and assumptions for current and potential future uses of the Site, as summarized in Table 1.

Section 4: Occurrence, Distribution and selection of Chemicals of Potential Concern, summarizes the results of the remedial investigation and the screening of chemicals against toxicity benchmark values to identify chemicals of potential concern, as presented in Table 2.

Section 5: Exposure Point Concentration Summary, estimates exposure pathway-specific concentrations of Site-related contaminants (using statistical analyses of data and/or modeling) as presented in Table 3.

Section 6: Estimated Daily Intake, estimates human intake based on chemical concentrations at the points of exposure combined with exposure variables for reasonable maximum and central tendency exposure scenarios, as presented in Table 4.

Section 7: Toxicological Assessment, presents a hazard evaluation for each selected chemical to derive toxicity values for cancer and non-cancer health effects, as presented in Tables 5 and 6.

[1] Tables relating to radionuclide risk estimations are not relevant.

Section 8: Risk Characterization, presents numerical estimates of carcinogenic and non-carcinogenic risks calculated for each chemical by each potential route of exposure, as presented in Tables 7 and 9.

Section 9: Uncertainty Assessment, discusses the assumptions used in the BRA and their effects on the estimated risks.

The SLERA includes ecological risk analyses that identify, qualitatively and quantitatively (where appropriate), the potential current and future environmental risks associated with the Site and comprises the following sections:

Section 10: Screening Level Problem Formulation, provides a qualitative evaluation of contaminant release, migration, and fate; identification of contaminants of concern, receptors, exposure pathways, and known ecological effects of the contaminants, and selection of endpoints for further study.

Section 11: Screening Level Exposure Assessment presents a quantitative evaluation of contaminant release, migration, and fate; characterization of exposure pathways and receptors, and measurement or estimation of conservative exposure point concentrations.

Section 12: Screening Level Ecological Effects Assessment presents the methodology for evaluating the potential toxic effects of contaminants of concern.

Section 13: Screening Level Risk Characterization presents the results of the numerical and qualitative estimates for risks according to medium and potential receptor.

Section 14: Uncertainty Assessment, discusses the assumptions used in the SLERA and their effects on the estimated risks.

Section 15: Conclusions, summarizes the overall conclusions of the BRA and SLERA.

Section 16: References, provides all references cited in the report.

In addition, a number of appendices to the report provide complete analytical results from the remedial investigation, and further details of statistical analyses, modeling, and related calculations.

2.0 SITE DESCRIPTION AND HISTORY

2.1 Conceptual Site Model

2.1.1 Site Setting

The Lightman Drum Company property (Property) covers approximately 15 acres and is located in Winslow Township, Camden County, New Jersey (Figure 1). For the purposes of this report, consistent with the AOC, the Site includes the Property and any area in the vicinity of the Property to which "hazardous substances have migrated or threatened to migrate and all areas in close proximity to the contamination necessary for the implementation of the response actions required by the AOC". The Property is bordered to the east by Route 73, to the west by the Pennsylvania Reading Railroad Line, to the north by open fields and wooded areas. A parcel south of the Property was recently developed as a recreational vehicle storage and maintenance facility. The Property and adjacent lands are zoned for industrial use only (PI-1; see Figure 2). A portion of the corridor along Route 73 southeast of the Property is zoned as minor commercial (PC-1). The area in the vicinity of the Property is currently semi-rural with a few residences and small businesses located along Route 73, including directly north and south of the Property. Properties to the south are being developed for industrial/commercial use, consistent with the current zoning, and all such properties are required to connect to the municipal water supply system. According to the AOC, approximately 8,000 people live within a 3-mile radius of the Site. The Delaware Valley Regional Planning Commission indicates that the population in Winslow Township has grown from 20,034 people in 1980 to 30,087 in 1990 and 34,611 in 2000.

The Property is narrow (approximately 300 feet wide) with access from Route 73. The majority of the Property is wooded as shown on Figure 3. There is very little topographic relief across the Property with a maximum elevation range of 15 feet. Topography generally slopes gently to the south-southwest with some relief apparent to the north of the Property. A wetland area is located along the western fringe of the Property adjacent to the railroad tracks, which forms part of the headwaters of Pump Branch Creek (Figure 4), which is ephemeral at the Property. A surface water retention area is located near the Property entrance, which receives intermittent flow from the west during major storm events via a short culvert that runs beneath a parking area.

The Property is currently used as a drum brokerage business operating under the name of United Cooperage. These operations are located in the eastern portion of the Property, which is used for storage of empty drums. Drums are stored in truck trailers and in open areas. A small office is

located near the Property entrance. A large concrete slab is located adjacent to the office which served as the foundation for a former storage warehouse. A water supply well is located near the office and is used for non-potable purposes. A small septic system, which was installed in 1975 to serve the office bathroom, is located adjacent to and west of the concrete slab.

An abandoned house is located on the Property adjacent to Route 73, north of the Property entrance. A water well is reportedly located at the house, however entrance to the house is not safely available, and no exterior spigot is evident.

2.1.2 Historic Operations at Property

According to USEPA's findings in the AOC, the Lightman Drum Company (LDC) operated an industrial waste hauling and drum reclamation business on the Property beginning in the spring of 1974. Various inspections of the Property were conducted by the NJDEP from 1974 through 1984. In 1978, the NJDEP issued a one-year Temporary Operating Authorization that allowed the storage of various wastes on the Property including chemical powders, pesticides, waste oil, oil sludges, paint, pigment, thinner, ink residues, ketones, alcohols, and mixed solvents. The permit was not renewed.

Based on the Site history and previous investigations at the Property, various storage areas have been identified at the Property (see Figure 3).

Underground Diesel Fuel Tanks

Two fiberglass underground storage tanks of 750 and 1,500 gallon capacity were installed in 1976 along the southern Property boundary (INTEX, 1989). The tanks were reportedly used for storing diesel fuel until the early 1980s and were removed in 1990.

Unlined Waste Disposal Pit

A former unlined waste disposal pit is located in a wooded area in the west-central area of the Property. Historic aerial photographs indicate that the small pit was accessed by a track from the main operations area, and was located within a shallow depression. It was reported that the pit was used for the disposal of a single tank trailer containing paint waste and possibly oil; LDC reportedly removed waste from the area shortly thereafter (INTEX, 1989).

Underground Waste Storage Tanks

Two 5,000 gallon underground storage tanks (USTs) were formerly located in the north-central area of the Property. The tanks were reportedly used to store waste paint pigments, ink sludges and thinners, and were reportedly in use under the Temporary Operating Authorization between November 2, 1978 and April 30, 1979 (INTEX, 1989). According to the findings of the AOC, NJDEP observed that the USTs had been removed in 1984.

Warehouse

Drums were stored in a warehouse located in the eastern part of the Property prior to 1985. In September 1985, a fire destroyed the warehouse. The concrete foundation slab from the warehouse is still present.

Drum Storage Areas

Drum storage areas were present throughout the active central portion of the Property. The main storage areas were located along the southern Property boundary, west of the former diesel tanks, and along the northern tree line east of the former waste storage tanks.

Historical aerial photos of the Property have been obtained and reviewed from the following dates:

1940	1979
1954	1984
1970	1986
1974	1987
1975	1989

These photographs confirm the following aspects of the Property history:

1. Prior to 1974, the currently active portion of the Property was used for agricultural purposes;

2. With the exception of the unlined waste disposal pit and associated access tracks, the wooded portion of the Property to the west and along the northern boundary has remained unchanged since at least 1940; and,

3. The current operational area has remained essentially the same since 1974.

2.1.3 Pre-RI Investigations

Pursuant to the New Jersey Order, an investigation was conducted in two phases (Phase I and Phase II) by INTEX on behalf of LDC (INTEX, 1989; INTEX, 1990). These investigations focused on delineating the extent of contamination in soil and groundwater. Approximately 80 soil samples were collected and twelve monitoring wells installed including shallow and deep well clusters at locations MW-2 and MW-8. The investigations were concentrated in known waste storage areas as shown on Figure 3 and as briefly described below. Constituents detected in groundwater on the Property included chlorinated and aromatic Volatile Organic Compounds (VOCs), and Semi-volatile Organic Compounds (SVOCs) in excess of federal drinking water standards (maximum contaminant levels; MCLs). Constituents detected in soils on the Property included VOCs (primarily chlorinated and aromatic solvents), SVOCs, pesticides, and inorganic compounds. The samples with the highest concentrations of BTEX compounds (benzene, toluene, ethylbenzene, and xylenes) and the chlorinated solvents tetrachloroethene (PCE) and trichloroethene (TCE) were taken in MW-2 and in soil samples taken in the Former Waste Storage Tank Area and in the Former Southwest Drum Storage Area.

Compound	Groundwater (ug/L)		Soil (mg/kg)	
	Intex 1989	Intex 1990	Intex 1989	Intex 1990
	MW2	MW2	12D2	MW-8B
Benzene	1300	364	0.64	
Toluene	5600	2750	16	221
Ethylbenzene	1200	4800	15	1210
Xylenes		41500		8190
PCE	3400	2010	20	83.1
TCE	6500	2500	5.1	73

Sample 12D2 was taken in the Former Underground Waste Storage Tank Area in the 10.5-12.5 feet bgs interval.
The soil sample taken from MW-8B was taken in the 8-17 feet bgs interval

Following the Phase I investigation, a geophysical investigation was conducted to assist in placement of additional monitoring wells downgradient of MW-2 and MW-3 during the Phase II investigation. The results of an electromagnetic terrain conductivity survey were inconclusive in the operational area of the site as a result of surficial interferences (i.e., metal drums and trailers). A small anomaly was identified in the area of a former Unlined Waste Disposal Pit and monitoring well MW-7 was subsequently installed at that location.

Groundwater Sampling

In July of 2000, the USEPA conducted sampling of wells on the Property and tap water sampling of surrounding residential properties both north and south of the Property. The results from this sampling indicated that monitoring wells on the Property were contaminated with compounds exceeding the MCLs and/or the New Jersey Groundwater Quality Standards (GWQS). Contaminants consisted primarily of VOCs, especially chlorinated solvents and BTEX compounds. The results of the residential tap water sampling indicated the presence of some naturally occurring metals (lead, iron, manganese, and aluminum) exceeding Federal MCLs and/or New Jersey State GWQS, that are not considered to be Site-related.

2.1.4 Geology and Hydrogeology

Site Geology

The Site is located in the Atlantic Coastal Plain Province of the eastern United States, which consists of a series of unconsolidated Cretaceous through Quaternary aged sands and clay sediments overlying Precambrian crystalline rocks. The sediments form a southeasterly-dipping wedge which gradually thickens from the outcrop areas near the Delaware River east toward the Atlantic Ocean (Hardt and Hilton, 1969).

The Site hydrogeologic model is characterized by the presence of a relatively uniform unconfined aquifer, known as the Cohansey Sand (Zapecza, 1989), consisting of yellowish brown coarse to fine grained sand, underlain at depth by the Kirkwood Formation. The base of the Cohansey-Kirkwood aquifer is defined by the top of a clay bed lying at the base of the Kirkwood Formation. Two test borings were drilled to locate the top of the Kirkwood formation. It was encountered between 100 feet and 105 feet below ground surface at locations TB-01 and TB-02, indicating that the aquifer in the vicinity of the Site is on the order of 100 feet thick.

Most of the soils in the Site area are mapped as Downer loamy sand, Klej loamy sand, and Leon soil. All three are well-drained soils which have poor filtering capacity (Markely, 1966). Much of the active area of the Property has been covered by a veneer of fill material. The fill is fairly impermeable in some areas, as evidenced by the presence of large puddles after storms which remain for as long as several days after the rain.

Site Hydrogeology

As noted above, the area is underlain by the Cohansey-Kirkwood aquifer system, which is a water table aquifer that dips eastward toward the Atlantic Ocean. This aquifer is almost always unconfined, although local clay units in the Cohansey Sand occasionally create locally confined conditions. In the Site area, there are no such mapped continuous confining layers, nor were any identified during the field investigation. The Cohansey-Kirkwood aquifer is used extensively for wells, primarily for domestic and farm-irrigation uses. Recharge to the unit is high, due to its high permeability, and therefore, the quantity of water available for use is substantial (Rooney, 1971). This Site is located within the Pinelands Protection Area where Class I-PL GWQS apply.

Water levels measured in wells and piezometers during the RI indicate groundwater flows to the south-southeast, with what appears to be an intermittent component of flow to the south-west, particularly in downgradient areas (i.e., in the vicinity of MW-18). Groundwater appears to be sporadically connected to surface water far downgradient of the Lightman Property (i.e., during wet seasons, 4,000 feet downgradient of the Property where the Pump Branch Creek is more developed), as evidenced by the similarity between the stream elevation measured by the staff gauge and groundwater elevations, during certain monitoring events. At other times the streambed is dry, and groundwater levels are well below the base of the stream. The variability of groundwater flow direction downgradient of the Property may be the result of the effect of Pump Branch during wetter periods and variations in the rate of extraction of groundwater by the municipal well located 2,800 feet west of the most downgradient monitoring well (MW-18; see below).

2.1.5 Local Wells

A well search was requested from the New Jersey Bureau of Water Allocation for the area surrounding the Property. Three hundred eighty-five wells (including both monitoring and supply wells) were located within 1.5 miles of the Property. The greatest density of wells is approximately 1 mile downgradient towards the south east along Pump Branch Road in the Cedarbrook area and in a housing development at the intersection of Cedarbrook Road and North Grove Street, to the southwest of the Site. The majority of the located wells are along North Grove St., Cedarbrook Road, 4th Avenue, Norcross Road, and Pump Branch Road. It is understood that the new development southwest of the Site (White Cedars) is completely connected to municipal water. The limit of groundwater contamination identified during the

Remedial Investigation underlies undeveloped property and no supply wells have been identified within the contaminated area.

There are two Winslow Township municipal wells (#4 and #8), which are located roughly 7,500 feet from the Property, approximately 2,800 feet to the west of the downgradient extent of groundwater contamination. Based on information provided by Winslow Township to USEPA, well #4 is 97 feet deep and has a rated capacity of 250 gallons per minute (gpm), but is used for emergency purposes only. Well #8 is 140 feet deep, has historically been pumped regularly, although not generally continuously, and has a rated capacity of 1,000 gpm. The Township reports that the well has not been pumped since August 2007. The Township has indicated to USEPA that the wells are sampled regularly for VOCs and no concerns have been reported. Wellhead treatment is in place at Well #8 and includes an air stripper designed for protection against possible VOCs and radon contamination.

Groundwater level monitoring transducers were installed in downgradient monitoring wells MW-16, MW-17, and MW-18 to compare the response of water levels in these wells to municipal pumping records for wells #4 and #8 provided by Winslow Township. The effect of municipal pumping can be seen in MW-18 with higher pumping rates being reflected in decreases in water levels (on the order of 0.10 feet) measured in MW-18. The correlation is also illustrated in MW-16 and MW-17, although the drawdown effects are smaller. These results confirm that the Municipal well can influence a broad area including the vicinity of the most downgradient site monitoring wells. Long-term pumping records available from NJDEP indicate that pumping rates from the municipal well vary significantly and the well has not been pumped since August 2007.

USEPA conducted groundwater sampling of residential wells along Route 73 in close proximity to the Property in 2000. The results of this sampling effort did not indicate any Site-related impacts to residential supplies. This is consistent with all the information collected to date on the overall delineation of the Site-related contamination.

On Property, there is a water supply well used for non-potable purposes. This well has been sampled and analyzed along with the monitoring wells and the results are discussed in Section 4.1.

2.1.6 Summary of Remedial Investigation

The main field work for the RI began in August 2002 and was concluded in July 2007. During this period, the work outlined in the original RI/FS Work Plan was expanded in off-Property areas downgradient, and an expanded monitoring well system was completed in accordance with the Remedial Investigation Update (Golder, 2004). Additional on-Property soil sampling was also conducted in the saturated zone (Figure 5), at the request of USEPA, to define potential saturated soil contamination, and an additional round of groundwater samples was collected in accordance with the Revised Addendum RI/FS Work Plan (Golder, 2006a). Additional samples were collected from select wells in August 2006 and November 2006 subsequent to issuance of the Remedial Investigation Report (Golder, 2006b), and USEPA requested further monitoring well sampling and completion of additional aquifer profile borings in specific areas in March 6, 2007 (Figure 6). This work was carried out in accordance with RI/FS Work Plan Addendum #2 (Golder, 2007b) and reported in an Addendum to Remedial Investigation Report on September 7, 2007 (Golder, 2007c). In summary, the RI field work included the following activities:

- Installation of 57 direct-push groundwater profiles;
- Installation of 10 piezometers (including two replacements);
- Installation of 11 groundwater monitoring wells;
- Installation of a staff gauge in Pump Branch Creek;
- Soil sampling in both the saturated and unsaturated zones;
- Sediment/surface water sampling;
- Collection of two complete rounds of groundwater samples from 12 existing and 11 new monitoring wells and the on-Property office supply well;
- Collection of two additional rounds of groundwater samples from eight selected wells downgradient of the Property;
- Topographic, Property boundary, and soil boring/well surveying;
- Slug testing of monitoring wells;
- Continuous water level recording in select downgradient wells;
- Wetlands delineation;
- Phase IA Cultural Resources Survey; and,

- Survey for Swamp Pink, a federal endangered plant species.

All sampling was conducted in accordance with the approved workplans listed above and the associated Sampling and Analysis Plans.

Soil

Unsaturated soil samples taken to assess potential vadose zone source areas did not detect any exceedances of even the most stringent NJDEP Soil Cleanup Criteria (Figure 7). Field tests of saturated soil samples taken to assess the presence of residual product soil contamination in identified source areas indicated positive results at the water table in three borings in the former Waste Storage Tank Area. Three VOCs (ethylbenzene, tetrachloroethene, and total xylenes) exceeded the most stringent of the New Jersey Soil Cleanup Criteria (NJDEP SCC), based on potential Impact to Groundwater, in two saturated zone borings located in the former Waste Storage Tank Area (Figure 5). There were no saturated zone exceedances in borings taken at the former Unlined Waste Disposal Pit Area or the former Southwest Drum Storage Area.

Sediment / Surface Water

Sediment sample results did not exceed the most stringent lowest effects level (LEL) of the NJDEP Sediment Screening Criteria (NJDEP SSC) for VOCs or SVOCs. Two sediment samples were collected from each of four locations in the wetland at the western end of the Property and in Pump Branch Creek downgradient of the Site (Figure 4): one sample was collected from a depth of 0-6 inches below the sediment surface and the other from a depth interval of 18 to 24 inches below the surface. One pesticide (4,4'-DDT) exceeded the NJSSC LEL. The surrounding area has historically been used for agricultural purposes and therefore the pesticide detection in the sediment is most likely not Site-related. Four metals exceeded LELs (lead, copper, arsenic, and mercury), but the maximum detected concentrations of arsenic occurred in the upstream (background) samples. The highest concentrations of lead, copper, and mercury were in the furthest downgradient samples, suggesting that the inorganic exceedances are also not Site-related.

Surface water detections in excess of NJDEP Surface Water Quality Criteria (SWQC) for FW2 classified surface waters were limited to arsenic and lead. Both arsenic and lead were detected in the background surface water sample collected upstream of the Property and in background

sediment samples, suggesting that arsenic and lead are not Site-related constituents in surface water.

The on-Property surface water retention area is no longer active and is overgrown with vegetation, including trees. There is no surface water or sediment present and results from the two soil borings (SB-01 and SB-02) that were taken in this area are included in the soil data used in this risk assessment.

Groundwater

Based on 46 geoprobe profile borings and data from 23 monitoring wells, groundwater has been impacted with chlorinated VOCs, namely trichloroethene (TCE) and tetrachloroethene (PCE), as well as BTEX compounds. There are two main plumes present (Figures 4A/B, 9A/B, and 10A/B), one originating from the former Waste Storage Tanks (eastern plume), and one from the former Unlined Waste Disposal Pit Area in the western part of the Property (western plume). Both plumes are relatively narrow in width horizontally and in thickness, and both plunge in depth from the source areas such that non-impacted groundwater overlies the plumes starting a short distance downgradient of the Property (Figures 11A/B, 12 A/B, 13A/B). The eastern PCE/TCE plume extends a distance of approximately 4,500 feet downgradient of the Property, at which point it is approximately 85 feet below ground surface (bgs). The western PCE/TCE plume extends approximately 1,500 feet downgradient, at which point it is about 55 feet bgs. BTEX compounds (mainly benzene and xylene) are co-located with the PCE/TCE; however, the eastern and western BTEX plumes do not extend as far downgradient as the chlorinated plumes. In the eastern plume, BTEX is detected a distance of approximately 1,500 feet downgradient, and in the western plume, BTEX is detected approximately 300 feet downgradient. In both plan view and cross-section, the eastern and western plumes exhibit evidence of historical variations in the release rate (areas of higher concentration bounded by areas of lower concentration occurring throughout the overall plume), which is consistent with the operational history at the Property. Additional aquifer profile borings conducted in July 2007 at the request of USEPA confirmed that localized zones of higher concentration exist within the overall boundaries of the plume.

In addition to VOCs, samples taken from monitoring wells were analyzed for Target Compound List (TCL) SVOCs, pesticides, PCBs, Target Analyte List (TAL) metals, and geochemical parameters. There were no PCBs detected. Nearly all SVOCs and pesticide detections were found in on-Property wells proximal to the former Waste Storage Tanks and within the larger

chlorinated VOC plumes. There were a few low level detections of SVOCs and pesticides in downgradient wells, but no detection was repeated between the 2005 and 2006 sampling events.

Twenty-three different metals were detected over the two sampling periods, eighteen of which exceeded the higher of NJ Class IIA Practical Quantitation Limit (PQL) or background concentrations in well MW-1. The inorganics that exceeded were, in decreasing order of number of exceedances: potassium, zinc, chromium, nickel, iron, cadmium, manganese, magnesium, mercury, copper, aluminum, thallium, vanadium, calcium, antimony, arsenic, lead, and selenium. Of these, aluminum, barium, calcium, chromium, iron, magnesium, manganese, nickel, potassium, sodium, vanadium, and zinc were detected in both wells that showed VOC impacts and in wells with no VOC impacts; and were also detected in the background monitoring well (MW-1), suggesting that these concentrations are naturally occurring. There were only isolated detections of the other metals.

In addition to the monitoring wells, the on-Property water supply well, reportedly used only for non-potable purposes, was sampled and analyzed. No SVOCs or pesticides/PCBs were detected. Only one VOC, 1,1-Dichloroethene, was detected in one sampling event at an estimated concentration of 0.13 µg/L, below NJ Class IIA PQL of 1 µg/L. Inorganic detections were consistent with the monitoring well data discussed above.

2.1.7 Source Area Removal Action

An Administrative Settlement Agreement and Order on Consent for Removal Action (Removal AOC), was entered between USEPA and some members of the Group (the Lightman Yard Source Removal Group, or Source Removal Group) and became effective on September 17, 2007. The Removal AOC required excavation of source area soils in the vicinity of the former underground waste storage tanks, which was completed pursuant to the Soil Source Removal Work Plan, submitted to USEPA on October 16, 2007 and approved October 29, 2007. The area of excavation was approximately 33-feet by 16-feet in plan dimensions and encompassed those RI borings where there was a positive field test result for residual product and/or borings that contained samples that exceeded the most stringent New Jersey Soil Cleanup Criteria (NJDEP SCC) (see Figure 5). The excavation extended to a depth of 25 feet, corresponding to the zone where exceedances of criteria occurred, and the excavation was backfilled with clean fill. The extent of the excavation was delineated during the RI, and basal samples were taken and analyzed for TCL VOCs, documenting that the quality of the remaining saturated soil was below the

NJDEP SCC. Soil removed from the excavation has been characterized and disposed off-site in accordance with the approved Work Plan. During the source area soils removal, discrete areas of un-naturally colored near-surface soils were observed (Figure 8). Investigations of these soils were conducted and summarized in an Addendum to the Remedial Investigation Report dated June 6, 2008. Analysis of the un-naturally colored soils observed near surface indicates that lead is the primary contaminant of concern, exceeding New Jersey screening criteria in seven of nine samples. Arsenic and pesticides were each present in one sample above screening criteria and hexavalent chromium was detected in two samples above the preliminary inhalation criteria. The Group is currently undertaking the removal of these un-naturally colored soils as an additional action required under the Removal AOC.

3.0 SELECTION OF HUMAN HEALTH EXPOSURE RECEPTORS AND PATHWAYS

In the following discussion, receptors refer to groups of individuals who may be exposed to a chemical or physical agent released into the environment from the Site. Potential exposure pathways are those mechanisms by which a receptor could come in contact with impacted environmental media at or originating from the Site. In this section, the potentially exposed populations (receptors) and possible exposure pathways under current and hypothetical future land-use conditions are identified.

3.1 Identification of Exposure Receptors

For purposes of this BRA, potential exposures occurring under both current and hypothetical future land use conditions are evaluated. Estimates of risk under current use scenarios evaluate potential risks to current receptors. Estimates of risk under future use scenarios evaluate whether there may be a potential for a health threat to hypothetical future receptors.

On-Property Receptors

The following receptors have been identified as having the potential to be exposed to contaminants present on Property under current and/or future exposure scenarios:

- Current and Future Industrial/Commercial Workers: Future use of the Property is assumed to include the existing commercial use or other industrial use consistent with zoning of the Property, therefore industrial/commercial workers were evaluated as receptors.

- Current and Future Trespassers: Entry to the Site is not restricted on all boundaries, therefore these receptors could come in contact with contaminated media.

- Future Construction workers: In the future, there is a possibility that construction workers will be hired to do work on-Property. As such, a hypothetical future use scenario was evaluated for construction workers on-Property.

Off-Property Receptors

The following receptors have been identified as having the potential to be exposed to contaminants present off-Property under current and/or future exposure scenarios:

- Current and Future Trespassers: Access to Pump Branch Creek (sediments and surface water) is not restricted, and therefore the trespasser scenarios were evaluated for these media.

- Future Residents: At the request of USEPA, the hypothetical future use scenario of residential exposure to groundwater was evaluated[2].

3.2 Identification of Exposure Pathways

Exposure pathways refer to potential routes by which Site receptors may be exposed to contaminants at the Site. The mechanism of exposure (i.e., ingestion, dermal contact, or inhalation) depends on the environmental medium in which the substance is present (e.g., soil, air, etc.). In this BRA, pathways involving contaminated groundwater, surface soil, subsurface soil, surface water, and sediment were evaluated. Table 1 presents potential current and future exposure pathways applicable to the Site in the standard RAGS Part D format and these pathways are discussed in greater detail below.

3.2.1 Groundwater

As discussed in Section 2.1.6, groundwater has been impacted with chlorinated VOCs in two relatively narrow plumes that extend from the former Waste Storage Tank Area and the former Unlined Waste Disposal Pit Area to varying distances south of the Property. Receptors can potentially be exposed to contamination through use of water from future wells installed within these plumes and through indoor air contamination arising from the volatilization of chemicals from the groundwater. Down-gradient of the Property, the plumes are overlain by non-impacted groundwater, limiting the area where the potential indoor air exposure pathway may be complete.

Current Scenario

In the current scenario, the only off-Property wells impacted by the contamination are monitoring wells. The existing on-Property supply well is not used for potable purposes and there are no structures over the plume and the current exposure routes are defined accordingly[3].

Future Scenario

In the future scenario, the hypothetical future use of groundwater by residential receptors was evaluated, including exposure through ingestion, direct contact, and inhalation of water vapors

[2] It should be noted that residential land use is not permitted by local zoning and by local ordinance any new development would be required to connect to the municipal water supply.

[3] According to the Site owner during the RI, groundwater from the on-Property well is used for handwashing and toilet facilities only. Workers predominantly operate outside and wear gloves/aprons/boots. Typical work hours are 8 hours a day, 5 days a week. Activities mostly comprise loading and unloading empty drums with approximately 4 hours per week hand painting drums and about 4-8 hours per week crushing damaged drums for recycling.

from household use (e.g. showering). Industrial/commercial use of on-Property wells, including exposure from incidental ingestion and dermal contact, as well as exposure to groundwater vapors in potential future structures on the Property, was also evaluated.

3.2.2 Soil

Direct exposure to contaminated on-Site soils may occur through dermal contact, by incidental ingestion of contaminated soil, and/or through the inhalation of airborne dust. Both current and future use of the Property is assumed to comprise commercial or other industrial use consistent with zoning of the Property. Because entry to the Property is not restricted on all boundaries, trespassing is possible. Exposure to surface soil (soils within 24-inches of the surface) was therefore evaluated for industrial/commercial workers, trespassers, and future construction workers. Subsurface soil (soils more than 24-inches from the surface) exposure was also evaluated for future construction workers. Exposure to soil in the on-Property surface water retention area and wetland area, both of which are rarely inundated, was included as part of the Site-wide surface soil exposures.

3.2.3 Surface Water and Sediment

A wetland area is located at the western end of the Property adjacent to the railroad tracks, which forms part of the headwaters of Pump Branch Creek. Surface water in the area of the Property is ephemeral. Although groundwater appears to be sporadically connected to surface water far downgradient of the Property, at this distance from the Property the plume lies beneath more than 50 feet of non-impacted groundwater; thus Site-related contamination does not impact Pump Branch Creek. Nonetheless, at the request of USEPA, exposure to surface water and sediment via ingestion and dermal contact was evaluated for both current and potential future trespassers.

3.3 Summary of Exposure Receptors and Pathways

Current use of the Property is limited to industrial/commercial workers and potentially both pre-adolescent and adolescent trespassers. Off-Property, current trespassers may access surface water and sediment. Potential future receptors on the entire Site include residents, pre-adolescent and adolescent trespassers, construction workers, and industrial/commercial workers.

The following exposure pathways were therefore considered for residents (children and adults):

- Ingestion Of Groundwater (Hypothetical Future Use Scenario)
- Dermal Exposure To Groundwater (Hypothetical Future Use Scenario)
- Inhalation Of Water Vapors From Household Use (Hypothetical Future Use Scenario)

The following exposure pathways were considered for pre-adolescent and adolescent trespassers for both current and future use scenarios:

- Surface water incidental ingestion
- Dermal exposure to surface water and sediment
- Incidental ingestion of sediment
- Incidental Surface Soil Ingestion
- Dermal Exposure to Surface Soil
- Airborne Dust Inhalation

The following exposure pathways were considered for industrial/commercial workers for both current and future use scenarios:

- Incidental Surface Soil Ingestion
- Dermal Exposure To Surface Soil
- Airborne Dust Inhalation
- Incidental Ingestion Of Groundwater (From On-Property Supply Well)
- Dermal Exposure To Groundwater (From On-Property Supply Well)
- Inhalation Of Indoor Air Impacted By Vapor Intrusion

Exposure via inhalation of indoor air impacted by vapor intrusion was also considered for industrial/commercial workers in a hypothetical future use scenario.

The following exposure pathways were considered for hypothetical future construction workers:

- Incidental Surface and Subsurface Soil Ingestion
- Dermal Exposure to Surface and Subsurface Soil
- Airborne Dust Inhalation

Complete details of the exposure pathways selected are provided in Table 1.

4.0 OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

During the Remedial Investigation (Golder, 2005b, 2006b), groundwater, soil, surface water, and sediment samples were analyzed for TCL/TAL analytes in accordance with the USEPA CLP SOWs, OLM04.2, OLC03.2, and ILM04.1 and tentatively identified compound data were specifically evaluated for 1,2-diphenylhydrazine and benzidine, neither of which was indicated in any media. All of the compounds that were detected at least once are included in Table 2. Comprehensive analytical data tables are provided in Appendix E. Sampling locations are illustrated in Figures 4 and 11.

Sample results were grouped together according to the possible exposure scenarios (see Section 3) as described below:

- On-Property supply well results (Table 2.1) were used for the current industrial/commercial worker exposures;
- All monitoring well results (Table 2.5) were used for hypothetical future residential exposures;
- On-Property monitoring well results (Table 2.6 and Table 2.7) were used for future industrial/commercial worker exposures;
- Surface soil results (Table 2.2) were used for the current and future industrial/commercial worker exposures; current and future pre-adolescent and adolescent trespasser exposures; and future construction worker exposures;
- Subsurface soil results (Table 2.8) were used for future construction worker exposures;
- Surface water results (Table 2.3) were used for current and future trespasser exposures; and,
- Sediment results (Table 2.4) were used for current and future trespasser exposures.

It should be noted that the surface soil and subsurface soil data sets used in this assessment comprise all of the data collected in the Remedial Investigation and do not reflect the fact that impacted surface soils and subsurface soils are being removed pursuant to a Removal Order as discussed in Section 2.1.6. Similarly, the groundwater data set is based on the complete rounds of groundwater monitoring conducted in 2005 and 2006, although subsequent monitoring of key wells indicate that concentrations have declined. As a result, the exposure point concentrations developed herein represent an overestimate compared to the current site conditions. A qualitative

discussion of the impact of the removal action on the quantitative estimates of risk and hazard is provided in Section 8.4

Chemicals of potential concern (COPCs) were selected according to the following screening procedures specified in USEPA's RAGS documents.

For both soil and sediment, the maximum detected concentration of each chemical was screened against the October 2004 chemical-specific USEPA Region IX Residential Soil Preliminary Remediation Goal (PRG). Region IX PRGs based on non-carcinogenic risks were multiplied by a factor of 0.1 per USEPA Region II guidelines so as to reflect a screening hazard quotient (HQ) of 0.1. Additionally, compounds whose PRG values were based on carcinogenic effects were compared with the adjusted PRGs based on non-carcinogenic effects with a HQ of 0.1. If the adjusted HQ-based PRG was lower than the carcinogenic risk-based PRG, the lower, adjusted PRG was used for screening.

Groundwater contaminants for on-Property wells were screened against generic screening levels from the USEPA Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (USEPA, 2002a) for the vapor intrusion pathway at a risk level of $1x10^{-6}$. Off-Property, contaminated groundwater is overlain by non-impacted groundwater, and the vapor pathway is therefore incomplete for off-Property receptors.

Consistent with USEPA policy, Group A carcinogens that were detected were retained in all media as COPCs irrespective of concentration. Otherwise, a compound was eliminated as a COPC if its maximum detection was below the screening value. Similarly, if a compound was detected in fewer than 5% of the samples, it was eliminated as a COPC. Compounds considered essential nutrients (e.g. calcium) were not retained as COPCs. If a PRG value was not available for a specific compound, it was retained for analysis. Detections for gamma- and alpha-chlordane, for which PRGs were not available, were screened against "Chlordane, technical". Detections of Endosulfan I and II were screened against the Region IX PRG value for "Endosulfan", and detections of chromium and mercury were screened against the most conservative values, Chromium VI and methyl mercury, respectively. Nickel detections were screened against the Region IX PRG value for "nickel (soluble salts)." For water samples, detections for lead were screened against the action level for lead in tap water from the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories (15 µg/L).

Surface water was screened against NJDEP FW2 Criteria for protection of human health, where non-cancer values were multiplied by a factor of 0.1. Compounds without screening criteria were retained.

4.1 Groundwater Screening Results

Twenty-three Monitoring wells and the on-Property supply well were sampled in two sampling events in 2005 and 2006. The samples taken in 2006 were analyzed by low level VOC analysis via OLC 03.2 to provide lower reporting limits.

In the on-Property supply well (Table 2.1), no compounds were detected above screening levels.

In monitoring wells, (Table 2.5), there were detections of 27 VOCs, 11 SVOCs, 10 pesticides, and 23 metals. The following 15 VOCs, 4 SVOCs, and 10 metals were retained as COPCs for future residential exposure:

Groundwater COPCs for Future Residential Use		
Volatile Organics	**Semi-Volatile Organics**	**Inorganics**
1,1,2-Trichloroethane	2,4-Dimethylphenol	Antimony
1,2,3-Trichlorobenzene	4-Methylphenol	Arsenic
1,2,4-Trichlorobenzene	bis(2-Ethylhexyl)Phthalate	Cadmium
1,2-Dichlorobenzene	Naphthalene	Chromium
1,4-Dichlorobenzene		Iron
Benzene		Lead
Chlorobenzene		Manganese
Chloroform		Nickel
cis-1,2-Dichloroethene		Thallium
Ethylbenzene		Vanadium
Tetrachloroethene		
Toluene		
Trichloroethene		
Vinyl Chloride		
Xylenes (total)		

In on-Property wells, (Table 2.6 and 2.7), there were detections of 25 VOCs, 10 SVOCs, nine pesticides, and 23 metals. The following chemicals were retained as COPCs for vapor intrusion and groundwater use:

On-Property Groundwater COPCs for Vapor Intrusion
Volatile Organics
Benzene
cis-1,2-Dichloroethene
Ethylbenzene
Isopropylbenzene
Tetrachloroethene
Trichloroethene
Vinyl Chloride
Xylenes (total)

On-Property Groundwater COPCs for Industrial/Commercial Use (Ingestion, Dermal Contact, and Inhalation)		
Volatile Organics	**Semi-volatile Organics**	**Inorganics**
1,2,3-Trichlorobenzene	2,4-Dimethylphenol	Antimony
1,2,4-Trichlorobenzene	2-Methylnaphthalene	Arsenic
1,2-Dichlorobenzene	4-Methylphenol	Cadmium
1,4-Dichlorobenzene	Naphthalene	Chromium
Benzene		Iron
Chlorobenzene		Manganese
Chloroform		Nickel
cis-1,2-Dichloroethene		Vanadium
Ethylbenzene		
Tetrachloroethene		
Toluene		
Trichloroethene		
Vinyl Chloride		
Xylenes (total)		

4.2 Surface Soil

In surface soils (Table 2.2), there were detections of 8 VOCs, 20 SVOCs, 15 pesticides, and 23 metals in 49 samples taken in September and November 2002. Shallow soil samples for non-VOC analysis were collected from the 0 to 6 inch interval, and shallow soil samples for VOC analysis were collected from the 6 to 24-inch interval. One SVOC (phenanthrene) and one pesticide (endrin aldehyde) were retained as COPCs because there were no screening values. Seven metals (aluminum, arsenic, chromium, iron, lead, nickel, and vanadium) were retained as COPCs.

4.3 Subsurface Soil

In subsurface soils (Table 2.8), there were detections of 8 VOCs, 9 SVOCs, 4 pesticides, and 21 metals in 40 borings taken in September and November 2002 between 5.5 and 19 feet below

ground surface. Five metals were retained as COPCs: arsenic, chromium, iron, nickel, and vanadium.

4.4 Surface Water and Sediment

Surface water is ephemeral in the vicinity of the Property. However, surface water and sediment were sampled at four locations: one location in the wetland at the western end of the Property, one (background) location upgradient of the Property, and two locations downgradient of the Property in Pump Branch Creek.

Arsenic, lead, and manganese were detected at concentrations greater than screening values and were retained as COPCs. Five other compounds (4-methylphenol, aluminum, cobalt, iron, and vanadium) for which there were no screening values were also retained as COPCs. Chromium was detected in surface water (Table 2.3) below the screening criteria. Although chromium is a Group A carcinogen by inhalation, because the surface water is ephemeral, and chromium is not volatile, inhalation is not considered an exposure route from water and so chromium was not retained as a COPC in this medium.

Two sediment samples were collected from each of four locations: one sample was collected from a depth of 0-6 inches below the sediment surface and the other from a depth interval of 18 to 24 inches below the surface. In sediment (Table 2.4) there were detections of 2 VOCs, 20 SVOCs, 5 pesticides, and 22 metals. Three SVOCs and one pesticide, for which there were no screening values, were retained as COPCs. Five metals (aluminum, arsenic, iron, lead, and vanadium) were also retained as COPCs.

5.0 EXPOSURE POINT CONCENTRATION SUMMARY

RAGS Part D Table 3 was prepared for each of the COPCs and for each unique Scenario Timeframe/Medium/Exposure Medium combination. Table 3 summarizes the distribution of measured concentrations by reporting the arithmetic mean of the concentrations, the 95% upper confidence limit on the mean (95% UCL), and the maximum detected concentration for each COPC in each medium of concern.

The mean and 95% UCL were calculated from the data used to compile Table 2. One-half the detection limit was used for non-detect results and the 95% UCL was calculated using USEPA's proUCL (version 3.0) software package; the reported values are based on the statistical distributions recommended by the program.

The 95% UCL was generally chosen as the exposure point concentration (EPC) presented in Table 3. Where the 95% UCL exceeded the maximum detection, the maximum detection (USEPA, 2002b) was chosen as the EPC. The maximum detection was used as the EPC for all surface water and sediment samples, as recommended by USEPA for small sample groups (USEPA, 1992). ProUCL output sheets are included in Appendix A.

6.0 ESTIMATED DAILY INTAKE

The estimated human exposure, or intake, received through each exposure pathway was calculated as a Chronic Daily Intake (CDI) which is expressed in terms of mass of the COPC taken into the body per unit of body weight per unit of time (usually expressed in units of mg/kg/day). The CDI for each receptor and exposure pathway is a function of the exposure point concentration (EPC), contact rate (e.g., ingestion rate, inhalation rate, etc.), exposure frequency and duration, body weight, and time. Some of these variables are comparable for all situations and so standard values are used, while others are dependent on the characteristics of the Site and the potentially exposed populations. Some of these variables (e.g., body weight, time exposed, etc.) are receptor-specific and are discussed below. Other variables (e.g., chemical concentration in air, volatilization factors, dermal absorption factors, etc.) are chemical or Site-specific and are discussed separately.

The parameters needed to calculate the CDI for each receptor (including adults, children, and adolescents, as appropriate) and exposure route are summarized in RAGS Part D Table 4 format for the exposure scenarios identified in Table 1. In some cases, exposure variables are the same for both current and future scenarios and, in such cases, this is noted in the table header. Separate tables are provided that represent central tendency (CT) and reasonable maximum exposure (RME) scenarios. Calculations based on CT variables are included in the risk assessment to assist USEPA in making risk management decisions for pathways that exceed acceptable risk ranges, based on the RME analyses. Exposure variables are taken from USEPA guidance documents and, where appropriate, professional judgment based on known Site conditions. The rationale/sources of the values presented are identified in Tables 4.1 through 4.11.

Consistent with USEPA Region II guidelines, the body weight of an adult is assumed to be 70 kg, while the weight of a child is estimated to be 15 kg. The averaging time for non-carcinogenic effects for all pathways is equal to the exposure duration. For carcinogenic effects, the excess lifetime cancer risk is calculated using an averaging time of 70 years (25,550 days) for both RME and CT conditions.

6.1 Industrial/Commercial Workers

Industrial/commercial workers are assumed to be adult, exposed for 8 hours per day, 250 days per year for a career spanning 25 years (RME scenario) and exposed for 8 hours per day, 219 days per year for a career spanning 9 years (CT scenario).

For adult industrial/commercial receptors at the Property, dermal exposure to groundwater may occur through washing of face, hands and forearms for an assumed duration of 0.25 hours per day. The skin surface area exposed is assumed to be 3,300 cm^2 for exposure to surface soils and for exposure to water (USEPA, 2004). At the request of USEPA, an ingestion rate of 1 L/day was used for industrial/commercial workers[4]. A soil adherence factor of 0.20 (USEPA, 2004) and the following intake rates are assumed:

- Soil ingestion of 100 mg/day;
- Water ingestion of 1.0 L/day; and,
- An inhalation rate of 1.5 m^3/hr (for an outdoor worker with moderate activity) was used for inhalation exposure to dust and 13.3 m^3/day (long term exposure; average of male and female adults) was used for the future vapor intrusion pathway.

6.2 Trespassers

Pre-adolescent and adolescent body weights were taken from Table 7-3 of the Exposure Factors Handbook (USEPA, 1997b) and represent the average of the mean body weights of boys and girls over the age interval represented.

For pre-adolescent trespasser receptors, the assumed soil exposure duration is 4 hours per day for 104 days, equivalent to 2 days per week (i.e., Saturday and Sunday) for each week of the year, for the full pre-adolescence period between ages 7 and 12 (RME scenario) and 4 hours per day for 52 days, or 1 day per week for each week of the year, for the CT scenario over the same period. The skin surface area exposed to surface soil is for the head, arms, hands, and lower legs, derived from the Exposure Factors Handbook (EFH), Tables 6-5, 6-6, 6-7, and 6-8 as follows:

- Head (12.0% of total body area – average of male and female ages 9-10 years)
- Arms (12.3% of total body area – average of male and female ages 9-10 years)

[4]As noted previously, the on-Property supply well is not used for potable purposes.

- Hands (5.3% of total body area – average of male and female ages 9-10 years)
- Lower legs (12.8% - not available for children, use Table 6-5 for adults)
- Total = 42.4%
- Average total body surface area for 7-12 year old male and female (50th percentile) = 1.134 m^2
- Total skin area exposed = 42.4%*1.134 m^2 = 0.480 m^2 ~ 4,800 cm^2

For adolescent trespasser receptors, the soil exposure duration is assumed to be higher than that of pre-adolescents at 4 hours per day for 156 days (RME scenario) or 78 days (CT scenario) as requested by USEPA in a letter dated June 7, 2005, for the full adolescent period between ages 13 to 18. The skin surface area exposed is for the head, arms, hands, and lower legs, derived from the Exposure Factors Handbook (EFH), Tables 6-5, 6-6, 6-7, and 6-8 as follows:

- Head (8.8% of total body area – average of ages 13-14 and 17-18 years)
- Arms (14.8% of total body area – average of ages 13-14 and 17-18 years)
- Hands (5.1% of total body area – average of ages 13-14 and 17-18 years)
- Lower legs (12.8% - not available for children, use Table 6-5 for adults)
- Total = 41.5%
- Average total body surface area for 13-18 year old male and female (50th percentile) = 1.617 m^2
- Total skin area exposed = 41.5%*1.617 m^2 = 0.671 m^2 ~ 6,700 cm^2

The soil to skin adherence factor for adolescent trespassers is assumed to be 0.07 mg/cm^2 (USEPA, 2004) for surface soils and 0.2 mg/cm^2 for pre-adolescent trespassers. The sediment to skin adherence factor for both adolescents and pre-adolescents is assumed to be 0.2 mg/cm^2, and the following intake rates are assumed:

- Soil ingestion of 100 mg/day;
- Inhalation rate of 1.5 m^3/hr; and,
- Incidental surface water ingestion of 0.05 L/day.

6.3 Residents

Adult residents are assumed to spend 350 days of the year, for 30 years, at the residence for the RME scenario and 350 days per year for 9 years in the CT scenario.

Child residents are assumed to spend 350 days of the year, for 6 years, at the residence.

A skin surface area of 18,000 cm^2 for adult contact with water (USEPA, 2004) was assumed for exposure while showering 0.58 hours/day (RME scenario; 0.25 hours/day CT scenario), with the following intake rates:

- Water ingestion of 2 L/day(RME scenario; 1.41 L/day CT scenario); and,
- Inhalation rate of 1.0 m^3/hr (for an adult with light activity).

A skin surface area of 6,600 cm^2 for child contact with water (USEPA, 2004) for exposure while bathing 1.0 hour/day (RME scenario; 0.33 hours/day CT scenario) was assumed with the following intake rates:

- Water ingestion of 1.23 L/day; and,
- Inhalation rates of 1.0 m^3/hr (for children with light activity).

6.4 Construction Workers

Construction workers are assumed to be adults, and to be exposed at the rate of 250 days/year for the RME scenario (219 days/year for the CT scenario) for the length of the construction project.

The skin surface area exposed is assumed to be 3,300 cm^2 for exposure to soils (USEPA, 2004). The assumed soil adherence factor is 0.20 (USEPA, 2004) along with the following intake rates:

- Soil ingestion of 330 mg/day; and,
- Inhalation rate of 1.5 m^3/hr (inhalation rates for adult men moderate activity for adult workers).

6.5 Showering/Bathing Exposure

In order to evaluate potential inhalation risks from groundwater, a shower model was used to derive vapor phase concentrations for volatile organic compounds (VOCs) that are COPCs for the Site. The risk assessment evaluates inhalation exposure due to showering (adult resident) or bathing (child resident). The equations used to derive the vapor phase concentrations are as follows (Andelman, 1990; Schaum *et al*., 1994):

$$C_{(aMAX)} = C_{(w)} * f * F_{(w)} * t1 / V_{(a)} \quad (1)$$

$$C_{(a)} = [(C_{(aMAX)}/2) * t1 + C_{(aMAX)} * t2] / (t1+t2) \quad (2)$$

Where:

$C_{(a)}$	=	concentration of volatile chemical contaminant in air (mg/m^3);
$C_{(aMAX)}$	=	maximum air concentration in bathroom (mg/m^3);
$C_{(w)}$	=	water concentration (mg/l);
f	=	0.5 fraction volatilized (unitless; calculated, Schaum et al., 1994, Table B-3);
$F_{(w)}$	=	477 l/hr water flow rate (USEPA 1997b, Table 17-17; restrictor shower head);
$V_{(a)}$	=	13.6 m^3 bathroom volume (USEPA 1997b Vol 1);
t1	=	0.58 hr time spent in shower/bath (hr) (USEPA, 2004); and,
t2	=	0.08 hr time spent in bathroom following shower/bath (USEPA 1997b, Table 15-23; mean).

This shower model was used to provide a conservative estimate of vapor phase concentrations in both the shower and bathing exposure scenarios. Values used for each of the above parameters are summarized in Table B2 together with the calculated vapor phase concentrations. As noted by Schaum, et al. (1994) "the assumptions of constant volatilization and no ventilation tend to make this model very conservative, that is, it is likely to overestimate actual levels." Additional assumptions made by this model include the following:

- The concentration of the chemical contaminant is assumed to be zero at the start of the shower;
- The exchange between air in the shower stall and bathroom air is so rapid that the combined volume of the two compartments can be treated as a single chamber with a single concentration of volatilized chemical; and,
- The model does not account for the exchange rate that occurs when an exhaust fan is turned on.

6.6 Vapor Intrusion Exposure

Vapor Intrusion refers to the migration of volatile chemicals from the subsurface into overlying buildings. Volatile chemicals in contaminated groundwater can emit vapors that may migrate through subsurface soils and into indoor air spaces of overlying buildings. An attenuation factor, α, is a proportionality constant relating indoor air concentrations to soil or groundwater concentrations. The attenuation factors used for calculating indoor vapor concentrations were calculated using the latest version of the Johnson-Ettinger Model (GW-SCREEN-Feb04) and the following site-specific parameters:

- Depth below grade to bottom of enclosed space floor = 200 cm
- Depth below grade to water table = 400 cm
- Soil type directly above water table = sand
- Average soil/groundwater temperature = 10°C
- Soil dry bulk density = 1.66 g/cm^3
- Soil porosity = 0.375
- Soil water-filled porosity = 0.054

6.7 Soil Dust Exposure

When calculating the intake of contaminants via inhalation of soils during on-site construction, two factors are necessary: a volatilization factor for volatile compounds to define the relationship between the concentration of the contaminant in soil and the flux of the volatilized contaminant to air (Table VF); and a particulate emission factor (PEF). The default PEF value of 1.36 x 10^9 m^3/kg was used for trespassers and on-site workers. The PEF for construction workers and VF values were calculated according to equations provided in *Supplemental Guidance for Developing Soil Screening Levels for Superfund* (USEPA, 2002c) and using the following Site-specific values:

- 80% of the Site is vegetated;
- 2.24 m/s mean annual windspeed, obtained from a weather station located less than 5 miles from the Site;
- Values for climate zone VIII;
- 15 acre Site;

- 122 days with at least 0.01 inches of precipitation (1/3 of the year, according to the Office of the New Jersey State Climatologist); and,

- Construction period: 250 days at 10 hours per day.

7.0 TOXICOLOGICAL ASSESSMENT

7.1 Introduction

Relevant toxicological literature detailing the adverse effects in humans or laboratory animals resulting from chemical exposures under various dosing regimens is used to quantitatively evaluate the potential health risks associated with environmental exposures to chemicals. USEPA has conducted such assessments on many frequently occurring environmental chemicals and has developed standardized toxicity values for use in risk assessment for these compounds. USEPA calculates reference doses (RfDs) and reference concentrations (RfCs) for assessment of non-carcinogenic effects, and cancer slope factors (CSFs) and unit risks for effects from known, suspected, or possible human carcinogens. These toxicity values are provided in USEPA's on-line database, the Integrated Risk Information System (IRIS), USEPA's Provisional Peer Reviewed Toxicity Values (PPRTV), and may be utilized from other sources including California EPA, the Agency for Toxic Substances and Disease Registry (ATSDR) and Health Effects Assessment Summary Table(s) (HEAST), upon the recommendation of the Superfund Technical Support Center (STSC) at the National Center for Environmental Assessment (NCEA) (USEPA, 2003). STSC- NCEA was contacted by USEPA for the appropriate toxicity values for use in Tables 5 & 6 for the contaminants that were not available through IRIS or PPRTV. The toxicity values in Tables 5 & 6 were taken from IRIS, and where unavailable in IRIS from the PPRTV. Where values were unavailable in either IRIS or PPRTV, the recommendations of STSC-NCEA were adopted.

RfDs (oral and dermal) and RfCs (inhalation) are USEPA's estimates of the daily exposures to the human population that are likely to pose no appreciable risk of negative non-cancer health effects. These toxicity values include uncertainty and modifying factors to address issues such as effects on sensitive subgroups of the population, and interspecies differences (toxicity values are generally based on studies performed on laboratory animals). Derivation of a typical RfD generally includes a modifying factor of at least 100, which represents two 10-fold uncertainty factors to address interspecies variation and the sensitivity of subgroups. Because of the substantial safety factors that are incorporated into RfDs, an exposure in excess of the RfD does not necessarily indicate that adverse health effects will occur.

To evaluate the carcinogenic potential of a chemical, USEPA uses a two-part analysis; the first step, called a Weight-of-Evidence assessment, is to determine the likelihood that the substance is a human carcinogen.

The USEPA 2005 Cancer Guidelines (USEPA, 2005a) provide an update to the original 1986 Cancer Guidelines (USEPA, 1986) and subsequent updates. In summary, the 2005 Cancer Guidelines emphasize the value of understanding the biological changes that the chemical can cause and how these changes might lead to the development of cancer. They also discuss methods to evaluate and use such information, including information about an agent's postulated *mode of action*, or the series of steps and processes that lead to cancer formation. Mode-of-action data, when available and of sufficient quality, may be useful in drawing conclusions about the potency of an agent, its potential effects at low doses, whether findings in animals are relevant to humans, and which populations or life stages may be particularly susceptible. In the absence of mode-of-action information, default options are available to allow the risk assessment to proceed.

The 2005 Guidelines recommend that an agent's human carcinogenic potential be described in a *weight-of-evidence narrative* rather than the previously identified letter categories (A = known; B= probable, C = possible, D = not classifiable, and E = non-human carcinogen). The narrative summarizes the full range of available evidence and describes any conditions associated with conclusions about an agent's hazard potential. For example, the narrative may explain that an agent appears to be carcinogenic by some routes of exposure but not others (e.g., by inhalation but not ingestion). Similarly, a hazard may be attributed to exposures during sensitive life stages of development but not at other times. The narrative also summarizes uncertainties and key default options that have been invoked. The following are the five recommended standard hazard descriptors:

- Carcinogenic to humans
- Likely to be carcinogenic to humans
- Suggestive evidence of carcinogenic potential
- Inadequate information to assess carcinogenic potential
- Not likely to be carcinogenic to humans

USEPA is evaluating the carcinogenic weight of evidence of chemical through the IRIS chemical process. Through the IRIS process, chemicals are nominated, and all chemicals are evaluated

consistent with the 2005 Guidelines and a narrative developed describing the Weight of Evidence. The IRIS chemical file is then reviewed through internal Agency consensus review and external peer-review. The requirements for in-depth analysis of "mode-of-action data" and the review process does not allow the equating of a chemical evaluated under the old system with the letter classification with the 2005 Classification narrative, rather a full analysis of the data is required.

The 2005 Cancer Guidelines also include Supplemental Guidance on the evaluation of early lifetime exposures. For example, where data is available on mutagenic mode of action for carcinogenesis, the Supplemental Guidance provides procedures for evaluating chemicals that are carcinogens and either using the data in the development of the potency factors or using age dependent adjustment factors. The Supplemental Guidance also provides for the evaluation of data on early lifetime exposures where children may be more susceptible.

In this risk assessment, all detected compounds which had been classified under previously identified letter category A = Human Carcinogen (sufficient evidence of carcinogenicity in humans), were identified as a COPC.

The second step of the USEPA two-step process for assessing potential carcinogenic risks is to quantify the relationship between the dose of a compound and the response it invokes. This leads to the calculation of a CSF for those compounds that are or may be human carcinogens. A CSF represents the 95 percent upper confidence limit on the linear component of the slope of the dose-response curve in the low-dose (low-risk) portion of the curve.

7.2 Toxicity Values for Chemicals Evaluated in the Risk Assessment

Tables 5 and 6 present non-cancer and cancer toxicity data, respectively, in RAGS Part D standard table format for chemicals retained as COPCs, together with the source of the toxicity data cited. Where both chronic and subchronic non-cancer toxicity data is available, the chronic value was used. In a number of cases, toxicity data is not available for certain chemicals/routes. For these situations, risks will be assessed qualitatively in section 9.0. Provisional toxicity data for TCE (USEPA, 2001) were used in this BRA. The differences between using this value and the earlier slope factor are discussed in the uncertainty section.

8.0 HUMAN HEALTH RISK CHARACTERIZATION

8.1 Introduction

In accordance with USEPA guidance, potential excess lifetime cancer risks are estimated by multiplying the Chronic Daily Intake (CDI) value by the chemical-specific CSF. Estimated or potential cancer risks associated with different exposure routes are summed for a given receptor. USEPA's acceptable risk range is a cumulative excess lifetime cancer risk of between $1x10^{-6}$ and $1x10^{-4}$ (one in a million to one in ten thousand). An excess lifetime cancer risk from Site-related chemicals of greater than $1x10^{-6}$ is regarded as a point of departure requiring consideration of possible remedial options in a Feasibility Study.

Potential non-cancer risks are estimated by calculating hazard quotients (HQ) for each chemical. A hazard quotient is the CDI value divided by the chemical-specific RfD. Potential non-cancer hazards from Site-related chemicals of less than 1.0 are considered acceptable. When receptors may be exposed to multiple COPCs, the chemical-specific HQs are added together to yield a hazard index (HI). In some cases, each chemical-specific hazard quotient may not exceed unity (1.0) but the overall HI may do so. When this occurs, the chemicals are grouped together by the effects on specific target organs or organ systems to more appropriately assess potential non-cancer hazards (e.g. potential liver damage risks are considered separately from risks to the central nervous system).

8.2 Quantitative Risk Estimation Methodology

8.2.1 Cancer Risk Estimation

Cancer risks are quantified by the product of the CDI (see Section 6) and the CSF (see Section 7) for a given receptor-chemical-pathway combination as shown in Equation 8-1.

$$CancerRisk = CDI \times CSF \quad (8\text{-}1)$$

where,

CDI = Chronic Daily Intake, mg/kg/day
CSF = Cancer Slope Factor, $(mg/kg/day)^{-1}$

8.2.2 Non-Cancer Risk Estimation

Non cancer risks are quantified by the quotient of the CDI (see Section 6) and the RfD (see Section 7) for a given receptor-chemical-pathway combination as shown in Equation 8-2.

$$HQ = \frac{CDI}{RfD} \tag{8-2}$$

where,

HQ	=	Hazard Quotient, unitless
CDI	=	Chronic Daily Intake, mg/kg/day
RfD	=	Reference Dose, mg/kg/day

For inhalation pathways, reference concentrations (RfCs) reported by USEPA in units of mg/m^3 are converted to RfDs by multiplying by an inhalation rate of 20 m^3/day and dividing by a body weight of 70 kg as shown in Equation 8-3.

$$RfD_{inhalation} = \frac{RfC \times IR_{inhalation}}{BW} \tag{8-3}$$

where,

$RfD_{inhalation}$	=	Inhalation Reference Dose, mg/kg/day
RfC	=	Reference Concentration, mg/m^3
$IR_{inhalation}$	=	Inhalation Rate (20 m^3/day)
BW	=	Body Weight (70 kg)

To further assess the potential non cancer hazards to receptors, the hazard indices are calculated by summing all hazard quotients for a given pathway, receptor, or effect.

8.3 Quantitative Risk Estimates

The sum of cancer risks and hazard indices for both RME and CT scenarios are summarized in Table 9.8.

8.3.1 Industrial/Commercial Workers

Tables 7.1 and 7.6 present the potential current and future risks to industrial/commercial workers including both excess lifetime cancer risks and non-cancer risks.

Current Estimated Risks

Under current exposure conditions (Table 7.1), there were no chemicals with a potential RME cancer risk exceeding a cancer risk level of 10^{-6}. The sum of all estimated RME cancer risks for the current industrial/commercial worker is 1.5×10^{-6}, which is within USEPA's acceptable risk range, and this risk is almost exclusively due to estimated arsenic (approximately 82%) and chromium inhalation risks. Arsenic levels in soil are considered to be representative of background levels; for example, the maximum arsenic concentration in soil did not exceed the NJDEP SCC, which is based on natural background considerations. The sum of all estimated CT cancer risks is 3.7×10^{-7}.

The total estimated hazard index is 0.1 under RME conditions, well below USEPA's threshold value of 1.0, and is driven primarily by chromium (79.4%) and arsenic (5.5%).

Future Estimated Risks

Under hypothetical future exposure conditions (Table 7.6), estimated risks for industrial/commercial workers from exposure to surface soil are the same as for the current scenario.

For hypothetical future exposure to groundwater via ingestion, dermal contact, and vapor intrusion, estimated potential risks for excess lifetime cancer exceed USEPA's acceptable risk range. For the ingestion exposure route, the sum of estimated cancer risks is 5.2×10^{-3} under RME conditions, driven primarily by PCE (68%) and TCE (31%). For the dermal exposure route, the sum of estimated cancer risks is 1.1×10^{-4} under RME conditions, driven primarily by PCE (85%) and TCE (14%). For vapor intrusion, the sum of estimated cancer risks is 6.4×10^{-2} under RME conditions, driven primarily by PCE (68.4%) and TCE (31.5%). The total medium exposure route is 6.9×10^{-2} under RME conditions. The total estimated cancer risk under CT conditions is 2.5×10^{-3}.

The total estimated hazard index for groundwater is 556 under RME conditions, driven both by risks associated by vapor intrusion and by ingestion. The hazard index for vapor intrusion is driven mainly by TCE (92%), followed by PCE (4%). The total estimated hazard index under CT conditions is 57.26.

8.3.2 Trespassers

Tables 7.2 and 7.3 (also 9.2 and 9.3) present the estimated potential current and future risks for pre-adolescent and adolescent trespassers, respectively, including both excess lifetime cancer risks and non-cancer risks.

Under current and future exposure conditions, the only chemical with a potential RME cancer risk exceeding a cancer risk level of 10^{-6} is arsenic for the trespasser, with an estimated risk to a pre-adolescent trespasser of $1.8x10^{-6}$ ($1.9x10^{-6}$ to an adolescent trespasser) for sediment exposure and $1.1x10^{-6}$ for surface water exposure ($1.2x10^{-6}$ to an adolescent trespasser). The sum of all estimated RME cancer risks for the pre-adolescent trespasser is 3.2×10^{-6} (1.6X10-6 CT), and that for the adolescent trespasser is 3.3×10^{-6} ($1.6X10^{-6}$ CT), both of which are driven by arsenic, which, as discussed previously, is representative of background.

The total estimated hazard index is 0.18 for the pre-adolescent trespasser (0.09 CT) and 0.16 for the adolescent trespasser (0.08 CT) under RME conditions, both of which are well below USEPA's threshold value of 1.0.

8.3.3 Residents

Tables 7.4 and 7.5 present the hypothetical future potential risks to residents at the Site including both excess lifetime cancer risks and non-cancer risks to adults and children.

Future Estimated Risks

Under hypothetical future exposure conditions, the sum of all estimated RME cancer risks for the adult resident is $2.6x10^{-2}$. Estimated groundwater cancer risk is due to inhalation (57.2%), ingestion (37.5%), dermal contact (5.2%). PCE and TCE contribute the majority of the risk (79% and 29%, respectively). The total estimated cancer risk under CT conditions is $1.7x10^{-3}$.

The sum of all estimated RME cancer risks for the child resident is $4.6x10^{-2}$. Estimated groundwater cancer risk is due to inhalation (83%), ingestion (15%), dermal contact (2%). PCE and TCE contribute the majority of the risk (57.4% and 24.8%, respectively). The total estimated cancer risk under CT conditions is $1.6x10^{-2}$.

For adult resident receptors, the total estimated hazard index is 183 under RME conditions (113 under CT conditions) and, is driven primarily by the ingestion (37.2%) and inhalation (48%) of TCE in groundwater. For the child resident receptors, the total estimated hazard index is 1243 under RME conditions (385 under CT conditions) and, like the cancer risks, is driven primarily by the inhalation (71.8%) and ingestion (15.9%) of TCE in groundwater.

8.3.4 Construction Workers

Future Estimated Risks

Under the hypothetical future exposure scenario, one COPC (chromium) has a potential RME cancer risk exceeding the lower end (10^{-6}) of USEPA's acceptable risk range (see Table 7.7). The sum of all estimated cancer risks is $6.7x10^{-5}$. The estimated cancer risk is dominantly due to the inhalation risk of chromium in surface and subsurface soil (99.3 % of the sum of all estimated cancer risks). The total estimated cancer risk under CT conditions is $1.8x10^{-7}$. It should be noted that these estimated risks were calculated making the assumption that all measured chromium was present as hexavalent chromium, which is the most conservative assumption. The more prevalent form of chromium, trivalent chromium, is not carcinogenic via inhalation. During additional investigation pursuant to the Removal Action, hexavalent chromium was analyzed in three samples and was found to range between non-detect and a maximum of 11.1% of the total chromium in each sample.

The overall estimated hazard index across all pathways and chemicals is 50.1 under RME conditions, which is above USEPA's acceptable potential risk threshold. Like the cancer risk, this estimated hazard risk is almost exclusively due to non-cancer risk from the inhalation of (assumed hexavalent) chromium (96 % of total estimated hazard risk). The total estimated hazard index under CT conditions is 0.31.

It should also be noted that the 95% UCL used for calculating these estimated risks (213.65 mg/kg) was dominated by a single elevated chromium detection of 912 mg/kg (SB25-06) and the soil in the area of this sample is being removed pursuant to the Removal Order.

8.4 Qualitative Effect of Soil Removal Action and Recent Groundwater Data

Soil Source Removal

Substantial source mass in the Former Waste Storage Tank Area has been effectively removed and will no longer contribute as a source to groundwater contamination in the eastern plume. In addition, the soil and groundwater around and including the most contaminated monitoring well (MW-2A) was removed. The concentrations measured at MW-2A contribute significantly to the elevated risks associated with groundwater and related vapor intrusion risks. Current and future risks associated with groundwater and vapor intrusion are therefore lower than the estimates presented in this risk assessment.

Colored Soils

Elevated concentrations of lead, arsenic, chromium and pesticides were identified in the un-naturally colored surface soils. These soils are being removed, which will eliminate the associated risk. As noted above, the risks calculated in this risk assessment for exposure to surface soils were dominated by chromium in an area that is subject to removal, and so current and future risks associated with surface soil will be lower than the estimates presented in this risk assessment.

Recent Groundwater Data

Results from more recent groundwater sampling conducted in wells within the eastern plume show lower concentrations in downgradient wells than was observed in the two full rounds of groundwater sampling conducted during the remedial investigation, which formed the basis for the quantitative risk estimates presented in this assessment. Current and future risks associated with groundwater and vapor intrusion are therefore lower than the estimates presented in this risk assessment.

9.0 UNCERTAINTY ASSESSMENT

A number of assumptions need to be made in any assessment of risk. These assumptions lead to uncertainties in the results of the assessment. Some uncertainties may result in an underestimation of potential risk, while others contribute to an overestimation of potential risk. There are five general categories of uncertainties that are introduced in the risk assessment process:

- Environmental sampling and laboratory measurement uncertainties;
- Mathematical fate and transport modeling uncertainties;
- Receptor exposure assessment uncertainties;
- Toxicological assessment uncertainties; and,
- Risk characterization uncertainties.

9.1 Environmental Sampling and Laboratory Measurement Uncertainties

Environmental sampling uncertainties are introduced by the field sampling program. The locations of samples collected as well as the sampling methodology can introduce errors or uncertainties in the estimation of exposure point concentrations. If the sampling program targets areas of high concentration the overall exposure of the population at the Site can be overestimated, while ignoring these areas will likely underestimate the exposure. For example, the 95% UCL exposure point concentration used for chromium in surface soils (213.65 mg/kg) is dominated by a single elevated concentration in one boring (912 mg/kg in SB25-06), while the next highest detection was 66.6 mg/kg (SB22-06). The arithmetic mean of the chromium measurements was 30.14 mg/kg while the median is 8.5 mg/kg. This distribution suggests that the value used provides an overestimate of the potential risk from chromium. Furthermore, as noted in Section 4, the data sets used in this assessment comprise all of the data collected during the remedial investigation and do not reflect the effects of subsequent Removal Actions on surface and subsurface soils and additional groundwater data collection. A qualitative discussion of how the results of these activities impact the quantitative estimates of risk and hazard is presented in Section 8.4, concluding that the risks calculated herein represent overestimates compared to the current site conditions.

Laboratory uncertainties include both random and systematic errors which affect the precision and accuracy of the sample results. The RI report included an evaluation of the data quality in

order to reduce the uncertainties involved with laboratory measurement of COPCs in environmental samples.

9.2 Mathematical Fate and Transport Modeling Uncertainties

In order to assess the potential risks associated with inhalation of airborne dust, inhalation of vapors during showering, and vapor intrusion, concentrations of COPCs in these media were estimated using fate and transport models. Parameters used in these models were chosen to be conservative and likely result in an overestimate of risks. Specific assumptions are discussed further below.

The estimation of airborne dust concentrations is dependent on a number of variables including the average wind speed, fraction of land covered by vegetation, assumed particulate emission rates due to construction activities, as well as a number of empirical constants. One of the largest uncertainties in the estimation of airborne dust concentrations is the determination of particulate emission factors (PEFs) for construction activities. While Site-specific parameters were used where available, various USEPA default parameters were used to develop PEFs. For the construction worker, risks were calculated separately for exposures to fugitive dust from vehicular traffic on unpaved roads and for exposures to other construction activities such as dozing and grading.

Concentrations of COPCs volatilized during showering were calculated using the Andelman (1990) model, as modified by Shaum et al. (1994). This shower model was used to provide a conservative estimate of vapor phase concentrations in both shower and bathing exposure scenarios. As noted by Schaum, et al. (1994) “the assumptions of constant volatilization and no ventilation tend to make this model very conservative, that is, it is likely to overestimate actual levels.”

The Johnson and Ettinger Model used to calculate the indoor air concentrations for the future vapor intrusion scenario was developed for use as a screening level model and is based on a number of simplifying assumptions regarding contaminant distribution and occurrence, subsurface characteristics, transport mechanisms and building construction. These simplifications introduce uncertainties into the calculated values. Because the model is designed for use as a screening tool, it uses conservative default parameters and therefore may overestimate the risk. However, a field study (Fitzpatrick and Fitzgerald, 1997) has indicated that

the model can under-predict indoor concentrations for chlorinated species, which are COPCs at the site, in some cases and the model also may not adequately represent partitioning between NAPL and vapor. Some evidence of NAPL was found at the Site, but the affected area has been excavated under the Removal Order.

9.3 Receptor Exposure Assessment Uncertainties

In almost all risk assessments, a variety of assumptions must be made to estimate the potential human exposure to COPCs. The calculations of CDI involve parameters such as ingestion and inhalation rates, which are not necessarily constant values that apply to the entire population exposed to the contaminated area. In order to conservatively estimate potential risks, USEPA recommends conducting the risk assessment using reasonable maximum exposure (95^{th} percentile) variables for most parameters. This approach is used to intentionally provide estimates of the maximum risk that is reasonably expected to occur at the Site. However, combining multiple parameters that are each applicable to the 95^{th} percentile level results in exposure estimates that reflect much higher percentiles (as high as the 99^{th} percentile). Exposures at this level are not reasonably expected to occur. Therefore, it is important to also consider more reasonable exposure variables when assessing risk, such as those represented by the Central Tendency (CT) estimates. The individual uncertainties involved with each exposure pathway are discussed in further detail below. Parameters common to multiple pathways, such as exposure duration and frequency, introduce uncertainty but are standard USEPA values and have a greater level of certainty than some of the pathway-specific parameters.

Ingestion of Groundwater

The groundwater ingestion rate is the parameter that introduces the most uncertainty in the groundwater ingestion pathway. The values used are standard USEPA Region II values and are intended to avoid underestimation of the groundwater ingestion risks. This risk assessment assumed that an adult would consume 1.41 (CT) to 2 L/day (RME) of contaminated groundwater daily for 9 (CT) to 30 (RME) years and that a child would consume 0.67 (CT) to 1.23 (RME) L/day daily for 6 years. Furthermore, as few individuals take the entirety of their fluid intake from their residential tap water, and since purchased beverages (such as carbonated beverages, milk, and juice) are unlikely to contain site groundwater, the assumed intake values will likely lead to over estimation of risk.

Dermal Contact with Groundwater

The dermal contact with groundwater pathway introduces a significant number of uncertainties as discussed in RAGS Part E (USEPA, 2004). The main uncertainties arise from the values used for skin surface area available for contact and the permeability coefficient.

The skin surface area available for contact for adult and child residents assumes that the total body surface area is exposed while bathing and the 50^{th} percentile values were recommended, so the uncertainty associated with the exposed skin surface area is not anticipated to be very significant. The permeability coefficients for many of the compounds are predicted values that are subject to uncertainty. The model used to predict the permeability coefficient may underestimate the values for halogenated compounds and could lead to underestimation of risk for these compounds.

Groundwater Contaminant Exposure through Inhalation

The inhalation of groundwater through household use (i.e.; vapors while showering) introduces two main uncertainties: the modeled values for the air concentration, discussed previously, and the inhalation rate of the receptor. The inhalation rates for both adult and child receptors were based on the short-term exposures for light activity. Inhalation rates for assessment of vapor intrusion risk were based on the average inhalation rates of adult males and females for long-term exposure. Therefore, the uncertainty introduced by the inhalation rates is not anticipated to be significant.

Ingestion of Soil and Sediment

As recommended in RAGS Part E (USEPA, 2004), the risk assessment approach for sediments followed that for soils. The soil/sediment ingestion rate is the parameter that introduces the most uncertainty in the soil and sediment ingestion pathway. The values used are standard USEPA Region II values and are intended to avoid underestimation of the soil ingestion risks. This risk assessment assumed that a child would consume 100 mg/day (CT) to 200 mg/day (RME) of contaminated sediment daily for six years. A number of studies have been conducted on the ingestion of soil by children that suggest lower ingestion rates may be appropriate. Clausing et al. (1987) estimated a mean of 56 mg/day in Dutch children ages 2 to 4. Davis and Mirick (2006) estimated values from 37 to 207 mg/day based on different tracer elements. Stanek and Calabrese (1995) reanalyzed data from several previous studies and concluded that childhood soil ingestion rates were 37 mg/day (50th percentile) to 156 mg/day (90th percentile). USEPA's IEUBK

model, which is intended to be conservative, uses ingestion rates that vary between 85 mg/day and 135 mg/day depending upon the age of the child. The assessment also assumed that adults consume 100 mg/day (RME) of contaminated soil daily for up to 25 years, which apart from the low likelihood that adults would come into contact with soil this often for this long, is inconsistent with the way most adults live their lives. The assessment also assumed that trespassers consume 100 mg/day for 104/156 (pre-adolescent/adolescent) days for 5 years in the RME scenario. It is unlikely that trespassing on this scale would be unnoticed or permitted in the portion of the Site where contaminated soils have been identified. In general, therefore, the soil/sediment ingestion pathways most likely overestimate the potential risk to receptors, especially under the RME scenario. An exception to this may occur in infrequent cases of children who intentionally ingest soil/sediment.

Dermal Contact with Soil and Sediment

The dermal contact with soil pathway introduces a significant number of uncertainties as discussed in RAGS Part E (USEPA, 2004). The main uncertainties arise from the values used for skin surface area available for contact, the adherence factor of soil to skin, and the absorption fraction for chemicals.

The soil-to-skin adherence factors (SAFs) include a number of assumptions that increase the uncertainty in the dermal pathway risk estimates. Variables such as the soil type, soil moisture content, specific activity, and exposure duration can have a significant impact on the soil adherence of soil particles to skin. For example, studies have shown that finer soil particles adhere to a greater extent than larger particles. In addition, wet soils adhere more readily than dry soils. The underlying assumptions regarding soil type, moisture content, and specific activity that were used to develop USEPA's recommended SAFs may either result in over or underestimations of the potential risk to receptors. In general, a mixture of central tendency and RME conditions were used (e.g. the central tendency adherence during a high-contact activity) by USEPA to develop the default values in order to minimize the uncertainty. However, one of the assumptions is a contact time of 24 hours between the soil and the skin, which means that a receptor does not wash his or her hands and body for 24 hours after each and every exposure to the contaminated soil. This is highly unlikely and is therefore likely to significantly overestimate the risks from dermal exposure.

Dermal absorption factors (DAF) are difficult to estimate and USEPA RAGS Part E specifies DAF values for only three of the Site COPCs: phenanthrene, arsenic and endrin aldehyde. Absorption factors are heavily dependent on the fate of chemicals (i.e. their chemical state in the environment) and on soil properties such as temperature, soil type, organic carbon content, and pH. The values used in this risk assessment may over or underestimate the potential dermal absorption of contaminants depending upon the Site-specific soil conditions.

Inhalation of Airborne Dust

The greatest uncertainties in the inhalation of airborne dust pathway are due to the modeled concentrations of COPCs in dust (discussed previously) and the assumed inhalation rate. The inhalation rate of 1.5 m^3/hr was used for all receptors, the value recommended for adults with moderate activity. This may be appropriate for most adult receptors but is an overestimate for children and may possibly be an underestimate for some construction workers.

9.4 Toxicological Assessment Uncertainties

Uncertainty and/or modifying factors are routinely applied to toxicity values to account for interspecies variation, protection of susceptible populations, and other differences between the toxicity study and the target use of the toxicity value. For example, the compounds in this risk assessment with the highest uncertainty factors were thallium and 2,4-dimethylphenol, with uncertainty factors of 3000, a factor of three or more greater than those for other compounds. These uncertainties in the toxicological values can lead to over or underestimation of risk.

In addition, toxicity reference values for inorganic chemicals, such as metal compounds, are often listed for a variety of species. For example, there are multiple toxicity values for chromium depending on its valence state. In this risk assessment, the most conservative values (i.e. lowest for non-cancer reference doses and highest for cancer slope factors, where appropriate) were used when the speciation of the chemical was unknown. As noted in Section 8.3.4, subsequent Site testing has shown that hexavalent chromium as a percentage of the total varies from non-detect to a maximum of 11.1%. The approach used in this assessment therefore likely overestimates the risks.

The provisional cancer slope factor of 4×10^{-1} $(mg/kg\text{-}day)^{-1}$ for TCE was used in this risk assessment, resulting in cancer risks for TCE ranging from 7.6×10^{-3} to 2.2×10^{-2} for different receptors (RME). The previous cancer slope factor of 1.1×10^{-2} $(mg/kg\text{-}day)^{-1}$ is considerably

less conservative and results in cancer risks ranging from 2.1 to 6.0 x 10^{-4}. The risks from both toxicity values, while spanning a range of estimated risks, are greater than 1 x 10^{-6}.

It is also assumed that COPCs affect the body in the same way whether they are ingested or are absorbed through dermal contact. Many laboratory animal toxicity studies include oral administration of compounds only. The ingestion toxicity values are then used for both oral and dermal exposure scenarios, when in, fact, the effect of the COPC may vary depending upon how it is taken into the body. This assumption may lead to an over or underestimation of risk estimates for dermal pathways.

Some COPCs in this assessment do not have USEPA-approved toxicity values for human health risk assessment. As such, quantitative risk estimates could not be performed when toxicity values were not available. This may underestimate the total potential risk. The main pathway affected by a lack of toxicity data was the inhalation pathway.

9.5 Risk Characterization Uncertainties

In the risk characterization for the Site, it was assumed that the potential adverse effects of the various COPCs are independent of one another and that the effects are additive. However, it is possible that the combined effect of the various chemicals may be less than (antagonistic) or greater than (synergistic) the sum of the individual effects. Therefore, by assuming that the risks are additive, the actual potential risks may either be over or underestimated.

In addition, when multiple target organs were listed for a COPC in IRIS, it was assumed that the COPC affects each target organ equally. However, it is more realistic to anticipate that the COPC doses required to cause adverse effects on the various organs would vary. Because toxicity values are intentionally chosen to be conservative, the hazard indices shown in Table 9 for the target organs may overestimate the actual risk posed to some of those organs.

10.0 SCREENING LEVEL ECOLOGICAL RISK ASSESSMENT

10.1 Habitat and Biota

10.1.1 Habitats and Vegetative Community

The Property is dominated by an approximately 10-acre mixed-deciduous and pine forest that contains less than one acre (0.8 acre) of wetland in its northwest corner. This wetland discharges into Pump Branch Creek to the south of the Property. Surface water at the Property is ephemeral. An approximately 4-acre cleared area, partially enclosed by forest, is currently used for commercial purposes in the eastern part of the Property.

The Property lies in a rural setting surrounded by predominantly agricultural parcels and to a lesser extent, light commercial and residential property (Appendix C). A fallow field and a commercial space used for the storage and sale of recreational vehicles lies directly to the south of the Property and a railroad track bounds it to the west. Undisturbed wooded parcels exist to the west of the railroad. The parcel north of the Property is presently undeveloped and includes a wooded corridor immediately adjacent to the Property. Route 73 lies to the east of the Property and light commercial, residential, and agricultural parcels are present on the opposite side of Route 73.

Vegetation at the Property includes two separate assemblages (Table 10-1): upland oak and pine forest, and palustrine forested and emergent wetland complex. The vast majority of the Property is dominated by the following oaks: post (*Quercus stellata*), blackjack (*Q. marilandica*), and bear (*Q. ilcifolia*) which are commingled with pitch pine (*Pinus rigida*).

The herbaceous wetland at the western end of the Property appears to be the result of an impounded culvert that used to convey the intermittent surface water flow under the railroad tracks. The dominant species in the wetland meadow are arrow-leaved tearthumb (*Polygonum sagittatum*), soft rush (*Juncus effusus*), wool grass (*Scirpus cyperinus*), purple loosetrife (*Lythrum salicaria*) and swamp loosestrife (*Decodon verticillatus*). The perimeter of this herbaceous wetland is defined by a narrow buffer of red maple trees. The wetland edge transitions to upland where maples are associated by an understory of sweetbay magnolia (*Magnolia virginiana*) and sweet pepperbush (*Clethra alnifolia*). The wetland appears to be diminishing based on the presence of decaying specimens of perennial herbaceous wetland vegetation, dry soil conditions

in the upper 24 inches, and the lack of inundation or saturation by surface water or groundwater recharge.

10.1.2 Threatened/Endangered Species

USEPA has assessed, in consultation with the United States Fish and Wildlife Service (USFWS), the potential presence of Federal and State threatened or endangered species or their habitat in the vicinity of the Property, pursuant to Section 7 of the Endangered Species Act. Swamp Pink (*Helonias bullata*) was identified as a federally listed threatened plant species that may be located on or adjacent to the Site and therefore a survey was conducted in order to determine if this plant species is present. The survey was conducted on November 7, 2002 by qualified wetland scientists with botanical training and experience with *Helonias bullata*. At the time of the survey the wetland was completely dry both at the surface and in the upper soil horizon and soil testing revealed no evidence of soil moisture in the upper 24 inches. The only potentially suitable habitat for Swamp Pink is the forested areas along the creek corridor located off-Property. However the results of the survey determined that "no evidence of the plant was found during the survey." (Patricia Ann Quigley, Inc., 2002). Furthermore, evidence, such as desiccated mosses, suggests that the hydrologic conditions have changed over the last several years and this area has been drying out and therefore does not provide the constant moisture habitat required by Swamp Pink.

10.1.3 Wildlife Observations

Wildlife observations are detailed in the Table 10-1 and include: unidentified bird feathers from a recent kill; a portion of a turtle carcass, possibly an Eastern box turtle (*Terrapene carolina carolina*) or red-eared slider (*Trachemys scripta elegans*) found on the rail road tracks adjacent to the Property; and a live unidentified snake. The unidentified snake was dark in color and appeared to be less than two centimeters thick and roughly two feet in length. It was observed sunning itself on red maple hummock in the wetland area.

Additional wildlife observations included burrows observed dug into a dike in the wetland area and throughout the wooded portion of the Property. These burrows, measuring roughly 10 inches in diameter, are possibly used by Eastern cottontail rabbit (*Sylvilagus floridanus*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), groundhog (*Marmota monax*), striped skunk (*Mephitis mephitis*), opossum (*Didelphis marsupialis*) and/or small rodents such as mice or voles.

Evidence of Eastern gray squirrel (*Sciurus carolinensis*) or red squirrel (*Tamiasciurus hudsonicus*) was indicated by observations of tree nests and chewed pine cones.

10.2 Nature and Extent of Contamination

The nature and extent of contamination at the Site is presented in Section 2.1.6. Contaminated media that may potentially expose ecological receptors to risk include: surface soil, surface water, and sediment. Ecological receptors can be directly exposed to these contaminated media on the Site. Exposure of higher trophic-level receptors can also occur through food chain exposure (the ingestion of prey that have become contaminated through direct Site-related exposure). Additionally, migration of contamination downstream of the Site into Pump Branch Creek may be possible, leading to potential exposure by aquatic organisms. A conceptual site model for potential ecological exposures at the Site is presented in Figure 14.

10.3 Endpoints

The assessment endpoints selected for the Site include the following:

- Protection of populations of freshwater invertebrates from the toxic effects (on survival, growth and reproduction) of Site-related chemicals present in sediment and surface water;
- Protection of populations of amphibians from the toxic effects (on survival, growth, and reproduction) of Site-related chemicals present in sediment and surface water;
- Protection of populations of terrestrial (soil) invertebrates from the toxic effects (on survival, growth, and reproduction) of Site-related chemicals present in soil;
- Protection of populations of terrestrial vegetation from the toxic effects (on survival, growth, and reproduction) of Site-related chemicals present in soil;
- Protection of populations of herbivorous and carnivorous mammals to ensure that ingestion of Site-related chemicals present in soil and through diet does not have negative impacts on survival, growth, and reproduction; and,
- Protection of populations of herbivorous, insectivorous, and carnivorous birds to ensure that ingestion of Site-related chemicals present in soil and through diet does not have negative impacts on survival, growth, and reproduction.

Fish and piscivorous birds were not assessed as endpoints for this Site because the size and ephemeral nature of Pump Branch Creek in the vicinity of the Site does not support fish.

Measurement endpoints are chosen to link the existing Site conditions to the goals established by the assessment endpoints. The measurement endpoints corresponding to the assessment endpoints used in this SLERA are:

- For aquatic invertebrates: comparison of surface water and sediment concentrations with aquatic invertebrate-based surface water and sediment screening (benchmark) values.
- For the frog: comparison of surface water concentrations with amphibian-based surface water[5] screening values.
- For soil invertebrates and terrestrial vegetation: comparison of soil concentrations with terrestrial invertebrate- and plant- based screening (benchmark) values.
- For mammals and birds: comparison of estimated dietary daily doses of contaminants of concern with dose-based ecotoxicity values that are associated with no observed adverse effect levels (NOAELs) and lowest observed adverse effect levels (LOAELs).

Assessment and measurement endpoints are summarized in Table 10-2.

10.4 Selection of Contaminants of Potential Ecological Concern

The selection of chemicals of potential ecological concern (COPECs) serves to identify contaminants that may contribute to Site-related ecological risk. The selection process used was based on the methodology presented in ERAGS (USEPA, 1997a) and the guidance provided in USEPA's *Ecological Assessment of Superfund Sites: An Overview*, ECO Update Intermittent Bulletin, Volume 1, Number 2, December 1991 (USEPA 1991b). Selection of COPECs was specific to each medium evaluated in this SLERA (i.e., sediment, surface water, and soil) and involved essentially three steps:

- Comparison of maximum detected chemical concentrations to media-specific screening values that are established to protect biota. Chemicals for which screening values have not been established are, by default, retained for further consideration as COPECs. Chemicals for which the maximum detected concentration exceeded any of the screening values were retained as COPECs.
- The detected chemicals' physical and chemical properties, specifically in terms of each chemical's bioaccumulation potential, were reviewed. Detected chemicals that possess the ability to bioaccumulate were retained as COPECs, irrespective of concentration.

[5] The contribution to the ecological risks to the frog from sediment contamination will not be determined in this SLERA due to the lack of established amphibian ecotoxicity values for sediment exposures.

The investigation at the Site yielded a larger soil data set than that for surface water and sediment (49 soil sample locations as opposed to 8 sediment and 4 surface water locations). Because Pump Branch Creek is ephemeral at the Site, sediment samples were included with the soil data as part of the terrestrial assessment, as well as being evaluated separately as sediment media.

10.4.1 Selection of Screening Values

Surface Water

USEPA Region III Freshwater Benchmarks, NJDEP Surface Water Quality Criteria, and criterion continuous concentrations from the National Recommended Water Quality Criteria (USEPA 2006) were used as screening criteria to evaluate surface water concentrations of chemicals potentially impacting ecological receptors at the Site. The criteria were developed to be protective of a wide range[6] of receptors exposed to the toxic effects associated with individual compounds and do not address the additive toxicity resulting from exposure to multiple chemicals.

The most conservative (lowest) values available from each of the above sources for freshwater ecosystems were used for screening purposes. Screening values for several of the metals (chromium, copper, nickel, and zinc) are hardness-dependent and were calculated using the lowest (most conservative) measured surface water hardness value.

Table 10-3 provides the results of the screening of surface water concentrations. Chemicals with maximum detected values below the water quality screening values were not evaluated further as COPECs in surface water. Seven metals were retained as COPECs for surface water: aluminum, arsenic, barium, copper, iron, lead, and selenium.

Sediment

A number of sediment guidelines were used to screen sediment COPECs:

- Ontario's Ministry of the Environment (MOE) sediment quality guidelines, for the protection of sediment-dwelling organisms;
- USEPA Region III Biological Technical Assistance Group (BTAG) values - Ecological Risk Assessment Freshwater Sediment Screening Benchmarks;
- USEPA Region IV Sediment Ecological Screening Values;

[6] In some cases receptors considered in developing these criteria may not be present at the Site.

- USEPA Region V Resource Conservation and Recovery Act (RCRA) Corrective Action Ecological Screening Levels;
- Ingersoll et al., 2000. Prediction of sediment toxicity using consensus-based freshwater sediment quality guidelines, EPA 905/R-00/007; and,
- Great Lakes Assessment and Remediation of Contaminated Sediments (ARCS) Program freshwater sediment quality assessment values

Sediment data was screened against the Ontario sediment screening values, where available, and against the most conservative of the remaining guideless (lowest) values available for each of the above sources. It should be noted that for organic compounds, the screening criteria are based on an assumed total organic carbon of 1 percent. Site data indicate levels between 1% and 28% and so the screening criteria are conservative.

Table 10-4 provides the results of the screening of sediment concentrations. If the maximum detected value in sediment exceeded the Ontario screening values or the most conservative of the remaining guidelines, if there were no benchmark values, or if the chemical was identified as potentially bioaccumulative, it was retained as a COPEC. Twenty-four chemicals were retained for sediment; eleven of which were included because there were no available screening values, three of which were included because they are potentially bioacumulative. The following 10 compounds exceed one or more of the screening values used:

4,4'-DDT	4,4'-DDE	Mercury
2-Methylnaphthalene	Endrin aldehyde	Arsenic
Acenaphthylene	Lead	Copper
Cyanide		

Soil

The following sources were used to compile a list of ecological toxicity screening values for contaminants in soil:

- USEPA Ecological Soil Screening Levels (Eco-SSL);
- Efroymson, Will and Suter, Toxicological Benchmarks for Contaminants of Potential Concern for Effects on Soil and Litter Invertebrates and Heterotrophic Process: 1997 Revision prepared for the U.S. Department of Energy;
- Efroymson, Will, Suter and Wooten, Toxicological Benchmarks for Contaminants of Potential Concern for Effects on Terrestrial Plants: 1997 Revision prepared for the U.S. Department of Energy; and,

- USEPA Region V Ecological Screening Levels.

The benchmark values found in these sources are listed in Table 10-5 and detected compounds were screened against the most conservative of these values. As hydrologic conditions at the site render the creek ephemeral, sediment data were incorporated into the terrestrial soil assessment. Chemicals with maximum detected values below the screening criteria were not retained as COPECs.

Thirty-three compounds were retained for surface soils; six of which were included because there were no available screening values. Nine compounds were retained on the basis of being potentially bioaccumulative: benzo(a)pyrene, hexachlorobenzene, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, beta-BHC, dieldrin, gamma-BHC (lindane), and gamma-chlordane. The following twenty-one compounds exceeded one or more of the screening values used.

2-Chloronaphthalene	beta-BHC	Beryllium	Mercury
Benzo(b)Fluoranthene	Dieldrin	Cadmium	Selenium
bis(2-Ethylhexyl)Phthalate	Endrin	Chromium	Vanadium
Di-n-butylphthalate	Aluminum	Cobalt	Zinc
4,4'-DDT	Antimony	Copper	
	Barium	Lead	

Bioaccumulation Potential

The potential for a detected chemical to bioaccumulate within organisms and biomagnify through the food chain was examined in order to assist in the selection of COPECs. The potential for bioaccumulation and/or biomagnification can be assessed based on the chemicals' physical and chemical properties and its tendency to occur in biota at higher concentrations than in the surrounding environment. Two separate USEPA programs, the Great Lakes Initiative (GLI) and the Persistent Bioaccumulative and Toxic (PBT) chemicals program, have developed lists of compounds that have significant bioaccumulation potential. The GLI identified twenty-two bioaccumulative chemicals of concern (BCCs), and the PBT program selected twelve priority PBT pollutants. If a compound detected at the site was on either of these lists, it was identified as being potentially bioaccumulative and included as a COPEC. As noted above, nine contaminants in surface soil were retained as COPECs solely on the basis of bioaccumulative potential: benzo(a)pyrene, hexachlorobenzene, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, beta-BHC, dieldrin, gamma-BHC (lindane), and gamma-chlordane.

10.5 Selection of Receptor Species

Since it is not feasible to evaluate every species which may be impacted, indicator species are selected to focus the SLERA and allow for screening level assessments of Site risk. Receptor selection was guided by the results of the Site habitat characterization, and resident species information, and was designed to address various trophic levels (to assess food chain impact and potential concern for bioaccumulation).

Species chosen as receptors should be as representative as possible of those which have been observed (or are expected to occur) with some frequency on the Site. It is also important that there is adequate information available for the selected receptor species in order to conduct exposure and toxicity analyses. In many cases, it was necessary to select surrogate species that may not be found on Site, but could reflect specific trophic levels expected to exist at the Site. Receptor species selected for consideration in this SLERA are tabulated below:

Contaminated Media	Receptors	Exposures
Surface water and sediment of the wetland	Amphibian (Green Frog)	Surface water exposure
	Aquatic invertebrates	Surface water and sediment exposures
Soil	Terrestrial vegetation	Soil exposures
	Terrestrial invertebrates	Soil exposures
	Herbivorous small mammal (Meadow Vole)	Ingestion of food items and incidental ingestion of soil
	Omnivorous bird (American Robin)	Ingestion of food items and incidental ingestion of soil
	Carnivorous mammal (Red Fox)	Ingestion of food items and incidental ingestion of soil
	Carnivorous bird (Red-tailed Hawk)	Ingestion of food items and incidental ingestion of soil

The dermal exposure pathway was considered to have a lesser impact than the ingestion exposure route on the total exposure of receptors. Considering this and the lack of appropriate wildlife uptake rate information for the dermal exposure route, dermal exposure was not directly factored into the exposure dose estimation of this SLERA.

The species selected to represent the herbivorous small mammal (Meadow Vole), the omnivorous bird (American Robin), carnivorous mammal (Red Fox) and carnivorous bird (Red-tailed Hawk)

were chosen because they, or species with similar food habits and exposure scenarios, are likely to occur on the Site. Additionally, there is information readily available for these four species to conduct the food chain dose estimation.

11.0 SCREENING LEVEL ECOLOGICAL EXPOSURE ASSESSMENT

The exposure assessment step of the SLERA characterizes the total exposure each receptor may potentially have to the COPECs.

11.1 Receptor Exposure

Each of the receptors selected for this SLERA has the potential to be exposed directly to contaminants either in Site surface soil or in surface water and sediment associated with the wetland and/or Pump Branch Creek. Terrestrial plants and invertebrates will also have potential exposure to soil throughout their life spans. Aquatic invertebrates and frog species could potentially be exposed to surface water and sediments throughout their life spans. For purposes of this SLERA, and consistent with ERAGS, conservative exposure point concentrations for these receptors are the maximum contaminant concentrations in the soil, surface water and sediment. Due to the lack of established amphibian ecotoxicity values for exposure to chemicals in sediment, it is not currently practical to evaluate sediment exposure to the frog receptors. Thus, only the surface water pathway was evaluated for the amphibian receptor.

The exposure of mammals (Meadow Vole and Red Fox) and birds (American Robin and Red-tailed hawk) to contaminants in soil could occur through direct contact with soil and through their diet. For the purposes of this SLERA, and consistent with ERAGS, the exposure point concentrations are estimated through food chain exposure dose estimation and are based on the maximum detected concentration in each medium.

11.2 Food Chain Exposure Dose Estimation

This subsection discusses the methods by which chemical exposures are estimated for the Meadow Vole, American Robin, Red Fox, and Red-tailed Hawk. The models used to estimate exposure doses, in milligrams (mg) of chemical intake per kilogram (kg) of body weight per day (mg/kg/day), are presented. Table D-1 of Appendix D summarizes the species-specific parameters used in this SLERA. The estimated exposure doses as calculated using the equations discussed below for each COPEC and each receptor are presented in Tables D-2 through D-5 of Appendix D.

In order to calculate a dietary exposure, a number of parameters are required. These include food ingestion rate, body weight, soil ingestion rate, the proportion of diet coming from each food

item, and the concentration of each COPEC in the food items. Conservative assumptions were made in these calculations including: 100% bioavailability of contaminants in food, maximum concentrations detected were assumed to contribute to food concentrations, and 100% area use factors.

Concentrations of Site COPECs in each food item considered in the food chain exposure model for terrestrial receptors were calculated using equations found in USEPA's Eco-SSL guidance (USEPA, 2005b). Where uptake equations were unavailable, bioaccumulation factors (Environmental Restoration Division, 1999) were used. Equation 11-1 below, was used to calculate the total dietary exposure.

$$Dose = \frac{(InR \times P_s \times C_s) + \Sigma(IR \times P_f \times C_f)}{BW} \times AUF \qquad (11\text{-}1)$$

where,

Dose	=	Potential dietary exposure through ingestion of soil and typical food items (mg COPEC/kg body weight/day)
InR	=	Food ingestion rate (kg diet/day)
P_s	=	Proportion of diet that is soil (unitless)
C_s	=	Concentration of COPEC in soil (mg/kg)
P_f	=	Proportion of diet that is each food item – (unitless)
C_f	=	Concentration of the COPEC in the food item based on chemical-specific equations (mg/kg)
BW	=	Body weight (kg)
AUF	=	Area Use Factor (unitless) = Size of Site / Size of Home Range

For receptors with diets comprised of multiple food items (such as the American Robin), each food item was analyzed and included in the total exposure.

12.0 SCREENING LEVEL ECOLOGICAL EFFECTS ASSESSMENT

The goal of the ecological effects assessment is to determine the potential toxic effects of COPECs at the Site on the selected receptor species. A database and literature search was performed to identify COPEC benchmark toxicity values for use in the estimation of the ecological risk. Data sources reviewed are identified on Table 13-1 for surface water and on Tables D-2, D-3, D-4, and D-5 in Appendix D but the majority of the values were taken from:

- Sample et al., 1996, *Toxicological Benchmarks for Wildlife: 1996 Revision*;
- ECOTOX, Release 4.0; and,
- Hazardous Substance Database (HSDB).

These data sources provided chronic no adverse effect levels (NOAELs) and chronic lowest adverse effect levels (LOAELs). In some cases, acute or chronic LOAELs or median lethal doses (LD_{50}) were the only available ecotoxicity values. Where necessary, adjustments were made to these values using safety factors to reflect levels of uncertainty. The following protocol was used to obtain an equivalent chronic NOAEL when only a LOAEL or LD_{50} was available (based on guidance provided by Calabrese and Baldwin, 1993):

- Chronic LOAELs (or chronic LD_{50}) were multiplied by a correction factor of 0.1; and,
- Acute LD_{50} were multiplied by a correction factor of 0.02

When toxicity data were not available for the specific selected receptor species, the use of toxicity values from other animal studies was necessary. No additional correction factors were applied to the available toxicity value if the value was for an animal within the same taxonomic class as the target receptor. Toxicity values for taxonomic classes other than the receptor species were not used. When more than one value was available, the most conservative value for the most closely-related species to the target receptor(s) was used.

13.0 SCREENING LEVEL ECOLOGICAL RISK CHARACTERIZATION

The potential risks to ecological receptors at the Site were assessed by comparing Site concentrations with benchmark toxicity values. In some cases this included calculating hazard quotients and hazard indices. A hazard quotient (HQ) is calculated for each individual COPEC and is defined as the exposure concentration divided by a species-specific toxicity reference value for that medium (known as an effects concentration) as shown in Equation 13-1. When food-chain modeling was used to determine exposure concentrations in upper-trophic level species (see Section 11.2), daily doses of COPECs were used in place of environmental concentrations. Daily doses of a chemical are expressed in units of mg/kg/day and HQs for these doses are calculated using dose-based toxicity values in place of effects concentrations (see Equation 13-2).

$$HQ = \frac{\text{Exposure Concentration}}{\text{Effects Concentration}} \quad (13\text{-}1)$$

$$HQ = \frac{\text{Daily Dose of a given COPEC}}{\text{Dose - Based Toxicity Value for a given species}} \quad (13\text{-}2)$$

For this risk assessment, the potential risks to the various receptors were assessed in the following ways:

- Potential risks to the aquatic invertebrate community were evaluated by comparing maximum surface water/sediment contaminant concentrations to relevant guidance values derived for the protection of benthic species. The results of this comparison are shown in Table 10-3 (surface water) and (10-4 sediment).

- Potential risks to terrestrial vegetation and invertebrates were evaluated by comparing the maximum soil concentration of each COPEC with appropriate benchmark toxicity values. The results of this comparison are shown in Table 10-5.

- Potential risks to selected semi-aquatic receptors (Green Frog) were evaluated by calculating HQs for each contaminant, as shown in Table 13-1.

- Potential food chain risks to the Meadow Vole, American Robin, Red Fox, and Red-tailed Hawk were evaluated by comparing estimated exposure levels (daily doses) with NOAEL and LOAEL-based dose-based ingestion toxicity reference values.

- Risks were characterized using HQs which were determined for each COPEC, as shown in Table 13-2 and Appendix D.

A hazard quotient equal to or less than unity (1.0), based on NOAEL reference values, indicates that no adverse effects are anticipated for the given species for that COPEC. On the other hand, a HQ value greater than unity based on LOAEL reference values suggests that adverse effects are possible for the given species for that COPEC. The following sections describe the results of the risk characterization in more detail for each receptor.

It is important to note that this methodology is not a measure of, and cannot be used to determine, absolute quantitative risk. Use of this technique, however, can be used to screen receptors and contaminants to indicate the greatest potential for ecological receptors to be at risk of an adverse effect from exposure to Site-related COPECs.

13.1 Estimation of Direct Contact Risk

Comparisons were made between the maximum detected contaminant levels and available toxicity reference values (TRVs) during the screening phase for COPECs (Section 10.4). This resulted in a number of COPECs for surface water (Table 10-3) and for sediment (Table 10-4), summarized in the table below:

	VOCs	SVOCs	Pesticides/PCBs	Inorganics
Surface Water	-	-	-	Aluminum Arsenic Barium Copper Iron Lead Selenium
Sediment	Methyl acetate	2-Methylnaphthalene Acenaphthylene Caprolactam Carbazole	4,4'-DDT alpha-Chlordane 4,4'-DDD 4,4'-DDE Endrin aldehyde	Aluminum Arsenic Barium Beryllium Calcium Copper Cyanide Lead Magnesium Mercury Potassium Sodium Vanadium

For the aquatic invertebrate community, the potential for adverse ecological risks may exist due to both surface water and sediment exposures associated with the following chemical parameter groups:

- Surface water – certain inorganics are a potential concern for aquatic invertebrates. However, the highest concentrations measured in surface water for two of the COPECs (copper, and lead), which were used for screening, were measured in the surface water sample taken more than 0.5 mile downgradient of the site (SW-04), and were higher than in the samples taken immediately adjacent to the Property; and,

- Sediment – one volatile organic compound (methyl acetate), and certain semivolatile organic compounds, pesticides, and inorganics are a potential concern for aquatic invertebrates.

The potential risks to the Green Frog were assessed by direct comparisons of contaminant concentrations in surface water with freshwater frog benchmark values (see Table 13-1). The NOAEL-based hazard quotients for the Green Frog are: 0.22 for to lead; 2.04 for arsenic, and 5.68 for aluminum. LOAEL-based HQ values cannot be calculated, but likely would be less than 1 in all cases. The measured lead concentration does not indicate potential for adverse effects resulting from exposure to surface water. Arsenic concentrations exceeded the NJDEP Surface Water Quality Criteria, but not the National Recommended Surface Water Quality Criteria. Background arsenic concentrations in soil are naturally elevated and this may be reflected in surface water concentrations. The maximum aluminum concentration was measured in a background sample.

13.2 Estimation of Food Chain Risk

The NOAEL and LOAEL based hazard quotients based on food chain exposure modeling using the maximum detected concentrations are summarized in Table 13-2. Detailed food chain calculations are provided in Appendix D.

The risk for the Meadow Vole is driven by risks associated with aluminum, where on-Property concentrations are consistent with natural background levels, with a NOAEL-based HQ of 10.80 (and a LOAEL-based HQ of 1.19) and by selenium with a NOAEL based HQ of 1.01 (and a LOAEL based HQ of 0.36).

Risks for the American Robin are driven by the following COPECs: chromium, with a NOAEL-based HQ of 45.59 (LOAEL-based HQ of 2.28); aluminum, with a NOAEL-based HQ of 8.07

(LOAEL-based HQ of 0.81); lead, with a NOAEL-based HQ of 7.12 (LOAEL-based HQ of 0.71); 4,4'-DDT with a NOAEL-based HQ of 6.56 (LOAEL-based HQ of 0.66); 4,4'-DDD with a NOAEL-based HQ of 2.21 (LOAEL-based HQ of 0.22); and selenium, with a NOAEL-based HQ of 1.25 (LOAEL-based HQ of 0.63). Chromium has the highest Hazard Quotient based on a single outlier value (912 mg/kg), the location of which is being addressed by the Soil Removal Action; the next highest measurement in any soil sample was 66.5 mg/kg, more than an order of magnitude lower.

Risks for the Red Fox are driven by the following COPECs: aluminum, which has a NOAEL-based HQ of 275.39 (LOAEL-based HQ of 27.51), and mercury, which has a NOAEL-based HQ of 5.56 (LOAEL-based HQ of 0.56). Other COPECs with NOAEL-based HQ values greater than unity were dieldrin (3.75 NOAEL/0.39 LOAEL), detected primarily along the fence line adjacent to a formerly farmed area; selenium (2.21 NOAEL/0.22 LOAEL); and chromium (1.69 NOAEL/0.17 LOAEL), due to the single outlier value (912 mg/kg) which is being addressed by the Soil Removal Action.

Risks for the Red-tailed hawk are driven by the following COPECs: 4,4'-DDT, with a NOAEL-based HQ of 6.25 (LOAEL-based HQ of 0.67) which was detected primarily along the fence line adjacent to a formerly farmed area; chromium, with a NOAEL based HQ of 2.1 (LOAEL based HQ of 0.21), which is due to the outlier value (912 mg/kg) referenced above; aluminum, with a NOAEL-based HQ of 1.38 (LOAEL-based HQ of 0.138); and mercury with a NOAEL based HQ of 1.2 (LOAEL-based HQ of 0.12).

13.3 Risk Summary

Potential risks to potential aquatic invertebrates in surface water and sediment were indicated by comparison to screening values. Seven metals in surface water and 24 compounds in sediment (primarily metals and SVOCs) were identified as COPECs. However, the hydrologic conditions at Site do not support an aquatic community and the maximum concentrations were measured predominantly in samples either upgradient or from far downgradient areas unrelated to the Site (6 of the 7 surface water COPECs and 18 of the 24 sediment COPECs). Marginal risk to amphibians was indicated, although the most significant risk contribution was from aluminum, where the sample with the highest concentration was taken upgradient of the Site.

A potential risk to terrestrial invertebrates was indicated by comparison to screening values in soils. Chromium, copper, and mercury were the COPEC for earthworms. Copper exceeded the screening value in only one sample and mercury was only detected sporadically.

A potential risk to terrestrial vegetation was indicated for one organic compound (di-n-butylphthalate) and seven metals by comparison to screening values. Four of 57 samples had di-n-butylphthalate detections that exceeded the screening values for plants. Seven metals exceeded the screening values for plants although the exceedances were largely observed in sediment samples, which were conservatively included in the terrestrial assessment due to the ephemeral nature of the creek.

A potential risk to herbivorous small mammals was indicated by NOAEL-based HQ values greater than 1 for aluminum, and to omnivorous birds by NOAEL-based HQ values greater than 1 for aluminum, chromium, lead, 4,4'DDD, 4,4'-DDT, 4,4'-DDE, and selenium. A potential risk to carnivorous mammals was indicated by NOAEL-based HQ values greater than 1 for aluminum, chromium, mercury, selenium, and dieldrin, and to carnivorous birds by HQ values greater than 1 for aluminum, 4,4'-DDT, and 4,4'-DDE. LOAEL-based HQ values exceeded 1 for mammals only for aluminum and for omnivorous birds for chromium and 4,4'-DDE.

However, in the case of terrestrial receptors as discussed above, the calculated risks are driven primarily by:

- A single high measurement of chromium that does not represent overall site conditions, and which has been removed as part of the colored-soils removal action,
- Concentrations of selenium in sediment samples, which were conservatively included in the terrestrial assessment due to the ephemeral nature of the creek.
- By 4,4'-DDT, 4,4'-DDD, and dieldrin detected primarily along the fence line adjacent to a formerly farmed area; average concentrations on-Site are much lower; and,
- By aluminum, where on-Property concentrations are consistent with natural background levels[7].

[7] Mean levels of aluminum in soils and surficial material in the eastern United States are 33,000 mg/kg (Efroymson et al., 1997a) and in New Jersey are 10,075 mg/kg (USEPA, 2005b).

14.0 UNCERTAINTY ASSESSMENT

In any risk assessment, it is necessary to make assumptions. Assumptions carry with them associated uncertainties which must be identified to put risk estimates in perspective. The following describes the major assumptions used in this SLERA and the associated uncertainties.

The maximum detected contaminant concentration was used to conservatively estimate potential ecological risks associated with Site soil, sediment and surface water. In reality, most ecological receptors will likely be exposed to a range of contaminant concentrations (lower than the maximum concentration). The use of maximum contaminant concentration will likely overestimate the potential for ecological risk in most cases (especially, for example, when there is a single elevated detection, as in the case of chromium in this assessment), or when detections are infrequent (as in the case of endrin in this assessment, which was detected in only 2 of 49 soil samples, located hundreds of feet apart). For small data sets such as those for surface water and sediment, the maximum concentration may not be an overestimate.

Soil samples taken in the top 2 feet of soil were used in this SLERA. However, most ecological exposures occur in surface soil (0-6-inch depth). This could result in an overestimation or underestimation of potential risk depending upon the concentration-depth profile.

Screening toxicity values available do not necessarily include all potential Site receptors, thus the screening values used are not necessarily protective of any ecological receptors that may be more sensitive to the effects of a chemical. Conversely, the sensitive species used to develop screening values may not be present at the Site for other reasons. This may contribute to underestimating or overestimating the overall risk to actual Site receptors.

There is a lack of ecotoxicity data regarding effects of chemical concentrations in sediment and surface water on amphibians. Therefore, exposures to sediment contamination for amphibians were not explicitly evaluated in this SLERA. This may underestimate the potential risks to amphibians.

Biouptake factors applicable to diet items in food chain models were limited and may not have accurately represented actual Site-specific conditions. Actual biouptake into food items is variable, depending upon such factors as chemical state, soil composition, and chemical

concentration. In cases where biouptake factors were not available in the literature, a value of 1.0 was utilized as a default. It is most likely that this results in an overestimation of receptor exposure and associated risk. In this context, it is noted that it was necessary to make this conservative assumption for aluminum, which contributes the largest proportion of the calculated risks to both the Meadow Vole and the Red Fox.

It is important to note that all potential risks to mammalian and avian species at the Site were determined solely on the measured environmental media concentrations. No biota (such as invertebrates, small mammals, and plants) samples were collected for analysis of COPEC concentrations in this investigation. Food-chain modeling of exposure concentrations in this risk assessment is likely to overestimate the risk to upper-trophic level receptors such as the Red Fox and Red-tailed hawk, particularly as the calculations assumed an Area Use Factor of 100%, where as the range of these receptors is larger than the Site.

In selecting benchmark toxicity values from available literature, the most conservative toxicity value was used for each receptor. The application of these values most likely overestimates ecological risk. In some cases, toxicity values varied depending on the chemical state of a contaminant (for example, chromium VI and chromium III). Because the chemical form of each contaminant was not always known, the most conservative toxicity value was chosen for each COPEC. Using the most conservative toxicity values in these cases is likely to cause an overestimation of risk.

In determining the benchmark toxicity values, toxicity correction factors were employed to account for differences in toxicity based on the length of exposure (i.e., acute and chronic) and toxicological endpoints (i.e., NOAELs, LOAELs, LD_{50}s). Uncertainties associated with these factors may have resulted in over- or underestimation of risks to receptors. With regard to interspecies differences, smaller animals have higher metabolic rates and are usually more resistant to the effects of toxic chemicals because of their higher rates of detoxification (Opresko, et al. 1993). In this assessment, benchmark toxicity values have not been normalized for receptor body weights. This may underestimate the risks to receptors that have a mass larger than the reported test species and overestimate the risks to receptors that have a mass smaller than the reported test species.

Additionally, the risks from some chemicals were not estimated in the risk evaluation due to the absence of ingestion ecotoxicity values in the literature searched. This may underestimate overall risk potential to each receptor.

Potential toxicological risks to individual receptors have been calculated in this SLERA. However, adverse effects on individuals may not be reflected on the population and community level. The predicted risks may overestimate the actual population or community level effects. This is important since, in general, the goal of ecological risk management is to be protective of populations rather than individual ecological receptors.

15.0 CONCLUSIONS

BRA

Quantitative risks were estimated for industrial/commercial workers, trespassers (both pre-adolescent and adolescent), residents (adult and child), and construction workers. Both cancer risks and hazard indices were estimated for both reasonable maximum exposure (RME) and central tendency (CT) scenarios using site-specific exposure pathways (both current and potential future exposure) associated with five media: groundwater, surface soil, subsurface soil, surface water, and sediment.

The assessment indicated risks that exceed USEPA guidelines for exposure to volatile organic compounds in groundwater by potential future industrial/commercial workers and hypothetical potential future residents. Potential risks to on-Property receptors have subsequently been mitigated by the soil Source Removal Action.

It should be noted that there are no current completed exposure pathways to contaminated groundwater, and that any new developments in the vicinity of the Site are required by municipal ordinance to connect to the municipal water supply system. MW-18, which is the most downgradient well, shows very low-level detections of chlorinated ethenes (PCE of 0.82 J µg/L, TCE of 1.8 J µg/L, and cis-DCE of 3.4 µg/L in February 2007) and is located approximately 2,800 feet east of the nearest Municipal Pumping Well, #8, which has not been operational since August 2007[8]. The groundwater plumes associated with the Site, therefore do not represent a current risk to the quality of the municipal water supply.

SLERA

The results of this screening level ecological risk assessment indicate that the potential exists for risk at the Site resulting from the maximum level of chemicals detected. However, the chemicals driving these risk estimates are either naturally occurring (aluminum), are isolated outliers being addressed by Removal Action (chromium), or do not appear to be Site-related and on an average exposure basis would not exceed a NOAEL-based HQ of 1. Accordingly, the calculated risks do not warrant additional assessment via a Baseline Ecological Risk Assessment.

[8] As noted in Section 2.1.5, the municipal well is also equipped with precautionary carbon treatment at the wellhead.

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TABLE 1
SELECTION OF EXPOSURE PATHWAYS
Lightman Drum Superfund Site

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Groundwater	Groundwater/ Air	Off-Site Groundwater/ Water Vapors from Showering with Off-Site Groundwater	Resident	Adult	Ingestion Dermal Inhalation	Off-Site	**None**	**There are no residential wells affected by plume; pathway is incomplete**
					Child	Ingestion Dermal Inhalation	Off-Site	**None**	
		Groundwater	On-Site Office Supply Well	Industrial/Commercial Worker	Adult	Ingestion Dermal	On-Site	**None**	**No Contaminants of Potential Concern**
	Surface Soil	Surface Soil	On-Site Surface Soil	Industrial/Commercial Worker	Adult	Ingestion Dermal Inhalation	On-Site	Quant	Current site operations.
		Surface Soil	On-Site Surface Soil	Trespasser	Pre-adolescent (7-12 yrs)	Ingestion Dermal Inhalation	On-Site	Quant	Entry to the Site is not Restricted. Receptor could potentially come in direct contact with contaminated media
		Surface Soil	On-Site Surface Soil	Trespasser	Adolescent (13-18 yrs)	Ingestion Dermal Inhalation	On-Site	Quant	
	Surface Water	Surface Water	Pump Branch Creek	Trespasser	Pre-adolescent (7-12 yrs)	Ingestion Dermal	Off-Site	Quant	Pump Branch Creek is on Private land, access is not restricted. Receptor could potentially come in direct contact with contaminated media
				Trespasser	Adolescent (13-18 yrs)	Ingestion Dermal	Off-Site	Quant	
	Sediment	Sediment	Pump Branch Creek	Trespasser	Pre-adolescent (7-12 yrs)	Ingestion Dermal	Off-Site	Quant	Pump Branch Creek is on Private land, access is not restricted. Receptor could potentially come in direct contact with contaminated media
				Trespasser	Adolescent (13-18 yrs)	Ingestion Dermal	Off-Site	Quant	
Future	Groundwater	Groundwater/ Air	Groundwater/ Water Vapors from Showering with Groundwater	Resident	Adult	Ingestion Dermal Inhalation	Off-Site	Quant	Hypothetical future use scenario; while property and adjacent lands have been zoned for industrial use only, this pathway is included at the request of USEPA.
					Child	Ingestion Dermal Inhalation	Off-Site	Quant	
		Groundwater	Hypothetical Future On-Site Supply Wells	Industrial/Commercial Worker	Adult	Ingestion Dermal	On-Site	Quant	Hypothetical future scenario; additional supply wells could potentially be installed on-Site in contaminated areas
		Air	Vapor Intrusion from On-Site Groundwater	Industrial/Commercial Worker	Adult	Inhalation	On-Site	Quant	This pathway may be complete in the future if buildings are built on site over groundwater contamination.
	Surface Soil	Surface Soil	On-Site Surface Soil	Trespasser	Pre-adolescent (7-12 yrs)	Ingestion Dermal Inhalation	On-Site	Quant	Entry to the Site is not Restricted. Receptor could potentially come in direct contact with contaminated media; same as current use scenario
				Trespasser	Adolescent (13-18 yrs)	Ingestion Dermal Inhalation	On-Site	Quant	
		Surface Soil	On-Site Surface Soil	Industrial/Commercial Worker	Adult	Ingestion Dermal Inhalation	On-Site	Quant	Same as current use scenario.
		Surface Soil	On-Site Surface Soil	Construction Worker	Adult	Ingestion Dermal Inhalation	On-Site	Quant	Hypothetical future scenario.
	Subsurface Soil	Air	Vapor Intrusion from On-Site Subsurface Soil	Industrial/Commercial Worker	Adult	Inhalation	On-Site	**None**	**No Volatile Contaminants of Potential Concern**
					Child	Inhalation	On-Site	**None**	
		Subsurface Soil	On-Site Subsurface Soil	Construction Worker	Adult	Ingestion Dermal Inhalation	On-Site	Quant	Hypothetical future scenario.
	Surface Water	Surface Water	Pump Branch Creek	Trespasser	Pre-adolescent (7-12 yrs)	Ingestion Dermal Inhalation	Off-Site	Quant	Pump Branch Creek is on Private land, access is not restricted. Receptor could potentially come in direct contact with contaminated media
				Trespasser	Adolescent (13-18 yrs)	Ingestion Dermal Inhalation	Off-Site	Quant	
	Sediment	Sediment	Pump Branch Creek	Trespasser	Pre-adolescent (7-12 yrs)	Ingestion Dermal	Off-Site	Quant	Pump Branch Creek is on Private land, access is not restricted. Receptor could potentially come in direct contact with contaminated media
				Trespasser	Adolescent (13-18 yrs)	Ingestion Dermal	Off-Site	Quant	

TABLE 2.1

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Lightman Drum Superfund Site

Scenario Timeframe: Current
Medium: Groundwater (1)
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (2)	Maximum Concentration (Qualifier) (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (3)	Background Value (4)	Screening Toxicity Value (N/C) (5)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (6)	COPC Flag (Y/N)	Rationale for Selection or Deletion (7)
On-Site Office Supply Well	*Volatile Organics*															
	75-35-4	1,1-Dichloroethene	-	0.13 J	ug/L	NA	1 / 2	0.1 - 0.78	0.13	ND	34	(NC)	7	A	N	BSL
	Inorganics															
	7429-90-5	Aluminum	-	71.1 J	ug/L	NA	1 / 2	8.8 - 13.5	71.1	172 B	3650	(NC)	30	B	N	BSL
	7440-39-3	Barium	21.8 B	28.6 J	ug/L	NA	2 / 2	0.1	28.6	3.1 J	255	(NC)	2000	A	N	BSL
	7440-41-7	Beryllium	-	5	ug/L	NA	1 / 2	0.1	5	ND	7.30	(NC)	4	A	N	BSL
	7440-70-2	Calcium	3940 J	4350 B	ug/L	NA	2 / 2	6.5 - 17	4350	9870	-		-		N	NUTR
	7440-48-4	Cobalt	0.57 J	0.77 B	ug/L	NA	2 / 2	0.5 - 0.6	0.77	ND	73.0	(NC)	-		N	BSL
	7440-50-8	Copper	2.3 J	62.7	ug/L	NA	2 / 2	0.3 - 0.4	62.7	1.1 J	146	(NC)	1300	A	N	BSL
	7439-89-6	Iron	212	747	ug/L	NA	2 / 2	9 - 11.2	747	932	1095	(NC)	20	B	N	BSL
	7439-92-1	Lead	1.3 J	2.4 B	ug/L	NA	2 / 2	1 - 1.3	2.4	ND	15.0	(NC) [5a]	5	B	N	BSL
	7439-95-4	Magnesium	1570 J	2080 B	ug/L	NA	2 / 2	2.5 - 7.3	2080	1960 B	-		-		N	NUTR
	7439-96-5	Manganese	6 J	37.3	ug/L	NA	2 / 2	0.1 - 0.2	37.3	5.3 B	87.6	(NC)	0.4	B	N	BSL
	7439-97-6	Mercury	-	0.1 J	ug/L	NA	1 / 2	0.1	0.1	ND	0.365	(NC) [5b]	2	A	N	BSL
	7440-02-0	Nickel	-	8.4 B	ug/L	NA	1 / 2	0.8 - 0.9	8.4	1.2 B	73.0	(NC)	4	B	N	BSL
	7440-09-7	Potassium	990 B	1280 J	ug/L	NA	2 / 2	5.3 - 10	1280	934 B	-		-		N	NUTR
	7440-23-5	Sodium	1360 B	1910 J	ug/L	NA	2 / 2	46.2 - 124	1910	69300	-		400	B	N	NUTR
	7440-66-6	Zinc	20	124	ug/L	NA	2 / 2	0.3 - 1.2	124	26.3	1095	(NC)	10	B	N	BSL

Footnotes:

(1) The results for samples taken from the office supply well over two sampling events (2/3/05 and 3/21/06) were used.

(2) Where there was only one detection, it is represented as the maximum. The Qualifier codes are defined as the following:

B - The analyte was detected at a concentration below the Contract Required Detection Limit.

J - The analyte was detected and is considered an estimated value.

NA - Not applicable

(3) Maximum detected value was used for screening.

(4) Background well is MW-01

ND - Not Detected

(5) Units are the same as those for Screening Concentrations. Where available, Screening Toxicity Values are Region 9 PRGs for Tap Water (2004), adjusted for a HI= 0.1 for non-cancer effects, where (C)=Cancer PRG; (NC)= Noncancer PRG. Where Region 9 PRGs were unavailable, USEPA Region 3 RBC (2006) values were used, adjusted for a HI= 0.1 for non-cancer effects.

a) Action Levels for lead in tap water from the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories (15 µg/L); b) Region 9 PRG for Mercury (methyl);

(-) = no PRG or RBC values found

(6) Potential ARARs/TBC values are the higher of Federal MCLs and NJ Class IIA PQLs: A -- Federal MCL B -- NJ Class IIA PQL

(-) = no ARAR found

(7) ASL = Above Screening Limit; BSL = Below Screening Limit; NUTR = Essential Nutrient

TABLE 2.2

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Lightman Drum Superfund Site

Scenario Timeframe:	Current/Future
Medium:	Surface Soil (1)
Exposure Medium:	Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (2)	Maximum Concentration (Qualifier) (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (3)	Background Value (4)	Screening Toxicity Value (N/C) (5)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (6)	COPC Flag (Y/N)	Rationale for Selection or Deletion (7)
On-Site Surface Soil	*Volatile Organics*															
	78-93-3	2-Butanone	3.75	15	ug/kg	SS02-12	6 / 49	0.61 3	15	5 J	2231120	(N)	50,000	A	N	BSL
	108-10-1	4-Methyl-2-pentanone	1 (J)	5.275	ug/kg	SS06-12	6 / 49	0.61 - 3	5.275	ND	528089	(N)	50,000	A	N	BSL
	67-64-1	Acetone	15	200	ug/kg	SS02-12	14 / 49	0.61 - 3	200	1	1412657	(N)	100,000	A	N	BSL
	75-15-0	Carbon Disulfide	2 (J)	3 (J)	ug/kg	SB02-24	2 / 49	0.61 - 3	3	ND	35534	(N)	4,000	B	N	BSL
	100-42-5	Styrene	1 (J)	23	ug/kg	SB35-24	2 / 49	0.61 - 3	23	ND	438209	(S)	97,000	A	N	BSL
	127-18-4	Tetrachloroethene	1 (J)	89	ug/kg	SB24-24	12 / 49	0.61 - 3	89	ND	484	(C)	1,000	A	N	BSL
	79-01-6	Trichloroethene	2 (J)	37	ug/kg	SB24-24	4 / 49	0.61 - 3	37	ND	53.0	(C)	1,000	A	N	BSL
	75-69-4	Trichlorofluoromethane	1 (J)	2 (J)	ug/kg	SB28-24	2 / 49	0.61 - 3	2	ND	38582	(N)	21,000	B	N	BSL
	Semivolatile Organics															
	91-58-7	2-Chloronaphthalene	-	28 (J)	ug/kg	SB23-06	1 / 49	9	28	ND	493664	(N)			N	BSL
	98-86-2	Acetophenone	-	11.5	ug/kg	SB07-06	1 / 49	10	11.5	ND	782143	(N) [5a]	3,000	B	N	BSL
	100-52-7	Benzaldehyde	11 (J)	63.5	ug/kg	SB07-06	3 / 49	4	63.5	ND	611031	(N)	68,000,000	B	N	BSL
	56-55-3	Benzo(a)Anthracene	10 (J)	12 (J)	ug/kg	SS01-06	2 / 49	9	12	10 J	621	(C)	4,000	A	N	BSL
	50-32-8	Benzo(a)Pyrene	11 (J)	14 (J)	ug/kg	SS09-06	3 / 49	8	14	14 J	62	(C)	660	A	N	BSL
	205-99-2	Benzo(b)Fluoranthene	-	11.25	ug/kg	SB07-06	1 / 49	13	11.25	ND	621	(C)	4,000	A	N	BSL
	117-81-7	bis(2-Ethylhexyl)Phthalate	200 (J)	8800	ug/kg	SB06-06	13 / 49	10	8800	ND	34741	(C)	100,000	A	N	BSL
	85-68-7	Butylbenzylphthalate	10 (J)	130 (J)	ug/kg	SB38-06	12 / 49	9	130	ND	1222062	(N)	100,000	A	N	BSL
	105-60-2	Caprolactam	27 (J)	63 (J)	ug/kg	SB23-06	2 / 49	14	63	ND	3055155	(N)	340,000,000	B	N	BSL
	218-01-9	Chrysene	11 (J)	18 (J)	ug/kg	SS01-06 & SS09-06	4 / 49	8	18	18 J	62146	(C)	40,000	A	N	BSL
	84-66-2	Diethylphthalate	10 (J)	85 (J)	ug/kg	SB32-06	3 / 49	9	85	ND	4888248	(N)	50,000	A	N	BSL
	84-74-2	Di-n-butylphthalate	14 (J)	300 (J)	ug/kg	SB08-06	13 / 49	11	300	ND	611031	(N)	100,000	A	N	BSL
	117-84-0	Di-n-Octyl Phthalate	10 (J)	770	ug/kg	SB06-06	19 / 49	9	770	98 J	244412	(N)	100,000	A	N	BSL
	206-44-0	Fluoranthene	9	26 (J)	ug/kg	SS01-06 & SS09-06	11 / 49	7	26	26 J	229361	(N)	100,000	A	N	BSL
	118-74-1	Hexachlorobenzene	-	12 (J)	ug/kg	SB28-06	1 / 49	11	12	ND	304	(C)	2,000	A	N	BSL
	193-39-5	Indeno(1,2,3-cd)Pyrene	12 (J)	13 (J)	ug/kg	SS01-06	2 / 49	8	13	12 J	621	(C)	4,000	A	N	BSL
	78-59-1	Isophorone	10 (J)	20 (J)	ug/kg	SB32-06	3 / 49	9	20	ND	511979	(C)	50,000	A	N	BSL
	91-20-3	Naphthalene	20 (J)	40	ug/kg	SB07-06	2 / 49	8	40	ND	5592	(N)	100,000	A	N	BSL
	85-01-8	Phenanthrene	12 (J)	18 (J)	ug/kg	SS01-06	3 / 49	10	18	ND	-				Y	NSL
	129-00-0	Pyrene	13.25	25 (J)	ug/kg	SS01-06	9 / 49	13	25	23 J	231595	(N)	100,000	A	N	BSL

TABLE 2.2

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Lightman Drum Superfund Site

Scenario Timeframe:	Current/Future
Medium:	Surface Soil (1)
Exposure Medium:	Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (2)	Maximum Concentration (Qualifier) (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (3)	Background Value (4)	Screening Toxicity Value (N/C) (5)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (6)	COPC Flag (Y/N)	Rationale for Selection or Deletion (7)
On-Site Surface Soil	*Pesticides/PCBs*															
	72-54-8	4,4'-DDD	-	2.6 (J)	ug/kg	SB19-06	1 / 48	0.97	2.6	ND	2437	(C)	12,000	A	N	BSL
	72-55-9	4,4'-DDE	1.8 (J)	25	ug/kg	SB23-06	10 / 48	0.9	25	ND	1720	(C)	9,000	A	N	BSL
	50-29-3	4,4'-DDT	2.5 (J)	19	ug/kg	SB33-06	9 / 48	1.6	19	ND	1720	(C)	9,000	A	N	BSL
	5103-71-9	alpha-Chlordane	2.5 (JN)	160 (J)	ug/kg	SB08-06	21 / 48	0.78	160	ND	1624	(C)[5b]			N	BSL
	319-85-7	beta-BHC	2.4 (J)	18 (J)	ug/kg	SB35-06	2 / 49	1	18	ND	316	(C)	6	B	N	BSL
	60-57-1	Dieldrin	2.9 (J)	12	ug/kg	SB35-06	6 / 48	1.3	12	ND	30	(C)	180	A	N	BSL
	959-98-8	Endosulfan I	2 (J)	8	ug/kg	SB06-06	2 / 49	0.3	8	ND	36662	(N)[5c]	50,000	A [6a]	N	BSL
	33213-65-9	Endosulfan II	4.3 (JN)	13 (J)	ug/kg	SB35-06	2 / 48	1.1	13	ND	36662	(N)[5c]	50,000	A [6a]	N	BSL
	1031-07-8	Endosulfan sulfate	2.3 (J)	2.6 (J)	ug/kg	SB33-06	2 / 48	1	2.6	ND	36662	(N)[5c]	10	B	N	FREQ
	72-20-8	Endrin	2.5	11	ug/kg	SB35-06	2 / 49	1.8	11	ND	1833	(N)	50,000	A	N	BSL
	7421-93-4	Endrin aldehyde	2.8 (J)	4.8 (J)	ug/kg	SB35-06	4 / 49	0.87	4.8	ND	-				Y	NSL
	58-89-9	gamma-BHC (Lindane)	-	1.1 (J)	ug/kg	SS02-06	1 / 49	0.37	1.1	ND	437	(C)	2,200	A	N	BSL
	5103-74-2	gamma-Chlordane	2.1	120	ug/kg	SB08-06 & SB32-06	21 / 48	0.72	120	ND	1624	(C)[5b]			N	BSL
	76-44-8	Heptachlor	1.1 (J)	4.5	ug/kg	SB07-06	3 / 48	0.68	4.5	ND	108	(C)	650	A	N	BSL
	1024-57-3	Heptachlor Epoxide	1 (J)	3.8 (J)	ug/kg	SB32-06	3 / 45	0.48	3.8	ND	53	(C)	8	B	N	BSL
	Inorganics															
	7429-90-5	Aluminum	72	9260	mg/kg	SB16-06	49 / 49	1.4 - 12.6	9260	998	7614	(N)	3,600	B	Y	ASL
	7440-36-0	Antimony	0.25	0.44 (B)	mg/kg	SB10-06	5 / 49	0.31 - 0.39	0.44	ND	3.1	(N)	1	B	N	BSL
	7440-38-2	Arsenic	0.54 (B)	3.5	mg/kg	SS01-06	46 / 49	0.25 - 0.57	3.5	0.54 B	0.39	(C)	0.006	B	Y	ASL/TOX
	7440-39-3	Barium	1.3 (B)	37.2 (B)	mg/kg	SB36-06	49 / 49	0.038 - 0.046	37.2	2.5 B	537	(N)	270	B	N	BSL
	7440-41-7	Beryllium	0.039 (B)	0.22 (B)	mg/kg	SB16-06	46 / 49	0.038 - 0.046	0.22	0.055 B	154	(N)	0.002	B	N	BSL
	7440-43-9	Cadmium	0.0745	2.2	mg/kg	SB36-06	15 / 49	0.038 - 0.091	2.2	ND	3.7	(N)	1	B	N	BSL
	7440-70-2	Calcium	9.7 (B)	3370	mg/kg	SB06-06	49 / 49	1.9 - 2.4	3370	29 B	-				N	NUTR
	7440-47-3	Chromium	0.76 (B)	912	mg/kg	SB25-06	49 / 49	0.076 - 0.13	912	1.7 B	22	(N) [5d]	6100; 20	C	Y	ASL/TOX
	7440-48-4	Cobalt	0.18 (B)	1.3 (B)	mg/kg	SB36-06	46 / 49	0.076 - 0.091	1.3	ND	138	(N)	23,000	B	N	BSL
	7440-50-8	Copper	0.44 (B)	20.9	mg/kg	SB22-06	49 / 49	0.12 - 0.18	20.9	1.1 B	313	(N)	5,200	B	N	BSL
	57-12-5	Cyanide	0.081 (B)	0.35 (B)	mg/kg	SB35-06	12 / 49	0.074 - 0.088	0.35	ND	122	(N)	24	B	N	BSL
	7439-89-6	Iron	127	10000	mg/kg	SB16-06	49 / 49	1.6 - 2	10000	1290	2346	(N)			Y	ASL

TABLE 2.2

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Lightman Drum Superfund Site

Scenario Timeframe:	Current/Future
Medium:	Surface Soil (1)
Exposure Medium:	Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (2)	Maximum Concentration (Qualifier) (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (3)	Background Value (4)	Screening Toxicity Value (N/C) (5)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (6)	COPC Flag (Y/N)	Rationale for Selection or Deletion (7)
On-Site Surface Soil	*Inorganics*															
	7439-92-1	Lead	1.9	54.5	mg/kg	SB11-06	49 / 49	0.13 - 0.3	54.5	6.5	40	(N)	54	B	Y	ASL
	7439-95-4	Magnesium	7.4 (B)	562 (B)	mg/kg	SB16-06	49 / 49	1.1 - 1.3	562	23.3 B	-				N	NUTR
	7439-96-5	Manganese	1.2 (B)	94.9 (J)	mg/kg	SB06-06	49 / 49	0.038 - 0.11	94.9	4.2	176	(N) [5e]	39	B	N	BSL
	7439-97-6	Mercury	0.036	0.13	mg/kg	SB38-06	20 / 49	0.036 - 0.052	0.13	ND	0.6	(N) [5f]	0.01	B	N	BSL
	7440-02-0	Nickel	0.22 (B)	12.2	mg/kg	SB36-06	48 / 49	0.11 - 0.15	12.2	0.46 B	156	(N) [5g]	19	B	Y	TOX
	7440-09-7	Potassium	6.4 (B)	289 (B)	mg/kg	SB06-06	49 / 49	4.6 - 15.3	289	16.2 B	-				N	NUTR
	7782-49-2	Selenium	0.33 (B)	1.3 (J)	mg/kg	SB38-06	23 / 49	0.32 - 0.63	1.3	0.74 J	39	(N)	3	B	N	BSL
	7440-22-4	Silver	0.13 (B)	0.42 (B)	mg/kg	SB34-06	5 / 49	0.094 - 0.15	0.42	ND	39	(N)	0.09	B	N	BSL
	7440-23-5	Sodium	37.925	190 (B)	mg/kg	SB18-06	48 / 49	13.3 - 33.2	190	126 B	-				N	NUTR
	7440-62-2	Vanadium	0.84 (B)	18.6	mg/kg	SB16-06	49 / 49	0.057 - 0.087	18.6	3.9 B	7.8	(N)	7,900	B	Y	ASL
	7440-66-6	Zinc	0.2 (B)	196	mg/kg	SB32-06	49 / 49	0.13 - 0.41	196	1.6 B	2346	(N)	970	B	N	BSL

Footnotes:

(1) Surface soils are defined as those samples taken from 0-24 inches depth. Soils were collected for laboratory analysis from the top 2 feet of soil as follows: non-VOCs from 0 inch to 6 inch interval and VOCs from 6-inch to 24-inch interval. The average result for samples with Field Duplicate samples was used. Where one measurement was nondetect, 1/2 the detection limit was used in average calculation.
Duplicate samples were taken for SB07-06, SS03-06, SS03-12, SS04-06, SS04-12, SS06-06, and SS06-12

(2) The Qualifier codes are defined as the following:

B - The analyte was detected at a concentration below the Contract Required Detection Limit.

J - The analyte was detected and is considered an estimated value.

JN - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

(3) Maximum detected value was used for screening.

(4) Background soil concentrations are the highest detections from sample locations SS-07, SS-08, and SS-09.

ND - Not Detected

(5) Units are the same as those for Screening Concentrations. Region 9 PRG (2004) for Residential Soil, Non-cancer values adjusted for a HI= 0.1, where (S)=soil saturation value; (C)=Cancer PRG; (N)= Noncancer PRG. Where Region 9 PRGs were unavailable, USEPA Region 3 RBC values were used, adjusted for a HI= 0.1 for noncancer effects.

a) USEPA Region 3 RBC tables; b) Region 9 PRG value for "Chlordane (technical)"; c) Region 9 PRG for Endosulfan; d) Region 9 PRG for Chromium VI non-standard method applied, see Region 9 PRG User's Guide; e) Region 9 PRG value for Manganese and Compounds, non-standard method applied, see Region 9 PRG User's Guide; f) Region 9 PRG for Mercury (methyl); g) Region 9 PRG value for Nickel (soluble salts)

(-) = no PRG or RBC values found

(6) A -- Minimum of NJDEP NRDCSCC and IGWSCC B -- draft NJ Soil Remediation Standards C -- Nonresidential Hexavalent Chromium Soil Cleanup Criteria (20 mg/kg is for the inhalation pathway)

(a) NJDEP IGWSCC for Endosulfan

(-) = no ARAR found

(7) ASL = Above Screening Limit; BSL = Below Screening Limit; NSL = No Screening Limit; FREQ = analyte detected in < 5% of the samples; NUTR = analyte is an essential nutrient; TOX = analyte is a Group A carcinogen for at least one exposure route

TABLE 2.3
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Lightman Drum Superfund Site

Scenario Timeframe:	Current/Future
Medium:	Surface Water
Exposure Medium:	Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration (2)	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (3)	Background Value (4)	Screening Toxicity Value (N/C) (5)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (6)	COPC Flag (Y/N)	Rationale for Selection or Deletion (7)
Pump Branch Creek	*Semi-Volatile Organics*															
	106-44-5	4-Methylphenol		5 (J)	ug/L	SW01	1 / 4	2	5	5 J	18.25	(NC)	-		N	BSL
	Inorganics															
	7429-90-5	Aluminum	1770	2300	ug/L	SW01	4 / 4	69.6	2300	2300	3649.9	(NC)	30	B	N	BSL
	7440-38-2	Arsenic	2.025	11	ug/L	SW02	4 / 4	2.1	11	2.9 B	0.0448	(C)	0.017	A	Y	ASL/TOX
	7440-39-3	Barium	53.2 (B)	102.45	ug/L	SW03	4 / 4	0.3	102.45	89.9 B	255.5	(NC)	200	B	N	BSL
	7440-41-7	Beryllium	0.29	0.3 (B)	ug/L	SW01	2 / 4	0.2	0.3	0.3 B	6	(NC)	1	B	N	BSL
	7440-70-2	Calcium	3285	5950	ug/L	SW02	4 / 4	18.3	5950	4290 B	-	-	-		N	NUTR
	7440-47-3	Chromium	2.35	3.8 (B)	ug/L	SW02 & SW04	4 / 4	1	3.8	2.8 B	10.95	(NC)	1	B	N	BSL [7a]
	7440-48-4	Cobalt	0.98 (B)	3.2 (B)	ug/L	SW02	4 / 4	0.8	3.2	2.1 B	73	(NC)	-		N	BSL
	7440-50-8	Copper	3.9	24.7 (B)	ug/L	SW04	4 / 4	1.3	24.7	11.5 B	146	(NC)	4	B	N	BSL
	57-12-5	Cyanide	1.45	2.1 (B)	ug/L	SW02	4 / 4	0.6	2.1	2 B	73	(NC)	6	B	N	BSL
	7439-89-6	Iron	11300	22500	ug/L	SW02	4 / 4	20.5	22500	11300	1095	(NC)	20	B	Y	ASL
	7439-92-1	Lead	10.6	22.8	ug/L	SW04	4 / 4	1.1	22.8	17.9	15	(NC) [5a]	5	A	Y	ASL
	7439-95-4	Magnesium	1180 (B)	1570 (B)	ug/L	SW02	4 / 4	12.4	1570	1510 B	-	-	-		N	NUTR
	7439-96-5	Manganese	24.9	77.6	ug/L	SW02	4 / 4	0.4	77.6	47.3	87.6	(NC)	0.4	B	N	BSL
	7440-02-0	Nickel	3.1 (B)	8 (B)	ug/L	SW02	4 / 4	1	8	7.5 B	73	(NC)	4	B	N	BSL [7a]
	7440-09-7	Potassium	1320	1570 (B)	ug/L	SW02	4 / 4	56.1	1570	1520 B	-	-	-		N	NUTR
	7782-49-2	Selenium	2.075	3.2 (B)	ug/L	SW04	3 / 4	2.5	3.2	2.8 B	18.25	(NC)	4	B	N	BSL
	7440-23-5	Sodium	2170 (B)	6680	ug/L	SW01	4 / 4	276	6680	6680	-	-	400	B	N	NUTR
	7440-62-2	Vanadium	7.25	13.8 (B)	ug/L	SW04	4 / 4	1	13.8	9.7 B	3.65	(NC)	-		Y	ASL

(1) The Qualifier codes are defined as the following:

B - The analyte was detected at a concentration below the Contract Required Detection Limit.

J - The analyte was detected and is considered an estimated value.

Where there was only one detected value, it is treated as the maximum value

(2) The average result for SW03 and Field Duplicate DSW03 was used. Where one measurement was non-detect, 1/2 the detection limit was used in average calculation.

(3) Maximum detected value was used for screening.

(4) Background is upgradient surface water sample SW-01

(5) Units are the same as those for Screening Concentrations. Where available, Screening Toxicity Values are Region 9 PRG (2004)s for Tap Water, adjusted for a HI= 0.1 for noncancer effects, where (C)=Cancer PRG; (NC)= Noncancer PRG.

a) Action Levels for lead in tap water from the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories (15 µg/L)

(-) = no PRG or RBC values found

(6) A - Lower of NJ Surface Water Quality Criteria of FW2 waters and NJ Class IIA PQLs; A - NJ Surface Water Quality Criteria of FW2 waters; B - NJ Class IIA PQLs

(-) = no ARAR found

(7) ASL = Above Screening Limit; BSL = Below Screening Limit; NUTR = compound is considered an essential nutrient and is ubiquitous in the environment; TOX = analyte is a Group A carcinogen for at least one exposure route

(a) Because chromium (VI) and Nickel are Group A known human carcinogens only for inhalation pathway, Chromium and nickel are not passed forward for quantitative risk assessment.

TABLE 2.4

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Lightman Drum Superfund Site

Scenario Timeframe:	Current/Future
Medium:	Sediment
Exposure Medium:	Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (5)	COPC Flag (Y/N)	Rationale for Selection or Deletion (6)
Pump Branch Creek	*Volatile Organics*															
	79-20-9	Methyl acetate	5 (J)	1600 (J)	ug/kg	SD04-06	4 / 8	0.92 - 2.8	1600	ND	2208674	(N)	-		N	BSL
	1330-20-7	Xylenes (total)	-	3 (J)	ug/kg	SD03-24	1 / 8	0.01	3	ND	27063	(N)	120	A	N	BSL
	Semi-Volatile Organics															
	91-57-6	2-Methylnaphthalene	12 (J)	63 (J)	ug/kg	SD02-06	3 / 8	10 - 67	63	50	31286	(N)[4a]	-		N	BSL
	106-44-5	4-Methylphenol	-	390 (J)	ug/kg	SD03-06	1 / 8	12 - 70	390	ND	30552	(N)	-		N	BSL
	208-96-8	Acenaphthylene	27 (J)	36.5	ug/kg	SD01-06	2 / 8	8 - 67	36.5	41	-		-		Y	NSL
	120-12-7	Anthracene	39 (J)	69.5	ug/kg	SD01-06	2 / 8	8 - 67	69.5	75	2189612	(N)	220	A	N	BSL
	56-55-3	Benzo(a)Anthracene	97 (J)	110	ug/kg	SD01-06	2 / 8	9 - 67	110	120	621	(C)	320	A	N	BSL
	50-32-8	Benzo(a)Pyrene	10 (J)	155	ug/kg	SD01-06	3 / 8	8 - 67	155	170	62.15	(C)	370	A	Y	ASL
	205-99-2	Benzo(b)Fluoranthene	21 (J)	275	ug/kg	SD01-06	3 / 8	13 - 67	275	280	621.46	(C)	-		N	BSL
	191-24-2	Benzo(g,h,i)Perylene	-	70	ug/kg	SD01-06	1 / 8	40 - 67	70	120	-		170	A	Y	NSL
	207-08-9	Benzo(k)Fluoranthene	110 (J)	240	ug/kg	SD01-06	2 / 8	14 - 67	240	280	6215	(C)	240	A	N	BSL
	105-60-2	Caprolactam	-	31.5	ug/kg	SD01-06	1 / 8	14 - 67	31.5	56	3055155	(N)	-		N	BSL
	86-74-8	Carbazole	23 (J)	29	ug/kg	SD01-06	2 / 8	9 - 67	29	32	24319	(C)	-		N	BSL
	218-01-9	Chrysene	18 (J)	240	ug/kg	SD01-06	3 / 8	8 - 67	240	260	62146	(C)	340	A	N	BSL
	53-70-3	Dibenzo(a,h)anthracene	-	24 (J)	ug/kg	SD02-06	1 / 8	11 - 67	24	ND	62	(C)	60	A	N	BSL
	132-64-9	Dibenzofuran	18	21 (J)	ug/kg	SD02-06	2 / 8	7 - 67	21	20	14526	(N)	-		N	BSL
	117-84-0	Di-n-Octyl Phthalate	-	602.25	ug/kg	SD01-06	1 / 8	9 - 67	602.25	1200	244412	(N)	-		N	BSL
	206-44-0	Fluoranthene	9 (J)	400 (J)	ug/kg	SD04-06	5 / 8	7 - 67	400	390	229361	(N)	750	A	N	BSL
	193-39-5	Indeno(1,2,3-cd)Pyrene	-	56 (J)	ug/kg	SD02-06	1 / 8	8 - 67	56	ND	621	(C)	200	A	N	BSL
	91-20-3	Naphthalene	32 (J)	33.5	ug/kg	SD01-06	2 / 8	8 - 67	33.5	36	5592	(N)	-		N	BSL
	85-01-8	Phenanthrene	16 (J)	160	ug/kg	SD01-06	3 / 8	10 - 67	160	180	-		560	A	Y	NSL
	129-00-0	Pyrene	22 (J)	360 (J)	ug/kg	SD04-06	4 / 8	13 - 67	360	360	231595	(N)	490	A	N	BSL
	Pesticides/PCBs															
	72-54-8	4,4'-DDD	2.85	5.8	ug/kg	SD02-06	3 / 8	0.34 - 0.97	5.8	3	2437	(C)	8	A	N	BSL
	72-55-9	4,4'-DDE	2.7 (J)	16	ug/kg	SD02-06	3 / 8	0.24 - 0.9	16	10	1720	(C)	-		N	BSL
	50-29-3	4,4'-DDT	4.4 (J)	8.3 (J)	ug/kg	SD02-06	3 / 8	0.34 - 1.6	8.3	ND	1720	(C)	7	A	N	BSL
	5103-71-9	alpha-Chlordane	-	5.4 (J)	ug/kg	SD04-06	1 / 8	0.11 - 0.78	5.4	ND	1624	(C) 4b	-		N	BSL
	7421-93-4	Endrin aldehyde	-	8.4 (J)	ug/kg	SD04-06	1 / 8	0.83 - 0.87	8.4	ND	-		-		Y	NSL
	Inorganics															
	7429-90-5	Aluminum	655 (J)	9455	mg/kg	SD01-06	8 / 8	11.5 - 75.3	9455	10200	7614	(N)	-		Y	ASL
	7440-36-0	Antimony	0.76	1.8 (J)	mg/kg	SD04-06	2 / 8	0.24 - 2.1	1.8	0.84	3.13	(N)	-		N	BSL
	7440-38-2	Arsenic	1 (B)	10.1	mg/kg	SD01-06	4 / 8	0.61 - 2.3	10.1	10.8	0.39	(C)	6	A	Y	ASL/TOX
	7440-39-3	Barium	8.3 (B)	116 (J)	mg/kg	SD04-06	8 / 8	0.061 - 0.33	116	106	537	(N)	-		N	BSL
	7440-41-7	Beryllium	0.084 (B)	1.1 (J)	mg/kg	SD03-06	8 / 8	0.04 - 0.22	1.1	0.93	15.4	(N)	-		N	BSL

TABLE 2.4

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Lightman Drum Superfund Site

Scenario Timeframe:	Current/Future
Medium:	Sediment
Exposure Medium:	Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (5)	COPC Flag (Y/N)	Rationale for Selection or Deletion (6)
Pump Branch Creek	*Inorganics*															
	7440-43-9	Cadmium	0.12 (B)	0.465	mg/kg	SD01-06	4 / 8	0.061 - 0.33	0.465	0.5	3.7	(N)	600	A	N	BSL
	7440-70-2	Calcium	107 (B)	3050 (J)	mg/kg	SD04-24	8 / 8	3 - 19.8	3050	1160	-		-		N	NUTR
	7440-47-3	Chromium	1.4 (J)	13.9	mg/kg	SD01-06	8 / 8	0.16 - 1.1	13.9	15.1	22	(N)[4c]	26000	A	N	BSL [6a]
	7440-48-4	Cobalt	0.14 (B)	2.1 (J)	mg/kg	SD03-06	7 / 8	0.14 - 0.87	2.1	1.8	13.8	(N)	-		N	BSL
	7440-50-8	Copper	1.4 (J)	150 (J)	mg/kg	SD04-06	8 / 8	0.3 - 1.4	150	32.7	313	(N)	16000	A	N	BSL
	57-12-5	Cyanide	0.036 (B)	1.05	mg/kg	SD01-06	7 / 8	0.028 - 0.11	1.05	1.1	122	(N)	-		N	BSL
	7439-89-6	Iron	344 (J)	10695	mg/kg	SD01-06	8 / 8	2.5 - 22.2	10695	12100	2346	(N)	-		Y	ASL
	7439-92-1	Lead	4.5 (J)	165 (J)	mg/kg	SD04-06	8 / 8	0.24 - 1.2	165	150	40	(N)	31000	A	Y	ASL
	7439-95-4	Magnesium	27 (B)	539 (J)	mg/kg	SD03-06	8 / 8	2.5 - 13.2	539	406	-		-		N	NUTR
	7439-96-5	Manganese	2.8 (B)	23.15	mg/kg	SD01-06	8 / 8	0.04 - 0.43	23.15	26.4	176	(N)	-		N	BSL
	7439-97-6	Mercury	0.093 (B)	0.48 (J)	mg/kg	SD04-06	4 / 8	0.039 - 0.22	0.48	0.36	0.61	(N)[4d]	200	A	N	BSL
	7440-02-0	Nickel	0.8 (B)	9.55	mg/kg	SD01-06	8 / 8	0.2 - 1.1	9.55	9.9	156	(N) [4e]	16000	A	N	BSL
	7440-09-7	Potassium	19.3 (B)	512 (J)	mg/kg	SD04-06	8 / 8	8.1 - 60.7	512	213	-		-		N	NUTR
	7782-49-2	Selenium	0.94 (J)	5.9 (J)	mg/kg	SD04-24	4 / 8	0.61 - 2.7	5.9	3.4	39	(N)	-		N	BSL
	7440-23-5	Sodium	97	2270 (J)	mg/kg	SD04-06	8 / 8	61.5 - 298	2270	142	-		-		N	NUTR
	7440-62-2	Vanadium	1.4 (B)	36.7 (J)	mg/kg	SD04-06	8 / 8	0.14 - 1.1	36.7	33.3	8	(N)	-		Y	ASL
	7440-66-6	Zinc	3.1 (B)	107 (J)	mg/kg	SD04-24	8 / 8	0.22 - 1.2	107	46	2346	(N)	120000	A	N	BSL

(1) The Qualifier codes are defined as the following:

B - The analyte was detected at a concentration below the Contract Required Detection Limit.

J - The analyte was detected and is considered an estimated value.

The average result for SD01-06 and Field Duplicate FSD01-06 was used. Where one measurement was non-detect, 1/2 the detection limit was used in average calculation.

(2) Maximum detected value was used for screening.

(3) Background is upgradient sediment sample SD-01

(4) Units are the same as those for Screening Concentrations. Region 9 PRG (2004) for Residential Soil, adjusted for a HI= 0.1, where (S)=soil saturation value; (C)=Cancer PRG; (N)= Noncancer PRG. Where Region 9 PRGs were unavailable, USEPA Region 3 RBC values were used, adjusted for a HI= 0.1 for noncancer effects.

(a) Region 3 RBC; b) Region 9 PRG (2004) value for "Chlordane (technical)"; c) Region 9 PRG (2004) for Chromium VI+++ in Residential soils, as the more conservative value Non-Standard Method Applied (See PRG User's Guide); d) Region 9 PRG (2004) for Mercury (methyl); e) Region 9 PRG (2004) value for Nickel (soluble salts)

(-) = no PRG or RBC values found

(5) A - NJDEP screening guidelines

(-) = no ARAR found

(6) ASL = Above Screening Limit; BSL = Below Screening Limit; NSL = no screening limit; FREQ = analyte detected infrequently; NUTR = compound is considered an essential nutrient and is ubiquitous in the environmen; TOX = analyte is a Group A carcinogen for at least one exposure route

(a) Because chromium (VI) and Nickel are Group A known human carcinogens only for inhalation pathway, Chromium and nickel are not passed forward for quantitative risk assessment.

TABLE 2.5

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Lightman Drum Superfund Site

Scenario Timeframe:	Future
Medium:	Groundwater (1)
Exposure Medium:	Groundwater/ Air

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (2)	Maximum Concentration (Qualifier) (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (3)	Background Value (4)	Screening Toxicity Value (N/C) (5)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (6)	COPC Flag (Y/N)	Rationale for Selection or Deletion (7)
Groundwater and Water Vapors from Showering with Groundwater	*Volatile Organics*															
	71-55-6	1,1,1-Trichloroethane	1	110 (J)	µg/L	MW-21	11 / 48	0.1 - 1.1	110	ND	317	(NC)	200	A	N	BSL
	79-34-5	1,1,2,2-Tetrachloroethane	-	1	µg/L	MW-8A	1 / 48	0.1 - 0.1	1	ND	0.055	(C)	1	B	N	FREQ
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	-	0.2 (J)	µg/L	MW-8A	1 / 48	0.1 - 0.1	0.2	ND	5918	(NC)			N	BSL
	79-00-5	1,1,2-Trichloroethane	1.1 (J)	2.7	µg/L	MW-8A	3 / 48	0.1 - 1.5	2.7	ND	0.2	(C)	5	A	Y	ASL
	75-34-3	1,1-Dichloroethane	0.16 (J)	2 (J)	µg/L	MW-12	3 / 48	0.1 - 1	2	ND	81	(NC)	1	B	N	BSL
	75-35-4	1,1-Dichloroethene	0.13 (J)	4.3 (J)	µg/L	MW-12	6 / 48	0.1 - 0.78	4.3	ND	34	(NC)	7	A	N	BSL
	87-61-6	1,2,3-Trichlorobenzene	0.27 (J)	280 (J)	µg/L	MW-21	7 / 24	0.1 - 0.1	280	ND	-				Y	NSL
	120-82-1	1,2,4-Trichlorobenzene	0.48 (J)	590	µg/L	MW-21	6 / 48	0.1 - 0.1	590	ND	0.716	(NC)	70	A	Y	ASL
	95-50-1	1,2-Dichlorobenzene	0.21 (J)	87 (J)	µg/L	MW-21	7 / 48	0.1 - 0.87	87	ND	37	(NC)	600	A	Y	ASL
	107-06-2	1,2-Dichloroethane	-	2 (J)	µg/L	MW-12	1 / 48	1.3 - 1.3	2	ND	0.123	(C)	5	A	N	FREQ
	541-73-1	1,3-Dichlorobenzene	0.25 (J)	12 (J)	µg/L	MW-2A	5 / 48	0.1 - 0.1	12	ND	18.25	(NC)	5	B	N	BSL
	106-46-7	1,4-Dichlorobenzene	0.55	130 (J)	µg/L	MW-21	8 / 48	0.1 - 1.6	130	ND	0.50	(C)	75	A	Y	ASL
	67-64-1	Acetone	4 (J)	340 (J)	µg/L	MW-2A	2 / 24	3.1 - 3.1	340	ND	548	(NC)	10	B	N	BSL
	71-43-2	Benzene	1.7	140	µg/L	MW-12	4 / 48	0.1 - 1.3	140	ND	0.35	(C)	5	A	Y	ASL/TOX
	75-15-0	Carbon Disulfide	-	2.7	µg/L	MW-9	1 / 48	.5-500	2.7	0.4 J	104.29	(NC)	1	B	N	BSL
	108-90-7	Chlorobenzene	1.4	86 (J)	µg/L	MW-21	8 / 48	0.1 - 0.73	86	ND	10.6	(NC)	100	A	Y	ASL
	67-66-3	Chloroform	0.15 (J)	2.7	µg/L	MW-10	9 / 48	0.1 - 0.83	2.7	ND	0.17	(C)	1	B	Y	ASL
	156-59-2	cis-1,2-Dichloroethene	0.14 (J)	1400	µg/L	MW-2A	18 / 48	0.1 - 1.4	1400	ND	6.1	(NC)	70	A	Y	ASL
	100-41-4	Ethylbenzene	0.25 (J)	3100	µg/L	MW-21	8 / 48	0.1 - 0.84	3100	ND	134	(NC)	700	A	Y	ASL
	98-82-8	Isopropylbenzene	0.59	54 (J)	µg/L	MW-21	3 / 48	0.1 - 0.1	54	ND	66	(NC)	1	B	N	BSL
	75-09-2	Methylene Chloride	0.1 (J)	0.13 (J)	µg/L	MW-12	2 / 48	0.1 - 0.1	0.13	ND	4.28	(C)	5	A	N	BSL
	127-18-4	Tetrachloroethene	0.27 (J)	4200	µg/L	MW-8A	28 / 48	0.1 - 0.97	4200	ND	0.10	(C)	5	A	Y	ASL
	108-88-3	Toluene	5 (J)	630	µg/L	MW-21	3 / 48	0.1 - 0.8	630	ND	72	(NC)	1000	A	Y	ASL
	156-60-5	trans-1,2-Dichloroethene	0.21	3.5	µg/L	MW-19	3 / 48	0.1 - 0.81	3.5	ND	12.2	(NC)	100	A	N	BSL
	79-01-6	Trichloroethene	0.11 (J)	2100	µg/L	MW-8A	28 / 48	0.1 - 0.95	2100	ND	0.03	(C)	5	A	Y	ASL
	75-01-4	Vinyl Chloride	-	6.6 (J)	µg/L	MW-2A	1 / 48	0.1 - 0.1	6.6	ND	0.02	(C)	2	A	Y	ASL/TOX
	1330-20-7	Xylenes (total)	0.47 (J)	90000	µg/L	MW-21	12 / 48	0.1 - 0.69	90000	ND	20.6	(NC)	10000	A	Y	ASL
	Semivolatile Organics															
	105-67-9	2,4-Dimethylphenol	2 (J)	300	µg/L	MW-2A	5 / 48	1.8 - 2	300	ND	73	(NC)	20	B	Y	ASL
	91-57-6	2-Methylnaphthalene	9 (J)	10	µg/L	MW-21	2 / 48	1.8 - 2	10	ND	2.43	N	10	B	N	FREQ
	95-48-7	2-Methylphenol	3 (J)	29	µg/L	MW-2A	3 / 48	1.8 - 2	29	ND	182	(NC)	-	A	N	BSL
	106-44-5	4-Methylphenol	16	1100	µg/L	MW-2A	4 / 48	2.2 - 2.5	1100	ND	18.2	(NC)	-	A	Y	ASL
	117-81-7	bis(2-Ethylhexyl)Phthalate	3 (J)	17	µg/L	MW-13	3 / 24	2.7 - 2.9	17	ND	4.8	(C)	6	A	Y	ASL
	85-68-7	Butylbenzylphthalate	2 (J)	10	µg/L	MW-21	3 / 48	1.8 - 2	10	ND	730	(NC)	1	B	N	BSL
	105-60-2	Caprolactam	-	3 (J)	µg/L	MW-18	1 / 48	1.9 - 1.9	3	ND	1825	(NC)	-	A	N	BSL
	84-74-2	Di-n-butylphthalate	-	4 (J)	µg/L	MW-21	2 / 48	1.8 - 2	4	ND	365	(NC)	1	B	N	BSL
	91-20-3	Naphthalene	2 (J)	17	µg/L	MW-21	4 / 48	1.8 - 2	17	ND	0.62	(NC)	2	B	Y	ASL
	85-01-8	Phenanthrene	-	26	µg/L	MW-2A	1 / 48	1.9 - 1.9	26	ND	-		0.4	B	N	FREQ
	108-95-2	Phenol	-	440	µg/L	MW-2A	1 / 48	1.9 - 1.9	440	ND	1095	(NC)	10	B	N	BSL

TABLE 2.5

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Lightman Drum Superfund Site

Scenario Timeframe:	Future
Medium:	Groundwater (1)
Exposure Medium:	Groundwater/ Air

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (2)	Maximum Concentration (Qualifier) (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (3)	Background Value (4)	Screening Toxicity Value (N/C) (5)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (6)	COPC Flag (Y/N)	Rationale for Selection or Deletion (7)
Groundwater and Water Vapors from Showering with Groundwater		*Pesticides/PCBs*														
	72-55-9	4,4'-DDE	-	0.064 (J)	µg/L	MW-21	1 / 48	0.02 - 0.02	0.064	ND	0.20	(C)	0.01	B	N	BSL
	5103-71-9	alpha-Chlordane	-	0.015 (J)	µg/L	MW-19	1 / 48	0.011 - 0.011	0.015	ND	0.192	(C) [5a]	-	A	N	BSL
	319-85-7	beta-BHC	-	0.22 (JN)	µg/L	MW-21	1 / 48	0.0095 - 0.0095	0.22	ND	0.04	(C)	0.04	B	N	FREQ
	319-86-8	delta-BHC	0.014 (J)	0.021 (J)	µg/L	MW-8A	2 / 48	0.0095 - 0.0098	0.021	ND	-		0.03	B	N	FREQ
	60-57-1	Dieldrin	-	0.031 (J)	µg/L	MW-9	1 / 48	0.02 - 0.02	0.031	ND	0.004	(C)	0.03	B	N	FREQ
	959-98-8	Endosulfan I	-	0.037 (J)	µg/L	MW-8A	1 / 48	0.0095 - 0.0095	0.037	ND	21.90	(NC) [5b]	0.02	B	N	BSL
	33213-65-9	Endosulfan II	-	0.046 (J)	µg/L	MW-21	1 / 48	0.02 - 0.02	0.046	ND	21.90	(NC) [5b]	0.04	B	N	BSL
	1031-07-8	Endosulfan sulfate	0.039 (J)	0.078 (J)	µg/L	MW-21	2 / 48	0.019 - 0.02	0.078	ND	21.90	(NC) [5b]	0.02	B	N	BSL
	58-89-9	gamma-BHC (Lindane)	-	0.022 (J)	µg/L	MW-21	1 / 48	0.0098 - 0.0098	0.022	ND	0.05	(C)	0.2	A	N	BSL
	1024-57-3	Heptachlor Epoxide	0.095 (J)	0.5 (J)	µg/L	MW-8A	2 / 48	0.0095 - 0.011	0.5	ND	0.01	(C)	0.2	A	N	FREQ
		Inorganics														
	7429-90-5	Aluminum	26.5 (B)	2930 (J)	µg/L	MW-9	33 / 48	8.8 - 13.5	2930	172 B	3649.87	(NC)	30	B	N	BSL
	7440-36-0	Antimony	2.5 (B)	7.5 (J)	µg/L	MW-10	3 / 48	1.2 - 2.1	7.5	ND	1.46	(NC)	6	A	Y	ASL
	7440-38-2	Arsenic	1.7 (J)	3.3 (J)	µg/L	MW-2A	4 / 48	1.4 - 2.1	3.3	ND	0.04	(C)	10	A	Y	ASL/TOX
	7440-39-3	Barium	2 (B)	143 (J)	µg/L	MW-11	43 / 48	0.1 - 0.1	143	3.1 J	255.50	(NC)	2000	A	N	BSL
	7440-41-7	Beryllium	0.14 (B)	5	µg/L	OSW	4 / 48	0.1 - 0.1	5	ND	7.30	(NC)	4	A	N	BSL
	7440-43-9	Cadmium	0.33 (B)	102	µg/L	MW-3	18 / 48	0.2 - 0.3	102	ND	1.82	(NC)	5	A	Y	ASL
	7440-70-2	Calcium	1265	15600	µg/L	MW-21	44 / 48	6.5 - 17	15600	9870	-		-	A	N	NUTR
	7440-47-3	Chromium	0.62 (B)	28.2	µg/L	MW-10	40 / 48	0.4 - 0.6	28.2	2.3 B	10.95	(NC) [5c]	100	A	Y	ASL/TOX
	7440-48-4	Cobalt	0.51 (J)	14.1 (B)	µg/L	MW-11	37 / 48	0.5 - 0.6	14.1	ND	73.00	(NC)	35	B	N	BSL
	7440-50-8	Copper	0.57 (B)	62.7	µg/L	WS-1	32 / 48	0.3 - 0.4	62.7	1.1 J	146.00	(NC)	1300	A	N	BSL
	7439-89-6	Iron	30.9 (B)	55700	µg/L	MW-2A	42 / 48	9 - 11.2	55700	932	1094.99	(NC)	20	B	Y	ASL
	7439-92-1	Lead	1.1 (J)	22	µg/L	MW-15	11 / 48	1 - 1.3	22	ND	15	(NC) [5d]	5	B	Y	ASL
	7439-95-4	Magnesium	222 (J)	4010 (B)	µg/L	MW-4	44 / 48	2.5 - 7.3	4010	1960 B	-		-	A	N	NUTR
	7439-96-5	Manganese	5.3 (B)	229	µg/L	MW-21	44 / 48	0.1 - 0.2	229	5.3 B	87.60	(NC)	0.4	B	Y	ASL
	7439-97-6	Mercury	0.1 (J)	0.16 (B)	µg/L	MW-12	6 / 48	0.1 - 0.1	0.16	ND	0.365	(NC) [5e]	2	A	N	BSL
	7440-02-0	Nickel	1.1 (J)	26.1 (B)	µg/L	MW-21	43 / 48	0.8 - 0.9	26.1	1.2 B	73.00	(NC)	4	B	Y	TOX
	7440-09-7	Potassium	199 (B)	8260	µg/L	MW-2A	44 / 48	5.3 - 10	8260	934 B	-		-	A	N	NUTR
	7782-49-2	Selenium	2.9 (B)	4.1 (J)	µg/L	MW-17	3 / 48	2.7 - 3.3	4.1	ND	18.25	(NC)	50	A	N	BSL

TABLE 2.5

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Lightman Drum Superfund Site

Scenario Timeframe:	Future
Medium:	Groundwater (1)
Exposure Medium:	Groundwater/ Air

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (2)	Maximum Concentration (Qualifier) (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (3)	Background Value (4)	Screening Toxicity Value (N/C) (5)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (6)	COPC Flag (Y/N)	Rationale for Selection or Deletion (7)
Groundwater and Water Vapors from Showering with Groundwater	*Inorganics*															
	7440-22-4	Silver	-	0.61 (J)	µg/L	MW-2A	1 / 48	0.5 - 0.5	0.61	ND	18.25	(NC)	1	B	N	BSL
	7440-23-5	Sodium	1140 (J)	69300	µg/L	MW-1	41 / 48	46.2 - 124	69300	69300	-		400	B	N	NUTR
	7440-28-0	Thallium	4.3 (B)	8.6 (J)	µg/L	MW-14	4 / 48	3 - 3.9	8.6	ND	0.24	(NC)	2	A	Y	ASL
	7440-62-2	Vanadium	0.34 (J)	8.2 (B)	µg/L	MW-12	29 / 48	0.3 - 0.5	8.2	1.7 B	3.65	(NC)	-	A	Y	ASL
	7440-66-6	Zinc	1.5 (J)	482.5	µg/L	MW-9	37 / 48	0.3 - 1.2	482.5	26.3	1094.99	(NC)	10	B	N	BSL

Footnotes:

(1) The average result for samples with Field Duplicate samples was used. Where one measurement was nondetect, 1/2 the detection limit was used in average calculation. Concentrations listed will be used as inputs for calculating concentration in air while showering. OSW is the office supply well.

In 2005, duplicate samples were taken for MW-9 and MW-19

In 2006, duplicate samples were taken for MW-1 and MW-20

(2) Where there was only one detection, it is represented as the maximum. The Qualifier codes are defined as the following:

B The analyte was detected at a concentration below the Contract Required Detection Limit.

J The analyte was detected and is considered an estimated value.

JN The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

(3) Maximum detected value was used for screening.

(4) Background well is MW-01

(ND) = Not Detected

(5) Units are the same as those for Screening Concentrations. Where available, Screening Toxicity Values are Region 9 PRGs (2004) for Tap Water, adjusted for a HI= 0.1 for noncancer effects, where (C)=Cancer PRG; (NC)= Noncancer PRG. Where Region 9 PRG (2004)s were unavailable, USEPA Region 3 RBC values were used, adjusted for a HI= 0.1 for noncancer effects.

a) Region 9 PRG (2004) value for "Chlordane, technical"; b) Region 9 PRG (2004) value for "Endosulfan"; c) Region 9 PRG (2004) for Chromium VI nonstandard method applied, see Region 9 PRG (2004) User's Guide; d) Action Levels for lead in tap water from the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories (15 µg/L); e) Region 9 PRG (2004) for Mercury (methyl);

(-) = no PRG or RBC values found

(6) Potential ARARs/TBC values are the higher of Federal MCLs and NJ Class IIA PQLs A Federal MCL B NJ Class IIA PQL

(-) = no ARAR found

(7) ASL = Above Screening Limit; BSL = Below Screening Limit; FREQ = analyte detected infrequently; NSL = No Screening Limit; NUTR = compound is considered an essential nutrient and is ubiquitous in the environment; TOX = analyte is a Group A carcinogen for at least one exposure route.

TABLE 2.6

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Lightman Drum Superfund Site

Scenario Timeframe:	Future
Medium:	Groundwater (1)
Exposure Medium:	Groundwater/ Air

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (2)	Maximum Concentration (Qualifier) (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (3)	Background Value (4)	Screening Toxicity Value (N/C) (5)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (6)	COPC Flag (Y/N)	Rationale for Selection or Deletion (7)
	Volatile Organics															
Hypothetical Future On-Site Supply Wells	71-55-6	1,1,1-Trichloroethane	1	110 (J)	ug/L	MW-21	9 / 30	0.1 - 1.1	110	ND	317	(NC)	200	A	N	BSL
	79-34-5	1,1,2,2-Tetrachloroethane	-	1	ug/L	MW-8A	1 / 30	0.1 - 0.66	1	ND	0.06	(C)	1	B	N	FREQ
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	-	0.2 (J)	ug/L	MW-8A	1 / 30	0.1 - 0.97	0.2	ND	5918	(NC)	-		N	BSL
	79-00-5	1,1,2-Trichloroethane	-	2.7	ug/L	MW-8A	1 / 30	0.1 - 1.5	2.7	ND	0.20	(C)	5	A	N	FREQ
	75-34-3	1,1-Dichloroethane	-	0.16 (J)	ug/L	MW-8A	1 / 30	0.1 - 1	0.16	ND	81	(NC)	1	B	N	BSL
	75-35-4	1,1-Dichloroethene	0.13 (J)	1.9	ug/L	MW-8A	3 / 30	0.1 - 0.78	1.9	ND	34	(NC)	7	A	N	BSL
	87-61-6	1,2,3-Trichlorobenzene	0.27 (J)	280 (J)	ug/L	MW-21	6 / 15	0.1	280	-	-		-		Y	NSL
	120-82-1	1,2,4-Trichlorobenzene	0.48 (J)	590	ug/L	MW-21	5 / 30	0.1 - 0.85	590	ND	0.72	(NC)	70	A	Y	ASL
	95-50-1	1,2-Dichlorobenzene	0.21 (J)	87 (J)	ug/L	MW-21	5 / 30	0.1 - 0.87	87	ND	37	(NC)	600	A	Y	ASL
	541-73-1	1,3-Dichlorobenzene	0.25 (J)	12 (J)	ug/L	MW-2A	4 / 30	0.1 - 0.97	12	ND	18	(NC)	5	B	N	BSL
	106-46-7	1,4-Dichlorobenzene	0.55	130 (J)	ug/L	MW-21	5 / 30	0.1 - 1.6	130	ND	0.50	(C)	75	A	Y	ASL
	67-64-1	Acetone	3.775	340 (J)	ug/L	MW-2A	3 / 15	3.1	340	ND	548	(NC)	10	B	N	BSL
	71-43-2	Benzene	1.7	10 (J)	ug/L	MW-2A	2 / 30	0.1 - 1.3	10	ND	0.35	(C)	5	A	Y	ASL/TOX
	75-15-0	Carbon Disulfide	-	0.225	ug/L	MW-1	1 / 30	0.1 - 0.9	0.225	0.4 J	104	(NC)	1	B	N	BSL
	108-90-7	Chlorobenzene	1.4	86 (J)	ug/L	MW-21	5 / 30	0.1 - 0.73	86	ND	11	(NC)	100	A	Y	ASL
	67-66-3	Chloroform	0.22 (J)	2.7	ug/L	MW-10	5 / 30	0.1 - 0.83	2.7	ND	0.2	(C)	1	B	Y	ASL
	156-59-2	cis-1,2-Dichloroethene	0.14 (J)	1400	ug/L	MW-2A	11 / 30	0.1 - 1.4	1400	ND	6.1	(NC)	70	A	Y	ASL
	100-41-4	Ethylbenzene	0.39 (J)	3100	ug/L	MW-21	6 / 30	0.1 - 0.84	3100	ND	134	(NC)	700	A	Y	ASL
	98-82-8	Isopropylbenzene	12 (J)	54 (J)	ug/L	MW-21	2 / 30	0.1 - 1.3	54	ND	66	(NC)	1	B	N	BSL
	127-18-4	Tetrachloroethene	0.27 (J)	4200	ug/L	MW-8A	15 / 30	0.1 - 0.97	4200	ND	0.1	(C)	5	A	Y	ASL
	108-88-3	Toluene	5 (J)	630	ug/L	MW-21	3 / 30	0.1 - 0.8	630	ND	72	(NC)	1000	A	Y	ASL
	156-60-5	trans-1,2-Dichloroethene	-	0.45 (J)	ug/L	MW-3	1 / 30	0.1 - 0.81	0.45	ND	12	(NC)	100	A	N	BSL
	79-01-6	Trichloroethene	0.11 (J)	2100	ug/L	MW-8A	18 / 30	0.1 - 0.95	2100	ND	0.028	(C)	5	A	Y	ASL
	75-01-4	Vinyl Chloride	-	6.6 (J)	ug/L	MW-2A	1 / 30	0.1 - 0.64	6.6	ND	0.020	(C)	2	A	Y	ASL/TOX
	1330-20-7	Xylenes (total)	0.47 (J)	90000	ug/L	MW-21	10 / 30	0.1 - 0.69	90000	ND	21	(NC)	10000	A	Y	ASL

TABLE 2.6

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Lightman Drum Superfund Site

Scenario Timeframe:	Future
Medium:	Groundwater (1)
Exposure Medium:	Groundwater/ Air

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (2)	Maximum Concentration (Qualifier) (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (3)	Background Value (4)	Screening Toxicity Value (N/C) (5)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (6)	COPC Flag (Y/N)	Rationale for Selection or Deletion (7)
Hypothetical Future On-Site Supply Wells	*Semivolatile Organics*															
	105-67-9	2,4-Dimethylphenol	5 (J)	300	ug/L	MW-2A	4 / 30	1.7 - 2	300	ND	73	(NC)	20	B	Y	ASL
	91-57-6	2-Methylnaphthalene	9 (J)	10	ug/L	MW-21	2 / 30	1.7 - 2	10	ND	2.4	(NC)	10	B	Y	ASL
	95-48-7	2-Methylphenol	3 (J)	29	ug/L	MW-2A	3 / 30	1.7 - 2	29	ND	182	(NC)	-		N	BSL
	106-44-5	4-Methylphenol	16	1100	ug/L	MW-2A	4 / 30	2.1 - 2.5	1100	ND	18	(NC)	-		Y	ASL
	117-81-7	bis(2-Ethylhexyl)Phthalate	-	3 (J)	ug/L	MW-21	1 / 30	2.7 - 3.1	3	ND	4.8	(C)	6	A	N	BSL
	85-68-7	Butylbenzylphthalate	2 (J)	10	ug/L	MW-21	3 / 30	1.7 - 2	10	ND	730	(NC)	1	B	N	BSL
	84-74-2	Di-n-butylphthalate	-	4 (J)	ug/L	MW-21	2 / 30	1.7 - 2	4	ND	365	(NC)	1	B	N	BSL
	91-20-3	Naphthalene	2 (J)	17	ug/L	MW-21	4 / 30	1.7 - 2	17	ND	0.62	(NC)	2	B	Y	ASL
	85-01-8	Phenanthrene	-	26	ug/L	MW-2A	1 / 30	1.7 - 2	26	ND	-		0.4	B	N	FREQ
	108-95-2	Phenol	-	440	ug/L	MW-2A	1 / 30	1.7 - 2	440	ND	1095	(NC)	10	B	N	BSL
	Pesticides/PCBs															
	72-55-9	4,4'-DDE	-	0.064 (J)	ug/L	MW-21	1 / 30	0.018 - 0.021	0.064	ND	0.20	(C)	0.01	B	N	BSL
	319-85-7	beta-BHC	-	0.22 (JN)	ug/L	MW-21	1 / 30	0.0089 - 0.011	0.22	ND	0.04	(C)	0.04	B	N	FREQ
	319-86-8	delta-BHC	0.014 (J)	0.021 (J)	ug/L	MW-8A	2 / 30	0.0089 - 0.011	0.021	ND	-		0.03	B	N	BSL
	60-57-1	Dieldrin	-	0.031 (J)	ug/L	MW-9	1 / 30	0.018 - 0.021	0.031	ND	0.004	(C)	0.03	B	N	FREQ
	959-98-8	Endosulfan I	-	0.037 (J)	ug/L	MW-8A	1 / 30	0.0089 - 0.011	0.037	ND	21.9	(NC) [5a]	0.02	B	N	BSL
	33213-65-9	Endosulfan II	-	0.046 (J)	ug/L	MW-21	1 / 30	0.018 - 0.021	0.046	ND	21.9	(NC) [5a]	0.04	B	N	BSL
	1031-07-8	Endosulfan sulfate	0.039 (J)	0.078 (J)	ug/L	MW-21	2 / 30	0.018 - 0.021	0.078	ND	21.9	(NC) [5a]	0.02	B	N	BSL
	58-89-9	gamma-BHC (Lindane)	-	0.022 (J)	ug/L	MW-21	1 / 30	0.0089 - 0.011	0.022	ND	0.05	(C)	0.2	A	N	BSL
	1024-57-3	Heptachlor Epoxide	-	0.5 (J)	ug/L	MW-8A	1 / 30	0.0089 - 0.011	0.5	ND	0.01	(C)	0.2	A	N	FREQ
	Inorganics															
	7429-90-5	Aluminum	27.6 (B)	2930 (J)	ug/L	MW-9	26 / 30	8.8 - 13.5	2930	172 B	3650	(NC)	30	B	N	BSL
	7440-36-0	Antimony	1.05	7.5 (J)	ug/L	MW-10	2 / 30	1.2 - 2.1	7.5	ND	1.46	(NC)	6	A	Y	ASL
	7440-38-2	Arsenic	1.05	3.3 (J)	ug/L	MW-2A	4 / 30	1.4 - 2.1	3.3	ND	0.04	(C)	10	A	Y	ASL/TOX
	7440-39-3	Barium	2 (B)	143 (J)	ug/L	MW-11	29 / 30	0.1	143	3.1 J	255	(NC)	2000	A	N	BSL
	7440-41-7	Beryllium	0.05	5	ug/L	OSW	4 / 30	0.1	5	ND	7.30	(NC)	4	A	N	BSL
	7440-43-9	Cadmium	0.33 (B)	102	ug/L	MW-3	17 / 30	0.2 - 0.3	102	ND	1.82	(NC)	5	A	Y	ASL
	7440-70-2	Calcium	1340 (J)	15600	ug/L	MW-21	30 / 30	6.5 - 17	15600	9870			-		N	NUTR
	7440-47-3	Chromium	0.62 (B)	28.2	ug/L	MW-10	27 / 30	0.4 - 0.6	28.2	2.3 B	10.950	(NC) [5b]	100	A	Y	ASL/TOX
	7440-48-4	Cobalt	0.57 (J)	14.1 (B)	ug/L	MW-11	27 / 30	0.5 - 0.6	14.1	ND	73	(NC)	35	B	N	BSL
	7440-50-8	Copper	0.57 (B)	62.7	ug/L	WS-1	24 / 30	0.3 - 0.4	62.7	1.1 J	146	(NC)	1300	A	N	BSL
	7439-89-6	Iron	50.2 (B)	55700	ug/L	MW-2A	29 / 30	9 - 11.2	55700	932	1095	(NC)	20	B	Y	ASL

TABLE 2.6

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Lightman Drum Superfund Site

Scenario Timeframe:	Future
Medium:	Groundwater (1)
Exposure Medium:	Groundwater/ Air

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (2)	Maximum Concentration (Qualifier) (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (3)	Background Value (4)	Screening Toxicity Value (N/C) (5)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (6)	COPC Flag (Y/N)	Rationale for Selection or Deletion (7)
	7439-92-1	Lead	0.65	2.5 (J)	ug/L	MW-5	8 / 30	1 - 1.3	2.5	ND	15	(NC) [5c]	5	B	N	BSL

TABLE 2.6

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Lightman Drum Superfund Site

Scenario Timeframe:	Future
Medium:	Groundwater (1)
Exposure Medium:	Groundwater/ Air

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (2)	Maximum Concentration (Qualifier) (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (3)	Background Value (4)	Screening Toxicity Value (N/C) (5)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (6)	COPC Flag (Y/N)	Rationale for Selection or Deletion (7)
Hypothetical Future On-Site Supply Wells	*Inorganics*															
	7439-95-4	Magnesium	222 (J)	4010 (B)	ug/L	MW-4	30 / 30	2.5 - 7.3	4010	1960 B			-		N	NUTR
	7439-96-5	Manganese	5.3 (B)	229	ug/L	MW-21	29 / 30	0.1 - 0.2	229	5.3 B	88	(NC)	0.4	B	Y	ASL
	7439-97-6	Mercury	0.05	0.12 (J)	ug/L	MW-9	3 / 30	0.1	0.12	ND	0.365	(NC) [5d]	2	A	N	BSL
	7440-02-0	Nickel	1.1 (J)	26.1 (B)	ug/L	MW-21	28 / 30	0.8 - 0.9	26.1	1.2 B	73	(NC)	4	B	Y	TOX
	7440-09-7	Potassium	199 (B)	8260	ug/L	MW-2A	30 / 30	5.3 - 10	8260	934 B			-		N	NUTR
	7782-49-2	Selenium	1.35	5	ug/L	OSW	4 / 30	2.7 - 3.3	5	ND	18	(NC)	50	A	N	BSL
	7440-22-4	Silver	0.4	0.61 (J)	ug/L	MW-2A	2 / 30	0.5 - 0.8	0.61	ND	18	(NC)	1	B	N	BSL
	7440-23-5	Sodium	1140 (J)	69300	ug/L	MW-1	29 / 30	46.2 - 124	69300	69300			400	B	N	NUTR
	7440-28-0	Thallium	-	1.5	ug/L	MW-9	1 / 30	3 - 3.9	1.5	ND	0.24	(NC)	2	A	N	FREQ
	7440-62-2	Vanadium	0.34 (J)	5.3 (B)	ug/L	MW-21	18 / 30	0.3 - 0.5	5.3	1.7 B	3.65	(NC)	-		Y	ASL
	7440-66-6	Zinc	7.3 (B)	482.5	ug/L	MW-9	23 / 30	0.3 - 1.2	482.5	26.3	1095	(NC)	10	B	N	BSL

Footnotes:

(1) The average result for samples with Field Duplicate samples was used. Where one measurement was non-detect, 1/2 the detection limit was used in average calculation. Only on-Property wells reported. Concentrations listed will be used as inputs for calculating concentration in air while showering

In 2005, duplicate samples were taken for MW-9

In 2006, duplicate samples were taken for MW-1

(2) Where there was only one detection, it is represented as the maximum. The Qualifier codes are defined as the following:

B The analyte was detected at a concentration below the Contract Required Detection Limit.

J The analyte was detected and is considered an estimated value.

(3) Maximum detected value was used for screening.

(4) Background well is MW-01

ND Not Detected

(5) Units are the same as those for Screening Concentrations. Where available, Screening Toxicity Values are Region 9 PRGs (2004) for Tap Water, adjusted for a HI= 0.1 for noncancer effects, where (C)=Cancer PRG; (NC)= Noncancer PRG. Where Region 9 PRGs (2004) were unavailable, USEPA Region 3 RBC values were used, adjusted for a HI= 0.1 for noncancer effects.

a) Region 9 PRG (2004) value for "Endosulfan"; b) Region 9 PRG (2004) for Chromium VI nonstandard method applied, see Region 9 PRG (2004) User's Guide; c) Action Levels for lead in tap water from the USEPA 2004 Edition of the Drinking Water Standards and Health Advisories (15 µg/L); d) Region 9 PRG (2004) for Mercury (methyl);

(-) = no PRG or RBC values found

(6) Potential ARARs/TBC values are the higher of Federal MCLs and NJ Class IIA PQLs: A Federal MCL B NJ Class IIA PQL

(-) = no ARAR found

(7) ASL = Above Screening Limit; BSL = Below Screening Limit; NSL = No Screening Limit; NUTR = compound is considered an essential nutrient and is ubiquitous in the environment; FREQ = analyte detected infrequently; TOX = analyte is a Group A carcinogen for at least one exposure route

a) This compound was detected infrequently (in 2 of 30 samples), had no screening toxicity value and was below the potential ARAR value and was therefore screened out as a COPC.

TABLE 2.7

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Lightman Drum Superfund Site

Scenario Timeframe:	Future
Medium:	Groundwater (1)
Exposure Medium:	Air

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (2)	Maximum Concentration (Qualifier) (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (3)	Background Value (4)	Screening Toxicity Value (N/C) (5)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (6)	COPC Flag (Y/N)	Rationale for Selection or Deletion (7)
		Volatile Organics														
Vapor Intrusion from On-Site Groundwater	71-55-6	1,1,1-Trichloroethane	1	110 (J)	ug/L	MW-21	9 / 30	0.1 - 1.1	110	ND	3100	NC	200	A	N	BSL
	79-34-5	1,1,2,2-Tetrachloroethane	-	1	ug/L	MW-8A	1 / 30	0.1 - 0.66	1	ND	3	C	1	B	N	BSL
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	-	0.2 (J)	ug/L	MW-8A	1 / 30	0.1 - 0.97	0.2	ND	1500	NC	-		N	BSL
	79-00-5	1,1,2-Trichloroethane	-	2.7	ug/L	MW-8A	1 / 30	0.1 - 1.5	2.7	ND	5	C	5	A	N	BSL
	75-34-3	1,1-Dichloroethane	-	0.16 (J)	ug/L	MW-8A	1 / 30	0.1 - 1	0.16	ND	2200	NC	1	B	N	BSL
	75-35-4	1,1-Dichloroethene	0.13 (J)	1.9	ug/L	MW-8A	3 / 30	0.1 - 0.78	1.9	ND	190	NC	7	A	N	BSL
	120-82-1	1,2,4-Trichlorobenzene	0.48 (J)	590	ug/L	MW-21	5 / 30	0.1 - 0.85	590	ND	3400	NC	70	A	N	BSL
	95-50-1	1,2-Dichlorobenzene	0.21 (J)	87 (J)	ug/L	MW-21	5 / 30	0.1 - 0.87	87	ND	2600	NC	600	A	N	BSL
	541-73-1	1,3-Dichlorobenzene	0.25 (J)	12 (J)	ug/L	MW-2A	4 / 30	0.1 - 0.97	12	ND	830	NC	5	B	N	BSL
	106-46-7	1,4-Dichlorobenzene	0.55	130 (J)	ug/L	MW-21	5 / 30	0.1 - 1.6	130	ND	8200	NC	75	A	N	BSL
	67-64-1	Acetone	3.775	340 (J)	ug/L	MW-2A	3 / 15	3.1	340	ND	220000	NC	10	B	N	BSL
	71-43-2	Benzene	1.7	10 (J)	ug/L	MW-2A	2 / 30	0.1 - 1.3	10	ND	5	C	5	A	Y	ASL/TOX
	75-15-0	Carbon Disulfide	-	0.225	ug/L	MW-1	1 / 30	0.1 - 0.9	0.225	0.4 J	560	NC	1	B	N	BSL
	108-90-7	Chlorobenzene	1.4	86 (J)	ug/L	MW-21	5 / 30	0.1 - 0.73	86	ND	390	NC	100	A	N	BSL
	67-66-3	Chloroform	0.22 (J)	2.7	ug/L	MW-10	5 / 30	0.1 - 0.83	2.7	ND	80	C	1	B	N	BSL
	156-59-2	cis-1,2-Dichloroethene	0.14 (J)	1400	ug/L	MW-2A	11 / 30	0.1 - 1.4	1400	ND	210	NC	70	A	Y	ASL
	100-41-4	Ethylbenzene	0.39 (J)	3100	ug/L	MW-21	6 / 30	0.1 - 0.84	3100	ND	700	C	700	A	Y	ASL
	98-82-8	Isopropylbenzene	12 (J)	54 (J)	ug/L	MW-21	2 / 30	0.1 - 1.3	54	ND	8.4	NC	1	B	Y	ASL
	127-18-4	Tetrachloroethene	0.27 (J)	4200	ug/L	MW-8A	15 / 30	0.1 - 0.97	4200	ND	5.0	C	5	A	Y	ASL
	108-88-3	Toluene	5 (J)	630	ug/L	MW-21	3 / 30	0.1 - 0.8	630	ND	1500	NC	1000	A	N	BSL
	156-60-5	trans-1,2-Dichloroethene	-	0.45 (J)	ug/L	MW-3	1 / 30	0.1 - 0.81	0.45	ND	180	NC	100	A	N	BSL
	79-01-6	Trichloroethene	0.11 (J)	2100	ug/L	MW-8A	18 / 30	0.1 - 0.95	2100	ND	5	C	5	A	Y	ASL
	75-01-4	Vinyl Chloride	-	6.6 (J)	ug/L	MW-2A	1 / 30	0.1 - 0.64	6.6	ND	2	C	2	A	Y	TOX
	1330-20-7	Xylenes (total)	0.47 (J)	90000	ug/L	MW-21	10 / 30	0.1 - 0.69	90000	ND	22000	NC	10000	A	Y	ASL

TABLE 2.7

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Lightman Drum Superfund Site

Scenario Timeframe:	Future
Medium:	Groundwater (1)
Exposure Medium:	Air

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (2)	Maximum Concentration (Qualifier) (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (3)	Background Value (4)	Screening Toxicity Value (N/C) (5)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (6)	COPC Flag (Y/N)	Rationale for Selection or Deletion (7)
Vapor Intrusion from On-Site Groundwater	*Semivolatile Organics*															
	91-57-6	2-Methylnaphthalene	9 (J)	10	ug/L	MW-21	2 / 30	1.7 - 2	10	ND	3300	NC	10	B	N	BSL
	91-20-3	Naphthalene	2 (J)	17	ug/L	MW-21	4 / 30	1.7 - 2	17	ND	150	NC	2	B	N	BSL
	Pesticides/PCBs															
	72-55-9	4,4'-DDE	-	0.064 (J)	ug/L	MW-21	1 / 30	0.018 - 0.021	0.064	ND	29	C	0.01	B	N	BSL
	60-57-1	Dieldrin	-	0.031 (J)	ug/L	MW-9	1 / 30	0.018 - 0.021	0.031	ND	0.9	C	0.03	B	N	BSL
	58-89-9	gamma-BHC (Lindane)	-	0.022 (J)	ug/L	MW-21	1 / 30	0.0089 - 0.011	0.022	ND	11	C	0.2	A	N	BSL
	Inorganics															
	7439-97-6	Mercury	0.05	0.12 (J)	ug/L	MW-9	3 / 30	0.1	0.12	ND	0.7	NC	2	A	N	BSL

Footnotes:

(1) The average result for samples with Field Duplicate samples was used. Where one measurement was non-detect, 1/2 the detection limit was used in average calculation. Only on-Property wells reported. Concentrations listed will be used as inputs to the Johnson-Ettinger model for vapor intrusion.

In 2005, duplicate samples were taken for MW-9

In 2006, duplicate samples were taken for MW-1

(2) Where there was only one detection, it is represented as the maximum. The Qualifier codes are defined as the following:

J - The analyte was detected and is considered an estimated value.

(3) Maximum detected value was used for screening.

(4) Background well is MW-01

ND - Not Detected

(5) Units are the same as those for Screening Concentrations. Screening Toxicity Values are Generic Screening Levels for Risk = 1 x 10^{-6} taken from OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (November, 2002). Compounds for which there were no screening levels were not included.

(a) The screening toxicity value for xylenes (total) is that of an individual xylene, as being a conservative estimate for total xylenes.

(6) Potential ARARs/TBC values are the higher of Federal MCLs and NJ Class IIA PQLs: A -- Federal MCL B -- NJ Class IIA PQL

(-) = no ARAR found

(7) ASL = Above Screening Limit; BSL = Below Screening Limit; TOX = analyte is a Group A carcinogen for at least one exposure route

TABLE 2.8

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Lightman Drum Superfund Site

Scenario Timeframe:	Future
Medium:	Subsurface Soil (1)
Exposure Medium:	Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (2)	Maximum Concentration (Qualifier) (2)	Units	Location of Maximum Concentration (3)	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (4)	Background Value (5)	Screening Toxicity Value (N/C) (6)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
On-Site Subsurface Soil	*Volatile Organics*															
	78-93-3	2-Butanone	6 (J)	9 (J)	ug/kg	SB26-72	3 / 40	0.9 - 1.7	9	0.005 J	2231120	(N)	50,000	A	N	BSL
	108-10-1	4-Methyl-2-pentanone	1 (J)	3 (J)	ug/kg	SB33-72	14 / 40	0.9 - 1.7	3	ND	528089	(N)	50,000	A	N	BSL
	67-64-1	Acetone	9 (J)	104.5	ug/kg	SB31-204	11 / 40	0.9 - 1.7	104.5	0.074	1412657	(N)	100,000	A	N	BSL
	75-15-0	Carbon Disulfide	-	2 (J)	ug/kg	SB17-72	1 / 40	0.9 - 1.7	2	ND	35534	(N)	4,000	B	N	BSL
	108-87-2	Methylcyclohexane	-	1 (J)	ug/kg	SB03-138	1 / 40	0.9 - 1.7	1	ND	259106	(N)			N	BSL
	127-18-4	Tetrachloroethene	0.735	2 (J)	ug/kg	SB25-192	2 / 40	0.9 - 1.7	2	ND	484	(C)	1,000	A	N	BSL
	79-01-6	Trichloroethene	-	1 (J)	ug/kg	SB25-192	1 / 40	0.9 - 1.7	1	ND	53	(C)	1,000	A	N	BSL
	75-69-4	Trichlorofluoromethane	1.2425	3 (J)	ug/kg	SB10-72	2 / 40	0.9 - 1.7	3	ND	38582	(N)	21,000	B	N	BSL
	Semivolatile Organics															
	50-32-8	Benzo(a)Pyrene	-	8 (J)	ug/kg	SB03-132	1 / 39	8	8	0.014 J	62	(C)	660	A	N	BSL
	205-99-2	Benzo(b)Fluoranthene	-	17 (J)	ug/kg	SB03-132	1 / 39	13	17	ND	621	(C)	4,000	A	N	BSL
	117-81-7	bis(2-Ethylhexyl)Phthalate	87.5	580 (J)	ug/kg	SB39-66	4 / 39	10	580	ND	34741	(C)	100,000	A	N	BSL
	85-68-7	Butylbenzylphthalate	-	10 (J)	ug/kg	SB27-66	1 / 39	9	10	ND	1222062	(N)	100,000	A	N	BSL
	218-01-9	Chrysene	-	12 (J)	ug/kg	SB03-132	1 / 39	8	12	0.018 J	62146	(C)	40,000	A	N	BSL
	84-74-2	Di-n-butylphthalate	11 (J)	88 (J)	ug/kg	SB29-222	3 / 39	11	88	ND	611031	(N)	100,000	A	N	BSL
	117-84-0	Di-n-Octyl Phthalate	31 (J)	240 (J)	ug/kg	SB27-66	7 / 39	9	240	0.098 J	244412	(N)	100,000	A	N	BSL
	206-44-0	Fluoranthene	-	16 (J)	ug/kg	SB03-132	1 / 39	7	16	0.026 J	229361	(N)	100,000	A	N	BSL
	129-00-0	Pyrene	-	15 (J)	ug/kg	SB03-132	1 / 39	13	15	0.023 J	231595	(N)	100,000	A	N	BSL
	Pesticides/PCBs															
	72-54-8	4,4'-DDD	1.5 (J)	2.7 (J)	ug/kg	SB35-66	2 / 39	0.97	2.7	ND	2437	(C)	12,000	A	N	BSL
	50-29-3	4,4'-DDT	-	3 (J)	ug/kg	SB03-132	1 / 39	1.6	3	ND	1720	(C)	9,000	A	N	BSL
	5103-71-9	alpha-Chlordane	2 (JN)	4.4 (JN)	ug/kg	SB32-66	5 / 39	0.78	4.4	ND	1624	(C)[6a]	30	B [7a]	N	BSL
	5103-74-2	gamma-Chlordane	1.9	4	ug/kg	SB32-66	5 / 39	0.72	4	ND	1624	(C)[6a]	30	B [7a]	N	BSL
	Inorganics															
	7429-90-5	Aluminum	434	4290	mg/kg	SB35-66	39 / 39	1.4 - 11.9	4290	998	7614	(N)	3,600	B	N	BSL
	7440-36-0	Antimony	0.33 (B)	0.43 (B)	mg/kg	SB37-66	4 / 39	0.31 - 0.35	0.43	ND	3	(N)	1	B	N	BSL
	7440-38-2	Arsenic	0.21	3.1	mg/kg	SB25-186	25 / 39	0.25 - 0.52	3.1	0.54 B	0.39	(C)	0.006	B	Y	ASL/TOX
	7440-39-3	Barium	1.7 (B)	9.1 (B)	mg/kg	SB33-66	39 / 39	0.038 - 0.042	9.1	2.5 B	537	(N)	270	B	N	BSL
	7440-41-7	Beryllium	0.04 (B)	0.14 (B)	mg/kg	SB09-66	30 / 39	0.038 - 0.042	0.14	0.055 B	15.4	(N)	0.002	B	N	BSL
	7440-70-2	Calcium	9.2 (B)	13300 (B)	mg/kg	SB04-66	37 / 39	1.9 - 2.3	13300	29 B	-				N	NUTR
	7440-47-3	Chromium	2.5	26.2	mg/kg	SB09-66	39 / 39	0.076 - 0.12	26.2	1.7 B	22	(N) [6b]	6100; 20	C	Y	ASL/TOX
	7440-48-4	Cobalt	0.083 (B)	0.92 (B)	mg/kg	SB06-66	37 / 39	0.076 - 0.083	0.92	ND	138	(N)	23,000	B	N	BSL
	7440-50-8	Copper	0.48 (B)	3.1 (B)	mg/kg	SB03-132	38 / 39	0.12 - 0.17	3.1	1.1 B	313	(N)	5,200	B	N	BSL
	57-12-5	Cyanide	0.12 (B)	0.15 (B)	mg/kg	SB07-66	2 / 39	0.073 - 0.08	0.15	ND	122	(N)	24	B	N	BSL
	7439-89-6	Iron	1310	7460	mg/kg	SB09-66	39 / 39	1.6 - 1.8	7460	1290	2346	(N)	-		Y	ASL
	7439-92-1	Lead	0.73 (J)	5.7	mg/kg	SB35-66	39 / 39	0.13 - 0.27	5.7	6.5	40	(N)	54	B	N	BSL
	7439-95-4	Magnesium	14.9 (B)	3420	mg/kg	SB04-66	39 / 39	1.1 - 1.2	3420	23.3 B	-		-		N	NUTR
	7439-96-5	Manganese	1.9 (J)	37.6 (J)	mg/kg	SB01-66	39 / 39	0.038 - 0.1	37.6	4.2	176	(N)	39	B	N	BSL
	7439-97-6	Mercury	-	0.046 (B)	mg/kg	SB25-186	1 / 39	0.037 - 0.05	0.046	ND	0.61	(N) [6c]	0.006	B	N	BSL

TABLE 2.8

OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Lightman Drum Superfund Site

Scenario Timeframe:	Future
Medium:	Subsurface Soil (1)
Exposure Medium:	Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (2)	Maximum Concentration (Qualifier) (2)	Units	Location of Maximum Concentration (3)	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (4)	Background Value (5)	Screening Toxicity Value (N/C) (6)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
On-Site Subsurface Soil	*Inorganics*															
	7440-02-0	Nickel	0.14 (B)	1.8 (B)	mg/kg	SB03-132	37 / 39	0.11 - 0.14	1.8	0.46 B	156	(N)	19	B	Y	TOX
	7440-09-7	Potassium	12.1 (B)	170 (B)	mg/kg	SB33-66	37 / 39	4.6 - 14	170	16.2 B	-		-		N	NUTR
	7782-49-2	Selenium	0.47 (B)	1.2 (J)	mg/kg	SB09-66	11 / 39	0.32 - 0.6	1.2	0.74 J	39	(N)	3	B	N	BSL
	7440-23-5	Sodium	26.7 (B)	171 (B)	mg/kg	SB32-66	39 / 39	13.3 - 31.4	171	126 B	-		-		N	NUTR
	7440-62-2	Vanadium	2.7 (B)	10.7	mg/kg	SB33-66	39 / 39	0.057 - 0.083	10.7	3.9 B	7.8	(N)	7,900	B	Y	ASL
	7440-66-6	Zinc	0.42 (B)	6.4	mg/kg	SB03-132	39 / 39	0.13 - 0.37	6.4	1.6 B	2346	(N)	970	B	N	BSL

Footnotes:

(1) Subsurface soils are defined as those unsaturated samples taken from >24 inches depth.

(2) The Qualifier codes are defined as the following:

B - The analyte was detected at a concentration below the Contract Required Detection Limit.

J - The analyte was detected and is considered an estimated value.

JN - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

(3) Samples for which a field duplicate was collected were counted as a single sample and the average result of the primary and duplicate sample was used. Where one measurement was non-detect, 1/2 the detection limit was used in average calculation.

Duplicate samples were taken for SB31-198 and SB31-204

(4) Maximum detected value was used for screening.

(5) Background soil samples are the highest measured from samples SS-07, SS-08, and SS-09 surface soil samples. ND - Not Detected

(6) Units are the same as those for Screening Concentrations. Region 9 PRGs (2004) for Residential Soil, Non-cancer values adjusted for a HI= 0.1, where (S)=soil saturation value; (C)=Cancer PRG; (N)= Noncancer PRG. Where Region 9 PRGs (2004) were unavailable, USEPA Region 3 RBC values were used, adjusted for a HI= 0.1 for noncancer effects.

a)Region 9 PRG (2004) value for "Chlordane (technical)"; b) Region 9 PRG (2004) for Chromium VI non-standard method applied, see Region 9 PRG (2004) User's Guide; c) Region 9 PRG (2004) for Mercury (methyl)

(-) = no PRG or RBC values found

(7) A -- Minimum of NJDEP NRDCSCC and IGWSCC B -- draft NJ Soil Remediation Standards C -- NonResidential Hexavalent Chromium Soil Cleanup Criteria (20 mg/kg is for the inhalation pathway)

(a) NJDEP Draft IGWSCC for Chlordane

(8) ASL = Above Screening Limit; BSL = Below Screening Limit; FREQ = analyte was detected in less than 5% of the samples; NUTR = analyte is considered an essential nutrient and is ubiquitous in the environment; TOX = analyte is a Group A carcinogen for at least one exposure route.

TABLE 3.1
EXPOSURE POINT CONCENTRATION SUMMARY
Lightman Drum Superfund Site

Scenario Timeframe:	Current/Future
Medium:	Surface Soil (1)
Exposure Medium:	Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value (4)	Units	Statistic	Rationale (5)
On-Site Surface Soil	*Semivolatile Organics*								
	Phenanthrene	ug/kg	5.57	6.14 (NP)	18 (J)	6.1	ug/kg	Student's-t UCL	5a
	Pesticides/PCBs								
	Endrin aldehyde	ug/kg	0.710	1.3 (NP)	4.8 (J)	1.3	ug/kg	95% Chebyshev (Mean, Sd) UCL	5b
	Inorganics								
	Aluminum	mg/kg	4258	4827.05 (N)	9260	4827	mg/kg	Student's-t UCL	5a
	Arsenic	mg/kg	1.45	1.63 (N)	3.50	1.6	mg/kg	Student's-t UCL	5a
	Chromium	mg/kg	30.1	213.65 (NP)	912	214	mg/kg	99% Chebyshev (Mean, Sd) UCL	5c
	Iron	mg/kg	5123	5767.5 (N)	10000	5768	mg/kg	Student's-t UCL	5a
	Lead	mg/kg	11.7	14.96 (G)	54.5	15	mg/kg	Approximate Gamma UCL	5d
	Nickel	mg/kg	3.02	4.48 (NP)	12.2	4.5	mg/kg	95% Chebyshev (Mean, Sd) UCL	5b
	Vanadium	mg/kg	9.24	10.32 (N)	18.6	10	mg/kg	Student's-t UCL	5a

Notes:

EPA's pro-UCL program was used to calculate 95% UCLs. The program's suggested 95% UCL was used. One half the reporting limit was used for non-detect samples. Samples for which a field duplicate was collected were counted as a single sample and the average result of the primary and duplicate sample was used. Where one measurement was non-detect, 1/2 the detection limit was used in average calculation.

(1) Surface soils are defined as those samples taken from 0-24 inches depth. Soils were collected for laboratory analysis from the top 2 feet of soil as follows: non-VOCs from 0 inch to 6 inch interval and VOCs from 6-inch to 24-inch interval

(2) 1/2 the Reporting Limit was used for samples with no measured detections. G = Gamma distribution; NP = non parametric distribution; N = Normal distribution

(3) The Qualifier codes are defined as the following:

J - The analyte was detected and is considered an estimated value.

(4) The 95% UCL or the Maximum value was used, whichever was lower

(5) Exposure Point Concentration rationale as follows:

(a) The Shapiro-Wilk test for samples <50 suggest data are normally distributed

(b) Distribution of data was non-parametric. ProUCL conducts analyses of the input data set to test if the data has a normal, gamma, or lognormal distribution. Data indicated as non-parametric do not have a normal, gamma, or lognormal distribution. The standard deviation of the log-transformed data is between 0.5 and 1.0

(c) The standard deviation of the log-transformed data is between 1 and 3.5 for sample sizes 40-50.

(d) Data has probability density indicating it follows a gamma distribution. The data has a shape parameter > 0.5

TABLE 3.2

EXPOSURE POINT CONCENTRATION SUMMARY

Lightman Drum Superfund Site

Scenario Timeframe:	Current/Future
Medium:	Surface water
Exposure Medium:	Surface water

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) (1)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale (2)
	Inorganics								
	Arsenic	ug/L	4.93	9.77	11.0	11.0	ug/L	MAX	
	Iron	ug/L	14750	20891	22500	22500	ug/L	MAX	
	Lead	ug/L	15.5	22.5	22.8	22.8	ug/L	MAX	
	Vanadium	ug/L	10.9	14.4	13.8 (B)	13.8	ug/L	MAX	

Notes:

EPA's pro-UCL program was used to calculate 95% UCLs. The program's suggested 95% UCL was used. One half the reporting limit was used for non-detect samples. Samples for which a field duplicate was collected were counted as a single sample and the average result of the primary and duplicate sample was used. Where one measurement was non-detect, 1/2 the detection limit was used in average calculation.

(1) 1/2 the Reporting Limit was used for samples with no measured detections. N = Normal distribution

(2) Because there were fewer than 10 samples, the maximum detected concentration was used.

TABLE 3.3
EXPOSURE POINT CONCENTRATION SUMMARY
Lightman Drum Superfund Site

Scenario Timeframe:	Current/Future
Medium:	Sediment
Exposure Medium:	Sediment

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) (1)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale (2)
Pump Branch Creek	*Semivolatile Organics*								
	Acenaphthylene	ug/kg	25.7	46.72 (NR)	36.5	36.5	ug/kg	MAX	
	Benzo(a)Pyrene	ug/kg	47.6	103.8 (G)	155	155	ug/kg	MAX	
	Benzo(g,h,i)Perylene	ug/kg	33.0	43.97 (NR)	70	70	ug/kg	MAX	
	Phenanthrene	ug/kg	54.4	117.4 (G)	160	160	ug/kg	MAX	
	Pesticides								
	Endrin aldehyde	ug/kg	1.42	11.34 (NR)	8.4 (J)	8.4	ug/kg	MAX	
	Inorganics								
	Aluminum	mg/kg	3620	5574 (N)	9455	9455	mg/kg	MAX	
	Arsenic	mg/kg	2.03	4.947 (G)	10.1	10.1	mg/kg	MAX	
	Iron	mg/kg	2648	9046 (G)	10695	10695	mg/kg	MAX	
	Lead	mg/kg	43.4	137.6 (G)	165 (J)	165	mg/kg	MAX	
	Vanadium	mg/kg	12.6	21.23 (N)	36.7 (J)	36.7	mg/kg	MAX	

Notes:

EPA's pro-UCL program was used to calculate 95% UCLs. The program's suggested 95% UCL was used. One half the reporting limit was used for non-detect samples. Samples for which a field duplicate was collected were counted as a single sample and the average result of the primary and duplicate sample was used. Where one measurement was non-detect, 1/2 the detection limit was used in average calculation.

(1) 1/2 the Reporting Limit was used for samples with no measured detections. G = Gamma distribution; N = Normal distribution; NR = No recommendation; NP = non-parametric distribution

(2) Because there were fewer than 10 samples, the maximum detected concentration was used.

TABLE 3.4

EXPOSURE POINT CONCENTRATION SUMMARY

Lightman Drum Superfund Site

Scenario Timeframe:	Future
Medium:	Groundwater (1)
Exposure Medium:	Groundwater/ Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value (4)	Units	Statistic	Rationale (5)
Groundwater/ Water Vapors from Showering with Groundwater	*Volatile Organics*								
	1,1,2-Trichloroethane	µg/L	0.503	1.27 (NP)	2.70	1.27	µg/L	99% Chebyshev (Mean, Sd) UCL	5a
	1,2,3-Trichlorobenzene	µg/L	19.9	143.56 (NP)	280 (J)	143.56	µg/L	99% Chebyshev (Mean, Sd) UCL	5b
	1,2,4-Trichlorobenzene	µg/L	14.8	138.12 (NP)	590	138.12	µg/L	99% Chebyshev (Mean, Sd) UCL	5a
	1,2-Dichlorobenzene	µg/L	2.75	21.55 (NP)	87 (J)	21.55	µg/L	99% Chebyshev (Mean, Sd) UCL	5a
	1,4-Dichlorobenzene	µg/L	4.67	32.97 (NP)	130 (J)	32.97	µg/L	99% Chebyshev (Mean, Sd) UCL	5a
	Benzene	µg/L	5.82	42.22 (NP)	140.00	42.22	µg/L	99% Chebyshev (Mean, Sd) UCL	5a
	Chlorobenzene	µg/L	3.60	22.35 (NP)	86 (J)	22.35	µg/L	99% Chebyshev (Mean, Sd) UCL	5a
	Chloroform	µg/L	0.407	1.12 (NP)	2.70	1.12	µg/L	99% Chebyshev (Mean, Sd) UCL	5a
	cis-1,2-Dichloroethene	µg/L	95.0	464.03 (NP)	1400	464.03	µg/L	99% Chebyshev (Mean, Sd) UCL	5c
	Ethylbenzene	µg/L	111	829.49 (NP)	3100	829.49	µg/L	99% Chebyshev (Mean, Sd) UCL	5b
	Tetrachloroethene	µg/L	223	1342.54 (NP)	4200	1342.54	µg/L	99% Chebyshev (Mean, Sd) UCL	5c
	Toluene	µg/L	16.1	148.85 (NP)	630	148.85	µg/L	99% Chebyshev (Mean, Sd) UCL	5a
	Trichloroethene	µg/L	141	757.87 (NP)	2100	757.87	µg/L	99% Chebyshev (Mean, Sd) UCL	5c
	Vinyl Chloride	µg/L	0.331	1.67 (NP)	6.6 (J)	1.67	µg/L	99% Chebyshev (Mean, Sd) UCL	5a
	Xylenes (total)	µg/L	4448	11516.51 (NP)	90000	11516.51	µg/L	Hall's Bootstrap UCL	5d
	Semi-volatile Organics								
	2,4-Dimethylphenol	µg/L	8.04	70 (NP)	300	70.00	µg/L	99% Chebyshev (Mean, Sd) UCL	5a
	4-Methylphenol	µg/L	27.1	254.96 (NP)	1100	254.96	µg/L	99% Chebyshev (Mean, Sd) UCL	5a
	bis(2-Ethylhexyl)Phthalate	µg/L	1.94	2.51 (NP)	17	2.51	µg/L	Student's-t UCL	5f
	Naphthalene	µg/L	1.52	3.18 (NP)	17	3.18	µg/L	95% Chebyshev (Mean, Sd) UCL	5e
	Pesticides/PCBs								
	Inorganics								
	Antimony	µg/L	29.9	72.27 (NP)	7.5 (J)	7.50	µg/L	MAX	5g
	Arsenic	µg/L	5.31	11.88 (NP)	3.3 (J)	3.30	µg/L	MAX	5g
	Cadmium	µg/L	7.24	35.49 (NP)	102	35.49	µg/L	99% Chebyshev (Mean, Sd) UCL	5b
	Chromium	µg/L	4.90	6.37 (G)	28.2	6.37	µg/L	Approximate Gamma UCL	5i
	Iron	µg/L	3317	10896.68 (LG)	55700	10896.68	µg/L	95% Chebyshev (MVUE) UCL	5h

TABLE 3.4

EXPOSURE POINT CONCENTRATION SUMMARY

Lightman Drum Superfund Site

Scenario Timeframe:	Future
Medium:	Groundwater (1)
Exposure Medium:	Groundwater/ Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value (4)	Units	Statistic	Rationale (5)
Groundwater/ Water Vapors from Showering with Groundwater	*Inorganics*								
	Lead	µg/L	2.34	4.3 (NP)	22	4.30	µg/L	95% Chebyshev (Mean, Sd) UCL	5e
	Manganese	µg/L	51.7	135.78 (NP)	229	135.78	µg/L	99% Chebyshev (Mean, Sd) UCL	5a
	Nickel	µg/L	8.35	12.39 (LG)	26.1 (B)	12.39	µg/L	95% H-UCL	5i
	Thallium	µg/L	6.10	8.57 (NP)	8.6 (J)	8.57	µg/L	95% Chebyshev (Mean, Sd) UCL	5e
	Vanadium	µg/L	12.0	40.8 (NP)	8.2 (B)	8.20	µg/L	MAX	5g

Notes:

EPA's pro-UCL program was used to calculate 95% UCLs. The program's suggested 95% UCL was used. One half the reporting limit was used for non-detect samples. Samples for which a field duplicate was collected were counted as a single sample and the average result of the primary and duplicate sample was used. Where one measurement was non-detect, 1/2 the detection limit was used in average calculation.

(1) Used only validated data from off-Property groundwater monitoring wells from samples taken in February 2005 and March 2006.

(2) 1/2 the Reporting Limit was used for samples with no measured detections. G = Gamma distribution; NP = non parametric distribution; LG = lognormal distribution

(3) The Qualifier codes are defined as the following:

B - The analyte was detected at a concentration below the Contract Required Detection Limit.

J - The analyte was detected and is considered an estimated value.

(4) The 95% UCL or the Maximum value was used. Where the 95% UCL exceeded the maximum detection, the max was used

(5) Exposure Point Concentration values will be used for modeling concentrations in air while showering. EPC rationale as follows:

ProUCL conducts analyses of the input data set to test if the data has a normal, gamma, or lognormal distribution. Data indicated as non-parametric do not have a normal, gamma, or lognormal distribution.

Distribution of data was non-parametric.

(a) The standard deviation of the log-transformed data is between 1 and 2 for sample sizes <50.

(b) The standard deviation of the log-transformed data is between 2 and 3 for sample size >10

(c) The standard deviation of the log-transformed data is between 3.0 and 3.5

(d) The standard deviation of the log-transformed data is greater than 3.5

(e) The standard deviation of the log-transformed data is between 0.5 and 1.0

(f) The standard deviation of the log-transformed data is less than 0.5

(g) The recommended UCL exceeds the maximum observation; maximum observation used

Shapiro-Wilk Test Statistic indicates the data are log normally distributed

(h) The standard deviation of the log-transformed data is between 1.0 and 1.5

Data has probability density indicating it follows a gamma distribution.

(i) The data has a shape parameter > 0.5

TABLE 3.5
EXPOSURE POINT CONCENTRATION SUMMARY
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Medium:	Groundwater (1)
Exposure Medium:	Groundwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) (1)	Maximum Concentration (Qualifier) (2)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale (3)
Hypothetical Future On-Site Supply Wells	*Volatile Organics*								
	1,2,3-Trichlorobenzene	ug/L	31.5	146.88 (NP)	280 (J)	146.88	ug/L	Hall's Bootstrap UCL	3a
	1,2,4-Trichlorobenzene	ug/L	23.4	220.29 (NP)	590.00	220.29	ug/L	99% Chebyshev (Mean, Sd) UCL	3b
	1,2-Dichlorobenzene	ug/L	4.18	34.15 (NP)	87 (J)	34.15	ug/L	99% Chebyshev (Mean, Sd) UCL	3c
	1,4-Dichlorobenzene	ug/L	6.53	51.62 (NP)	130 (J)	51.62	ug/L	99% Chebyshev (Mean, Sd) UCL	3c
	Benzene	ug/L	0.740	3.99 (NP)	10 (J)	3.99	ug/L	99% Chebyshev (Mean, Sd) UCL	3c
	Chlorobenzene	ug/L	3.56	31.96 (NP)	86 (J)	31.96	ug/L	99% Chebyshev (Mean, Sd) UCL	3c
	Chloroform	ug/L	0.450	1.57 (NP)	2.70	1.57	ug/L	99% Chebyshev (Mean, Sd) UCL	3c
	cis-1,2-Dichloroethene	ug/L	98.9	642.58 (NP)	1400	642.58	ug/L	99% Chebyshev (Mean, Sd) UCL	3d
	Ethylbenzene	ug/L	178	1316.85 (NP)	3100	1316.85	ug/L	99% Chebyshev (Mean, Sd) UCL	3d
	Tetrachloroethene	ug/L	353	1892.49 (NP)	4200	1892.49	ug/L	Hall's Bootstrap UCL	3a
	Toluene	ug/L	25.7	237.44 (NP)	630	237.44	ug/L	99% Chebyshev (Mean, Sd) UCL	3b
	Trichloroethene	ug/L	209	1176.82 (NP)	2100	1176.82	ug/L	99% Chebyshev (Mean, Sd) UCL	3d
	Vinyl Chloride	ug/L	0.400	2.54 (NP)	6.6 (J)	2.54	ug/L	99% Chebyshev (Mean, Sd) UCL	3d
	Xylenes (total)	ug/L	7103	18406.94 (NP)	90000	18406.94	ug/L	Hall's Bootstrap UCL	3a
	SemiVolatile Organics								
	2,4-Dimethylphenol	ug/L	12.0	110.98 (NP)	300	110.98	ug/L	99% Chebyshev (Mean, Sd) UCL	3c
	2-Methylnaphthalene	ug/L	1.51	3.24 (NP)	10	3.24	ug/L	95% Chebyshev (Mean, Sd) UCL	3e
	4-Methylphenol	ug/L	42.3	406.38 (NP)	1100	406.38	ug/L	99% Chebyshev (Mean, Sd) UCL	3c
	Naphthalene	ug/L	1.85	4.48 (NP)	17	4.48	ug/L	95% Chebyshev (Mean, Sd) UCL	3e
	Inorganics								
	Antimony	ug/L	1.06	1.44 (NP)	7.5 (J)	1.44	ug/L	Student's-t UCL	3f
	Arsenic	ug/L	1.05	1.23 (NP)	3.3 (J)	1.23	ug/L	Student's-t UCL	3f
	Cadmium	ug/L	9.07	54.15 (NP)	102	54.15	ug/L	99% Chebyshev (Mean, Sd) UCL	3b
	Chromium	ug/L	3.64	5.28 (G)	28.20	5.28	ug/L	Approximate Gamma UCL	3g
	Iron	ug/L	3975	11382.3 (LG)	55700	11382.30	ug/L	95% Chebyshev (MVUE) UCL	3h
	Manganese	ug/L	62.3	93.31 (G)	229	93.31	ug/L	Approximate Gamma UCL	3g
	Nickel	ug/L	8.26	11.7 (G)	26.1 (B)	11.70	ug/L	Approximate Gamma UCL	3g
	Vanadium	ug/L	0.810	1.19 (LG)	5.3 (B)	1.19	ug/L	95% H-UCL	3i

TABLE 3.5

EXPOSURE POINT CONCENTRATION SUMMARY

Lightman Drum Superfund Site

Scenario Timeframe:	Future
Medium:	Groundwater (1)
Exposure Medium:	Groundwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) (1)	Maximum Concentration (Qualifier) (2)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale (3)

Notes:

EPA's pro-UCL program was used to calculate 95% UCLs. The program's suggested 95% UCL was used. One half the reporting limit was used for non-detect samples. Samples for which a field duplicate was collected were counted as a single sample and the average result of the primary and duplicate sample was used. Where one measurement was non-detect, 1/2 the detection limit was used in average calculation.

(1) NP = non parametric distribution; LG = lognormal distribution; G = gamma distribution

(2) The Qualifier codes are defined as the following:

J - The analyte was detected and is considered an estimated value.

B - The analyte was detected at a concentration below the Contract Required Detection Limit.

(3) Exposure Point Concentration values will be used for modeling concentrations in air while showering. EPC rationale as follows:

ProUCL conducts analyses of the input data set to test if the data has a normal, gamma, or lognormal distribution. Data indicated as non-parametric do not have a normal, gamma, or lognormal distribution.

Distribution of data was non-parametric.

(a) The standard deviation of the log-transformed data is > 3.5 for sample size <100

(b) The standard deviation of the log-transformed data is between 2 and 3.0 for sample sizes ≥10

(c) The standard deviation of the log-transformed data is between 1 and 2.0 for sample sizes <50.

(d) The standard deviation of the log-transformed data is between 3.0 and 3.5 for sample sizes ≥30.

(e) The standard deviation of the log-transformed data is between 0.5 and 1.0

(f) The standard deviation of the log-transformed data is ≤ 0.5

(g)The data has a probability density indicating it follows a gamma distribution and a shape parameter > 0.5

(h) Data has a lognormal distribution with a standard deviation of the log-transformed data between 1.5 and 2.0 for sample sizes 20-50

(i) Data has a lognormal distribution with a standard deviation of the log-transformed data between 0.5 and 1.0

TABLE 3.6

EXPOSURE POINT CONCENTRATION SUMMARY

Lightman Drum Superfund Site

Scenario Timeframe:	Future
Medium:	Groundwater (1)
Exposure Medium:	Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) (1)	Maximum Concentration (Qualifier) (2)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale (3)
Vapor Intrusion from On-Site Groundwater	*Volatile Organics*								
	Benzene	ug/L	0.740	3.99 (NP)	10 (J)	3.99	ug/L	99% Chebyshev (Mean, Sd) UCL	3a
	cis-1,2-Dichloroethene	ug/L	98.9	642.58 (NP)	1400.00	642.58	ug/L	99% Chebyshev (Mean, Sd) UCL	3b
	Ethylbenzene	ug/L	178	1316.85 (NP)	3100.00	1316.85	ug/L	99% Chebyshev (Mean, Sd) UCL	3b
	Isopropylbenzene	ug/L	2.55	20.62 (NP)	54 (J)	20.62	ug/L	99% Chebyshev (Mean, Sd) UCL	3a
	Tetrachloroethene	ug/L	353	1892.49 (NP)	4200.00	1892.49	ug/L	Hall's Bootstrap UCL	3c
	Trichloroethene	ug/L	209	1176.82 (NP)	2100.00	1176.82	ug/L	99% Chebyshev (Mean, Sd) UCL	3b
	Vinyl Chloride	ug/L	0.400	2.54 (NP)	6.6 (J)	2.54	ug/L	99% Chebyshev (Mean, Sd) UCL	3a
	Xylenes (total)	ug/L	7103	18406.94 (NP)	90000.00	18406.94	ug/L	Hall's Bootstrap UCL	3c

Notes:

EPA's pro-UCL program was used to calculate 95% UCLs. The program's suggested 95% UCL was used. One half the reporting limit was used for non-detect samples. Samples for which a field duplicate was collected were counted as a single sample and the average result of the primary and duplicate sample was used. Where one measurement was non-detect, 1/2 the detection limit was used in average calculation.

(1) NP = non parametric distribution

(2) The Qualifier codes are defined as the following:

J - The analyte was detected and is considered an estimated value.

(3) Distribution of data was non-parametric. ProUCL conducts analyses of the input data set to test if the data has a normal, gamma, or lognormal distribution. Data indicated as non-parametric do not have a normal, gamma, or lognormal distribution. Exposure Point Concentration values will be used for the Johnson and Ettinger model. EPC rationale as follows:

(a) The standard deviation of the log-transformed data is between 1 and 2.0 for sample sizes <50.

(b) The standard deviation of the log-transformed data is between 3 and 3.5 for sample sizes ≥30

(c) The standard deviation of the log-transformed data is > 3.5 for sample size <100

TABLE 3.7
EXPOSURE POINT CONCENTRATION SUMMARY
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Medium:	Subsurface Soil (1)
Exposure Medium:	Subsurface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) (2)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value (3)	Units	Statistic	Rationale (4)
On-Site Subsurface Soil	*Inorganics*								
	Arsenic	mg/kg	0.586	0.73 (G)	3.1	0.73	mg/kg	Approximate Gamma UCL	4a
	Chromium	mg/kg	5.78	8.91 (NP)	26.2	8.91	mg/kg	95% Chebyshev (Mean, Sd) UCL	4b
	Iron	mg/kg	3011	5424.71 (NP)	7460	5424.71	mg/kg	99% Chebyshev (Mean, Sd) UCL	4c
	Nickel	mg/kg	0.206	0.63 (NP)	1.8 (B)	0.63	mg/kg	95% Chebyshev (Mean, Sd) UCL	4d
	Vanadium	mg/kg	5.50	6.09 (N)	10.7	6.09	mg/kg	Student's-t UCL	4e

Notes:

EPA's pro-UCL program was used to calculate 95% UCLs. The program's suggested 95% UCL was used. One half the reporting limit was used for non-detect samples. Samples for which a field duplicate was collected were counted as a single sample and the average result of the primary and duplicate sample was used. Where one measurement was non-detect, 1/2 the detection limit was used in average calculation.

(1) Subsurface soils are defined as those samples taken from>24 inches depth.

(2) 1/2 the Reporting Limit was used for samples with no measured detections. G = Gamma distribution; NP = non parametric distribution; N = Normal distribution

(3) The 95% UCL was used.

(4) Exposure Point Concentration rationale as follows:

ProUCL conducts analyses of the input data set to test if the data has a normal, gamma, or lognormal distribution. Data indicated as non-parametric do not have a normal, gamma, or lognormal distribution.

(a) Data has probability density indicating it follows a gamma distribution. The data has a shape parameter > 0.5

(b) Distribution of data was non-parametric. The standard deviation of the log-transformed data is between 0.5 and 1.0

(c) Distribution of data was non-parametric. The standard deviation of the log-transformed data is between 1.0 and 2.0 for sample sizes <50.

(d) Distribution of data was non-parametric. Lognormal statistics not available.

(e) The Shapiro-Wilk test for samples <50 suggest data are normally distributed

TABLE 4.1.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Current and Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: On-Site Surface Soil
Receptor Population: Industrial/Commercial Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	70	EPA 1991	(CS x CF x ED x EF x IR-S) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	9,125	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yr	25	EPA 1991	
	IR-S	Ingestion Rate-Soil	mg/day	100	EPA 2002c	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	
Dermal	BW	Body Weight	kg	70	EPA 1991	(CS x CF x EF x ED x SA x DABS x SSAF) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	9,125	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	event/yr	250	EPA 1991	Assumes 250 days per year and 1 event per day
	ED	Exposure Duration	yr	25	EPA 1991	
	DABS	Dermal Absorption Factor	unitless	Table B5	EPA 2004	
	SSAF	Soil to Skin Adherence Factor	mg/cm^2	0.20	EPA 2002c	
	SA	Skin Surface Area	cm^2/event	3,300	EPA 2002c	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	
Inhalation	BW	Body Weight	kg	70	EPA 1991	(CS x ED x EF x ET x IN) ÷ (BW x AT x (PEF+VF))
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	9,125	EPA 1991	
	VF	Volatilization Factor	m^3/kg	Table B4	EPA 1996	
	PEF	Particulate Emission Factor	m^3/kg	1.36E+09	EPA 2002c	
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yr	25	EPA 1991	
	ET	Exposure Time	hr/day	8	EPA 1991	
	IN	Inhalation Rate	m^3/hr	1.5	EPA 1997	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	

RME: Reasonable Maximum Exposure

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March.
EPA 1996, Soil Screening Guidance, EPA/540/R-96/018
EPA 1997, Exposure Factors Handbook, EPA/600/P-95/002Fa, IN: Table 5-23 for an outdoor worker/moderate activity
EPA 2002c, Supplemental Guidance for Developing Soil Screening Levels for Superfund, December 2002, OSWER 9355.4-24, Equation 4-5
EPA 2004, 'Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final August, 2004

TABLE 4.2.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Current and Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: On-Site Surface Soil
Receptor Population: Trespasser
Receptor Age: Pre-Adolescent (7 to 12 years)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	35	EPA 1997	(CS x CF x ED x EF x IR-S) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	104	SS	
	ED	Exposure Duration	yr	6	EPA 1989	
	IR-S	Ingestion Rate-Soil	mg/day	100	EPA 1997	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	
Dermal	BW	Body Weight	kg	35	EPA 1997	(CS x CF x EF x ED x SA x DABS x SSAF) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	event/yr	104	SS	Assumes 104 days per year and one event per day
	ED	Exposure Duration	yr	6	EPA 1989	
	DABS	Dermal Absorption Factor	unitless	Table B5	EPA 2002c	
	SSAF	Soil to Skin Adherence Factor	mg/cm^2	0.2	EPA 2004	
	SA	Skin Surface Area	cm^2/event	4,800	EPA 1997	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	
Inhalation	BW	Body Weight	kg	35	EPA 1997	(CS x ED x EF x ET x IN) ÷ (BW x AT x (PEF+VF))
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	VF	Volatilization Factor	m^3/kg	calculated, Table B4	EPA 1996	
	PEF	Particulate Emission Factor	m^3/kg	1.36E+09	EPA 2002c	
	EF	Exposure Frequency	day/yr	104	SS	
	ED	Exposure Duration	yr	6	EPA 1989	
	ET	Exposure Time	hr/day	4	SS	
	IN	Inhalation Rate	m^3/hr	1.5	EPA 1997	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	

RME: Reasonable Maximum Exposure
SS : Site-specific parameter based upon professional judgement, see text for explanation

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002

EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March.

EPA 1996, Soil Screening Guidance, EPA/540/R-96/018

EPA 2002c, Supplemental Guidance for Developing Soil Screening Levels for Superfund, December 2002, OSWER 9355.4-24, Equation 4-5 September, 2001

EPA 2004, 'Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, August, 2004

TABLE 4.3.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Current and Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: On-Site Surface Soil
Receptor Population: Trespasser
Receptor Age: Adolescent (13 to 18 years)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	59	EPA 1997	(CS x CF x ED x EF x IR-S) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	156	SS	
	ED	Exposure Duration	yr	6	EPA 1989	
	IR-S	Ingestion Rate-Soil	mg/day	100	EPA 1997	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	
Dermal	BW	Body Weight	kg	59	EPA 1997	(CS x CF x EF x ED x SA x DABS x SSAF) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	event/yr	156	SS	Assumes 156 days per year and one event per day
	ED	Exposure Duration	yr	6	EPA 1989	
	DABS	Dermal Absorption Factor	unitless	Table B5	EPA 2001	
	SSAF	Soil to Skin Adherence Factor	mg/cm^2	0.07	EPA 2002c	
	SA	Skin Surface Area	cm^2/event	6,700	EPA 1997	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	
Inhalation	BW	Body Weight	kg	59	EPA 1997	(CS x ED x EF x ET x IN) ÷ (BW x AT x (PEF+VF))
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	VF	Volatilization Factor	m^3/kg	calculated, Table B4	EPA 1996	
	PEF	Particulate Emission Factor	m^3/kg	1.36E+09	EPA 2002c	
	EF	Exposure Frequency	day/yr	156	SS	
	ED	Exposure Duration	yr	6	EPA 1989	
	ET	Exposure Time	hr/day	4	SS	
	IN	Inhalation Rate	m^3/hr	1.5	EPA 1997	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	

RME: Reasonable Maximum Exposure
SS : Site-specific parameter based upon professional judgement, see text for explanation

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March.
EPA 1996, Soil Screening Guidance, EPA/540/R-96/018
EPA 2002c, Supplemental Guidance for Developing Soil Screening Levels for Superfund, December 2002, OSWER 9355.4-24, Equation 4-5 September, 2001

TABLE 4.4.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Current and Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Pump Branch Creek
Receptor Population: Trespasser
Receptor Age: Pre-adolescent (7 - 12 yrs)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	35	EPA 1991	(CW x ED x EF x IR-W) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	EF	Exposure Frequency	day/yr	104	SS	
	ED	Exposure Duration	yr	6	EPA 1991	
	IR-W	Incidental ingestion Rate-Water	L/d	0.05	EPA 1989	
	CW	Chemical Concentration in Water	mg/L	Table 3.2	measured	
Dermal	BW	Body Weight	kg	35	EPA 1991	(CW x CF x EF x ED x ET x Kp x SA) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	L/cm^3	0.001	EPA 1991	
	EF	Exposure Frequency	day/yr	104	EPA 2004	
	ED	Exposure Duration	yr	6	EPA 1991	
	ET	Exposure Time	hr/day	4	SS	
	SA	Skin Surface Area	cm^2	4,800	EPA 2004	
	Kp	Permeability Coefficient	cm/hr	Table B6	EPA 2004	
	CW	Chemical Concentration in Water	mg/L	Table 3.2	measured	

RME: Reasonable Maximum Exposure
SS: Site-specific parameter based on professional judgement. See text for details

As recommended (EPA 1991), the same equation for the incidental ingestion of soil is used to calculate sediment intake.

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March., for EF, see text
EPA 2004, 'Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, August, 2004

TABLE 4.5.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Current and Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Pump Branch Creek
Receptor Population: Trespasser
Receptor Age: Adolescent (13 - 18 yrs)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	59	EPA 1991	(CW x ED x EF x IR-W) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	EF	Exposure Frequency	day/yr	156	SS	
	ED	Exposure Duration	yr	6	EPA 1991	
	IR-W	Incidental ingestion Rate-Water	L/d	0.05	EPA 1989	
	CW	Chemical Concentration in Water	mg/L	Table 3.2	measured	
Dermal	BW	Body Weight	kg	59	EPA 1991	(CW x CF x EF x ED x ET x Kp x SA) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	L/cm^3	0.001	EPA 1991	
	EF	Exposure Frequency	day/yr	156	EPA 2004	
	ED	Exposure Duration	yr	6	EPA 1991	
	ET	Exposure Time	hr/day	4	SS	
	SA	Skin Surface Area	cm^2	6,700	EPA 2004	
	Kp	Permeability Coefficient	cm/hr	Table B6	EPA 2004	
	CW	Chemical Concentration in Water	mg/L	Table 3.2	measured	

RME: Reasonable Maximum Exposure
SS: Site-specific parameter based on professional judgement. See text for details

As recommended (EPA 1991), the same equation for the incidental ingestion of soil is used to calculate sediment intake.

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March., for EF, see text
EPA 2004, 'Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, August, 2004

TABLE 4.6.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Current and Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Pump Branch Creek
Receptor Population: Trespasser
Receptor Age: Pre-adolescent (7 - 12 years)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	35	EPA 1991	(CS x CF x ED x EF x IR-S) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	104	SS	
	ED	Exposure Duration	yr	6	EPA 1991	
	IR-S	Ingestion Rate-Sediment	mg/day	100	EPA 2002c	
	CS	Chemical Concentration in Sediment	mg/kg	Table 3.3	Measured	
Dermal	BW	Body Weight	kg	35	EPA 1991	(CS x CF x EF x ED x SA x DABS x SSAF) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	104	SS	
	ED	Exposure Duration	yr	6	EPA 1991	
	DABS	Dermal Absorption Factor	unitless	Table B5	EPA 2004	
	SSAF	Sediment to Skin Adherence Factor	mg/cm^2	0.20	EPA 2004	
	SA	Skin Surface Area	cm2/event	4,800	EPA 2004	
	CS	Chemical Concentration in Sediment	mg/kg	Table 3.3	Measured	

RME: Reasonable Maximum Exposure
SS: Site-specific parameter based on professional judgement. See text for details

As recommended (EPA 1991), the same equation for the incidental ingestion of soil is used to calculate sediment intake.

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manu EPA 2002c
Exposure Factors". OSWER Directive 9285.6-03. March., for EF, see text
EPA 2002c, Supplemental Guidance for Developing Soil Screening Levels for Superfund, December 2002, OSWER 9355.4-24, Equation 4-5
September, 2001
EPA 2004, 'Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, August, 2004

TABLE 4.7.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Current and Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Pump Branch Creek
Receptor Population: Tresspasser
Receptor Age: Adolescent (13 - 18 yrs)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	59	EPA 1991	(CS x CF x ED x EF x IR-S) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	156	SS	
	ED	Exposure Duration	yr	6	EPA 1991	
	IR-S	Ingestion Rate-Sediment	mg/day	100	EPA 1991	
	CS	Chemical Concentration in Sediment	mg/kg	Table 3.3	Measured	
Dermal	BW	Body Weight	kg	59.00	EPA 1991	(CS x CF x EF x ED x SA x DABS x SSAF) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	156	SS	
	ED	Exposure Duration	yr	6	EPA 1991	
	DABS	Dermal Absorption Factor	unitless	Table B5	EPA 2004	
	SSAF	Soil to Skin Adherence Factor	mg/cm^2	0.20	EPA 2004	
	SA	Skin Surface Area	cm^2	6,700	EPA 2004	
	CS	Chemical Concentration in Sediment	mg/kg	Table 3.3	Measured	

RME: Reasonable Maximum Exposure
SS: Site-specific parameter based on professional judgement. See text for details
As recommended (EPA 1991), the same equation for the incidental ingestion of soil is used to calculate sediment intake.
EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual EPA 2002c
OSWER Directive 9285.6-03. March., for EF, see text
EPA 2004, 'Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, August, 2004

TABLE 4.8 RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Off-Site Groundwater/ Water Vapors from Showering with Off-Site Groundwater
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	70	EPA 1991	(CW x ED x EF x IR-W) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	8,760	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 1991	
	ED	Exposure Duration	yr	24	EPA 1991	
	IR-W	Ingestion Rate-Water	L/d	2	EPA 1991	
	CW	Chemical Concentration in Water	ug/L	Table 3.4	measured	
Dermal	BW	Body Weight	kg	70	EPA 1991	(CW x CF x EF x ED x ET x Kp x SA) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	8,760	EPA 1991	
	CF	Conversion Factor	L/cm^3	1E-03	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 2004	
	ED	Exposure Duration	yr	24	EPA 1991	
	ET	Exposure Time	hr/day	0.58	EPA 2004	
	SA	Skin Surface Area	cm^2	18,000	EPA 2004	
	Kp	Permeability Coefficient	cm/hr	Table B6	EPA 2004	
	CW	Chemical Concentration in Water	ug/L	Table 3.4	measured	
Inhalation	BW	Body Weight	kg	70	EPA 1991	(C-air x ED x EF x ET x IN) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	10,950	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 1991	
	ED	Exposure Duration	yr	24	EPA 1991	
	ET	Exposure Time	hr/day	0.58	EPA 2004	
	IN	Inhalation Rate	m3/hr	1	EPA 1997	
	C-air	Chemical Concentration in Air	mg/m3	Table B2.RME	----	Andelman-Schaum model

RME: Reasonable Maximum Exposure

EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March.

EPA 1997, Exposure Factors Handbook, EPA/600/P-95/002Fa, SA: Table 6-4, also see explanation in text.

EPA 2004, 'Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, August, 2004

TABLE 4.9 RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Off-Site Groundwater/ Water Vapors from Showering with Off-Site Groundwater
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	15	EPA 1991	(CW x ED x EF x IR-W) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 1991	
	ED	Exposure Duration	yr	6	EPA 1991	
	IR-W	Ingestion Rate-Water	L/d	1.23	EPA 1997	
	CW	Chemical Concentration in Water	mg/L	Table 3.4	measured	
Dermal	BW	Body Weight	kg	15	EPA 1991	(CW x CF x EF x ED x ET x Kp x SA) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	L/cm^3	1E-03	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 2004	
	ED	Exposure Duration	yr	6	EPA 1991	
	ET	Exposure Time	hr/day	1	EPA 2004	
	SA	Skin Surface Area	cm^2	6,600	EPA 2004	
	Kp	Permeability Coefficient	cm/hr	Table B6	EPA 2004	
	CW	Chemical Concentration in Water	mg/L	Table 3.4	measured	
Inhalation	BW	Body Weight	kg	15	EPA 1991	(C-air x ED x EF x ET x IN) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 1991	
	ED	Exposure Duration	yr	6	EPA 1997	
	ET	Exposure Time	hr/day	1	EPA 2004	
	IN	Inhalation Rate	m3/hr	1	EPA 1997	
	C-air	Chemical Concentration in Air	mg/m3	Table B2.RME	----	Andelman-Schaum model

RME: Reasonable Maximum Exposure

EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposur Factors". OSWER Directive 9285.6-03. March.

EPA 1997, Exposure Factors Handbook, EPA/600/P-95/002Fa,IR-W: Table 3-6, 90th % time weighted average; IN; recommended short term exposure for light activities

EPA 2004, 'Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, August, 2004

TABLE 4.10.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Hypothetical Future On-site Supply Wells
Receptor Population: Industrial/Commercial Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	70	EPA 1991	(CW x ED x EF x IR-W) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	9,125	EPA 1991	
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yr	25	EPA 1991	
	IR-W	Ingestion Rate-Water	L/d	1	EPA 1991	
	CW	Chemical Concentration in Water	mg/L	Table 3.5	measured	
Dermal	BW	Body Weight	kg	70	EPA 1991	(CW x CF x EF x ED x ET x Kp x SA) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	9,125	EPA 1991	
	CF	Conversion Factor	L/cm3	1E-03	EPA 1989	
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yr	25	EPA 1991	
	ET	Exposure Time	hr/day	0.25		EPA Region 2 and Andelman-Schaum model
	SA	Skin Surface Area	cm2	3,300	EPA 2001	
	Kp	Permeability Coefficient	cm/hr	Table B6	EPA 2001	
	CW	Chemical Concentration in Water	mg/L	Table 3.5	measured	

RME: Reasonable Maximum Exposure

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002

EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March.

EPA 2001, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Supplemental Guidance for Dermal Risk Assessment (Interim), September, 2001. SA and ET: Exhibit 3-2.

TABLE 4.11.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Vapor Intrusion from On-Site Groundwater
Receptor Population: Industrial/Commercial Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Inhalation	BW	Body Weight	kg	70	EPA 1991	(CS x AF x CF x ED x EF x IN) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	9,125	EPA 1991	
	AF	Attenuation Factor	unitless	9.E-04	EPA 2002	Johnson-Ettinger Model (see Table B1)
	CF	Conversion Factor	L/m^3	1.E+03		
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yr	25	EPA 1991	
	IN	Inhalation Rate	m^3/day	13.3	EPA 1997	
	CS	Chemical Concentration in Water	mg/L	Table 3.6	Measured	

RME: Reasonable Maximum Exposure

EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March.

EPA 1997, Exposure Factors Handbook, EPA/600/P-95/002Fa, IN: Table 5-23, Long-term, adult, average of male and female

EPA, 2002, Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance), November 2002, EPA/530-F-02-052.

TABLE 4.12.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: On-Site Surface Soil
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	70	EPA 1991	(CS x CF x ED x EF x IR-S) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	365	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yr	1	SS	
	IR-S	Ingestion Rate-Soil	mg/kg	330	EPA 2002c	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	
Dermal	BW	Body Weight	kg	70	EPA 1991	(CS x CF x EF x ED x SA x DABS x SSAF) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	365	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yr	1	SS	
	DABS	Dermal Absorption Factor	unitless	Table B5	EPA 2001	
	SSAF	Soil to Skin Adherence Factor	mg/cm^2	0.2	EPA 2002c	
	SA	Skin Surface Area	cm^2	3,300	EPA 2002c	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.2	Measured	
Inhalation	BW	Body Weight	kg	70	EPA 1997	(CS x ED x EF x IN) ÷ (BW x AT x (PEF + VF))
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	365	EPA 1991	
	VF	Volatilization Factor	m^3/kg	calculated,Table B4	EPA 1996	
	PEF	Particulate Emission Factor	m^3/kg	3.E+05	EPA 2002c	
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yrs	1	SS	
	IN	Inhalation Rate	m^3/day	15	EPA 2002c	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	

RME: Reasonable Maximum Exposure
SS : Site-specific parameter based upon professional judgement, see text for explanation

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March.
EPA 1996, Soil Screening Guidance, EPA/540/R-96/018
EPA 1997, Exposure Factors Handbook, EPA/600/P-95/002Fa, IN: Table 5-23, Long-term, adult, average of male and female
EPA 2001, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Supplemental Guidance for Dermal Risk Assessment (Interim), September, 2001
EPA 2002c, Supplemental Guidance for Developing Soil Screening Levels for Superfund, December 2002, OSWER 9355.4-24, Equation 4-5

TABLE 4.13.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil
Exposure Point: On-Site Subsurface Soil
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	70	EPA 1991	(CS x CF x ED x EF x IR-S) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	365	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yr	1	SS	
	IR-S	Ingestion Rate-Soil	mg/kg	330	EPA 2002c	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.7	Measured	
Dermal	BW	Body Weight	kg	70	EPA 1991	(CS x CF x EF x ED x SA x DABS x SSAF) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	365	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yr	1	SS	
	DABS	Dermal Absorption Factor	unitless	Table B5	EPA 2001	
	SSAF	Soil to Skin Adherence Factor	mg/cm^2	0.2	EPA 2002c	
	SA	Skin Surface Area	cm^2	3,300	EPA 2002c	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.7	Measured	
Inhalation	BW	Body Weight	kg	70	EPA 1997	(CS x ED x EF x IN) ÷ (BW x AT x (PEF + VF))
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	365	EPA 1991	
	VF	Volatilization Factor	m^3/kg	calculated, Table B4	EPA 1996	
	PEF	Particulate Emission Factor	m^3/kg	3.E+05	EPA 2002c	
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yr	1	SS	
	IN	Inhalation Rate	m^3/day	15	EPA 2001a	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.7	Measured	

RME: Reasonable Maximum Exposure
SS : Site-specific parameter based upon professional judgement, see text for explanation

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March.
EPA 1996, Soil Screening Guidance, EPA/540/R-96/018
EPA 1997, Exposure Factors Handbook, EPA/600/P-95/002Fa, IN: Table 5-23, Long-term, adult, average of male and female
EPA 2001, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Supplemental Guidance for Dermal Risk Assessment (Interim),
EPA 2002c, Supplemental Guidance for Developing Soil Screening Levels for Superfund, December 2002, OSWER 9355.4-24, Equation 4-5 September, 2001

TABLE 4.1.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Current and Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: On-Site Surface Soil
Receptor Population: Industrial/Commercial Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	70	EPA 1991	(CS x CF x ED x EF x IR-S) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	3,285	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	219	EPA 1991	
	ED	Exposure Duration	yr	9	EPA 1991	
	IR-S	Ingestion Rate-Soil	mg/day	100	EPA 2001a	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	
Dermal	BW	Body Weight	kg	70	EPA 1991	(CS x CF x EF x ED x SA x DABS x SSAF) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	3,285	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	event/yr	219	EPA 1991	Assumes 219 days per year and 1 event per day
	ED	Exposure Duration	yr	9	EPA 1991	
	DABS	Dermal Absorption Factor	unitless	Table B5	EPA 2004	
	SSAF	Soil to Skin Adherence Factor	mg/cm^2	0.02	EPA 2001a	
	SA	Skin Surface Area	cm^2/event	3,300	EPA 2001a	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	
Inhalation	BW	Body Weight	kg	70	EPA 1991	(CS x ED x EF x ET x IN) ÷ (BW x AT x (PEF+VF))
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	3,285	EPA 1991	
	VF	Volatilization Factor	m^3/kg	Table B4	EPA 1996	
	PEF	Particulate Emission Factor	m^3/kg	1.36E+09	EPA 2002	
	EF	Exposure Frequency	day/yr	219	EPA 1991	
	ED	Exposure Duration	yr	9	EPA 1991	
	ET	Exposure Time	hr/day	8	EPA 1991	
	IN	Inhalation Rate	m^3/hr	1.5	EPA 1997	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	

CT: Central Tendency

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March.
EPA 1996, Soil Screening Guidance, EPA/540/R-96/018
EPA 1997, Exposure Factors Handbook, EPA/600/P-95/002Fa, IN: Table 5-23 for an outdoor worker/moderate activity
EPA 2001a, Supplemental Guidance for Developing Soil Screening Levels for Superfund, March 2001, OSWER 9355.4-24, Exhibit 4-1; for PEF see text.
EPA 2002, Supplemental Guidance for Developing Soil Screening Levels for Superfund, December 2002, OSWER 9355.4-24, Equation 4-5
EPA 2004, 'Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, August, 2004

TABLE 4.2.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Current and Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: On-Site Surface Soil
Receptor Population: Trespasser
Receptor Age: Pre-Adolescent (7 to 12 years)

Exposure Route	Parameter Code	Parameter Definition	Units	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	35	EPA 1997	(CS x CF x ED x EF x IR-S) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	52	SS	
	ED	Exposure Duration	yr	6	EPA 1989	
	IR-S	Ingestion Rate-Soil	mg/day	100	EPA 1997	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	
Dermal	BW	Body Weight	kg	35	EPA 1997	(CS x CF x EF x ED x SA x DABS x SSAF) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	event/yr	52	SS	Assumes 52 days per year and one event per day
	ED	Exposure Duration	yr	6	EPA 1989	
	DABS	Dermal Absorption Factor	unitless	Table B5	EPA 2001	
	SSAF	Soil to Skin Adherence Factor	mg/cm^2	0.2	EPA 2004	
	SA	Skin Surface Area	cm^2/event	4,800	EPA 1997	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	
Inhalation	BW	Body Weight	kg	35	EPA 1997	(CS x ED x EF x ET x IN) ÷ (BW x AT x (PEF+VF))
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	VF	Volatilization Factor	m^3/kg	calculated, Table B4	EPA 1996	
	PEF	Particulate Emission Factor	m^3/kg	1.36E+09	EPA 2001a	
	EF	Exposure Frequency	day/yr	52	SS	
	ED	Exposure Duration	yr	6	EPA 1989	
	ET	Exposure Time	hr/day	4	SS	
	IN	Inhalation Rate	m^3/hr	1.2	EPA 1997	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	

CT: Central Tendency
SS : Site-specific parameter based upon professional judgement, see text for explanation

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March.
EPA 1996, Soil Screening Guidance, EPA/540/R-96/018
EPA 1997, Exposure Factors Handbook, EPA/600/P-95/002Fa, BW: Table 7-3, IR-S: Table 4-23, SA: see text, IN: Table 5-23 adult/moderate activity.
EPA 2001, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Supplemental Guidance for Dermal Risk Assessment (Interim), September, 2001
EPA 2001a, Supplemental Guidance for Developing Soil Screening Levels for Superfund, March 2001, OSWER 9355.4-24, Exhibit 1-2.
EPA 2004, 'Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, August, 2004

TABLE 4.3.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Current and Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: On-Site Surface Soil
Receptor Population: Trespasser
Receptor Age: Adolescent (13 to 18 years)

Exposure Route	Parameter Code	Parameter Definition	Units	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	59	EPA 1997	(CS x CF x ED x EF x IR-S) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	78	SS	
	ED	Exposure Duration	yr	6	EPA 1989	
	IR-S	Ingestion Rate-Soil	mg/day	100	EPA 1997	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	
Dermal	BW	Body Weight	kg	59	EPA 1997	(CS x CF x EF x ED x SA x DABS x SSAF) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	event/yr	78	SS	Assumes 78 days per year and one event per day
	ED	Exposure Duration	yr	6	EPA 1989	
	DABS	Dermal Absorption Factor	unitless	Table B5	EPA 2001	
	SSAF	Soil to Skin Adherence Factor	mg/cm^2	0.07	EPA 2001a	
	SA	Skin Surface Area	cm^2/event	6,700	EPA 1997	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	
Inhalation	BW	Body Weight	kg	59	EPA 1997	(CS x ED x EF x ET x IN) ÷ (BW x AT x (PEF+VF))
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	VF	Volatilization Factor	m^3/kg	calculated, table B4	EPA 1996	
	PEF	Particulate Emission Factor	m^3/kg	1.36E+09	EPA 2001a	
	EF	Exposure Frequency	day/yr	78	SS	
	ED	Exposure Duration	yr	6	EPA 1989	
	ET	Exposure Time	hr/day	4	SS	
	IN	Inhalation Rate	m^3/hr	1.5	EPA 1997	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	

CT: Central Tendency
SS : Site-specific parameter based upon professional judgement, see text for explanation

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March.
EPA 1996, Soil Screening Guidance, EPA/540/R-96/018
EPA 1997, Exposure Factors Handbook, EPA/600/P-95/002Fa, BW: Table 7-3, IR-S: Table 4-23, SA: see text, IN: Table 5-23 for adults/moderate activity
EPA 2001, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Supplemental Guidance for Dermal Risk Assessment (Interim), September, 2001
EPA 2001a, Supplemental Guidance for Developing Soil Screening Levels for Superfund, March 2001, OSWER 9355.4-24, Exhibit 1-2.

TABLE 4.4.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Current and Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Pump Branch Creek
Receptor Population: Trespasser
Receptor Age: Pre-adolescent (7 - 12 yrs)

Exposure Route	Parameter Code	Parameter Definition	Units	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	35	EPA 1991	(CW x ED x EF x IR-W) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	EF	Exposure Frequency	day/yr	52	SS	
	ED	Exposure Duration	yr	6	EPA 1991	
	IR-W	Incidental ingestion Rate-Water	L/d	0.05	EPA 1989	
	CW	Chemical Concentration in Water	mg/L	Table 3.2	Measured	
Dermal	BW	Body Weight	kg	35	EPA 1991	(CW x CF x EF x ED x ET x Kp x SA) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	L/cm^3	0.001	EPA 1991	
	EF	Exposure Frequency	day/yr	52	EPA 2004	
	ED	Exposure Duration	yr	6	EPA 1991	
	ET	Exposure Time	hr/day	4	SS	
	SA	Skin Surface Area	cm^2	4,800	EPA 2004	
	Kp	Permeability Coefficient	cm/hr	Table B6	EPA 2004	
	CW	Chemical Concentration in Water	mg/L	Table 3.2	Measured	

CT: Central Tendency
SS: Site-specific parameter based on professional judgement. See text for details

As recommended (EPA 1991), the same equation for the incidental ingestion of soil is used to calculate sediment intake.

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March., for EF, see text
EPA 2004, 'Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, August, 2004

TABLE 4.5.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Current and Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Pump Branch Creek
Receptor Population: Trespasser
Receptor Age: Adolescent (13 - 18 yrs)

Exposure Route	Parameter Code	Parameter Definition	Units	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	59	EPA 1991	(CW x ED x EF x IR-W) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	EF	Exposure Frequency	day/yr	78	SS	
	ED	Exposure Duration	yr	6	EPA 1991	
	IR-W	Incidental ingestion Rate-Water	L/d	0.05	EPA 1989	
	CW	Chemical Concentration in Water	mg/L	Table 3.2	Measured	
Dermal	BW	Body Weight	kg	59	EPA 1991	(CW x CF x EF x ED x ET x Kp x SA) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	L/cm^3	0.001	EPA 1991	
	EF	Exposure Frequency	day/yr	78	EPA 2004	
	ED	Exposure Duration	yr	6	EPA 1991	
	ET	Exposure Time	hr/day	4	SS	
	SA	Skin Surface Area	cm^2	6,700	EPA 2004	
	Kp	Permeability Coefficient	cm/hr	Table B6	EPA 2004	
	CW	Chemical Concentration in Water	mg/L	Table 3.2	Measured	

CT: Central Tendency
SS: Site-specific parameter based on professional judgement. See text for details

As recommended (EPA 1991), the same equation for the incidental ingestion of soil is used to calculate sediment intake.

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March., for EF, see text
EPA 2004, 'Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, August, 2004

TABLE 4.6.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Current and Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Pump Branch Creek
Receptor Population: Trespasser
Receptor Age: Pre-adolescent (7 - 12 years)

Exposure Route	Parameter Code	Parameter Definition	Units	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	35	EPA 1991	(CS x CF x ED x EF x IR-S) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	52	SS	
	ED	Exposure Duration	yr	6	EPA 1991	
	IR-S	Ingestion Rate-Sediment	mg/day	100	EPA 2001a	
	CS	Chemical Concentration in Sediment	mg/kg	Table 3.3	Measured	
Dermal	BW	Body Weight	kg	35	EPA 1991	(CS x CF x EF x ED x SA x DABS x SSAF) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	event/yr	52	SS	Assumes 52 days per year and one event per day
	ED	Exposure Duration	yr	6	EPA 1991	
	DABS	Dermal Absorption Factor	unitless	Table B5	EPA 2004	
	SSAF	Sediment to Skin Adherence Factor	mg/cm^2	0.20	EPA 2004	
	SA	Skin Surface Area	cm^2/event	4,800	EPA 2004	
	CS	Chemical Concentration in Sediment	mg/kg	Table 3.3	Measured	

CT: Central Tendency
SS: Site-specific parameter based on professional judgement. See text for details

As recommended (EPA 1991), the same equation for the incidental ingestion of soil is used to calculate sediment intake.

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March., for EF, see text
EPA 2001a, Supplemental Guidance for Developing Soil Screening Levels for Superfund, March 2001, OSWER 9355.4-24, Exhibit 4-1; for PEF see text.
EPA 2004, 'Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, August, 2004

TABLE 4.7.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Current and Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Pump Branch Creek
Receptor Population: Tresspasser
Receptor Age: Adolescent (13 - 18 yrs)

Exposure Route	Parameter Code	Parameter Definition	Units	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	59	EPA 1991	(CS x CF x ED x EF x IR-S) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	78	SS	
	ED	Exposure Duration	yr	6	EPA 1991	
	IR-S	Ingestion Rate-Sediment	mg/day	100	EPA 1991	
	CS	Chemical Concentration in Sediment	mg/kg	Table 3.3	Measured	
Dermal	BW	Body Weight	kg	59	EPA 1991	(CS x CF x EF x ED x SA x DABS x SSAF) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	event/yr	78	SS	Assumes 78 days per year and one event per day
	ED	Exposure Duration	yr	6	EPA 1991	
	DABS	Dermal Absorption Factor	unitless	Table B5	EPA 2004	
	SSAF	Soil to Skin Adherence Factor	mg/cm^2	0.20	EPA 2004	
	SA	Skin Surface Area	cm^2/event	6,700	EPA 2004	
	CS	Chemical Concentration in Sediment	mg/kg	Table 3.3	Measured	

CT: Central Tendency
SS: Site-specific parameter based on professional judgement. See text for details
As recommended (EPA 1991), the same equation for the incidental ingestion of soil is used to calculate sediment intake.
EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March., for EF, see text
EPA 2004, 'Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, August, 2004

TABLE 4.8 CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Off-Site Groundwater/ Water Vapors from Showering with Off-Site Groundwater
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	70	EPA 1991	(CW x ED x EF x IR-W) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	1,095	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 1991	
	ED	Exposure Duration	yr	3	EPA 1991	
	IR-W	Ingestion Rate-Water	L/d	1.41	EPA 1991	
	CW	Chemical Concentration in Water	mg/L	Table 3.4	Measured	
Dermal	BW	Body Weight	kg	70	EPA 1991	(CW x CF x EF x ED x ET x Kp x SA) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	1,095	EPA 1991	
	CF	Conversion Factor	L/cm^3	1E-03	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 2004	
	ED	Exposure Duration	yr	3	EPA 1991	
	ET	Exposure Time	hr/day	0.25	EPA 2004	
	SA	Skin Surface Area	cm^2	18,000	EPA 2004	
	Kp	Permeability Coefficient	cm/hr	Table B6	EPA 2004	
	CW	Chemical Concentration in Water	mg/L	Table 3.4	Measured	
Inhalation	BW	Body Weight	kg	70	EPA 1991	(C-air x ED x EF x ET x IN) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	1,095	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 1991	
	ED	Exposure Duration	yr	3	EPA 1991	
	ET	Exposure Time	hr/day	0.25	EPA 2004	Showering time (0.1 hr) + Time spent in bathroom after shower (0.15 hr)
	IN	Inhalation Rate	m3/hr	1	EPA 1997	
	C-air	Chemical Concentration in Air	mg/m3	Table B2.CT	----	Andelman-Schaum model

CT: Central Tendency

EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March.

EPA 1997, Exposure Factors Handbook, EPA/600/P-95/002Fa, SA: Table 6-4, also see explanation in text.

EPA 2004, 'Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, August, 2004

TABLE 4.9 CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Off-Site Groundwater/ Water Vapors from Showering with Off-Site Groundwater
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	15	EPA 1991	(CW x ED x EF x IR-W) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 1991	
	ED	Exposure Duration	yr	6	EPA 1991	
	IR-W	Ingestion Rate-Water	L/d	0.67	EPA 1997	
	CW	Chemical Concentration in Water	mg/L	Table 3.4	Measured	
Dermal	BW	Body Weight	kg	15	EPA 1991	(CW x CF x EF x ED x ET x Kp x SA) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	L/cm^3	1E-03	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 2004	
	ED	Exposure Duration	yr	6	EPA 1991	
	ET	Exposure Time	hr/day	0.33	EPA 2004	
	SA	Skin Surface Area	cm^2	6,600	EPA 2004	
	Kp	Permeability Coefficient	cm/hr	Table B6	EPA 2004	
	CW	Chemical Concentration in Water	mg/L	Table 3.4	Measured	
Inhalation	BW	Body Weight	kg	15	EPA 1991	(C-air x ED x EF x ET x IN) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 1991	
	ED	Exposure Duration	yr	6	EPA 1997	
	ET	Exposure Time	hr/day	0.25	EPA 2004	
	IN	Inhalation Rate	m3/hr	1	EPA 1997	
	C-air	Chemical Concentration in Air	mg/m3	Table B2.CT	----	Andelman-Schaum model

CT: Central Tendency

EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposur OSWER Directive 9285.6-03. March.

EPA 1997, Exposure Factors Handbook, EPA/600/P-95/002Fa,IR-W: Table 3-6, 90th % time weighted average; IN; recommended short term exposure for light activities

EPA 2004, Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk August, 2004

TABLE 4.10.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Hypothetical Future On-site Supply Wells
Receptor Population: Industrial/Commercial Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	70	EPA 1991	(CW x ED x EF x IR-W) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	3,285	EPA 1991	
	EF	Exposure Frequency	day/yr	219	EPA 1991	
	ED	Exposure Duration	yr	9	EPA 1991	
	IR-W	Ingestion Rate-Water	L/d	0.5	EPA 1991	
	CW	Chemical Concentration in Water	mg/L	Table 3.5	Measured	
Dermal	BW	Body Weight	kg	70	EPA 1991	(CW x CF x EF x ED x ET x Kp x SA) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	3,285	EPA 1991	
	CF	Conversion Factor	L/cm3	1E-03	EPA 1989	
	EF	Exposure Frequency	day/yr	219	EPA 1991	
	ED	Exposure Duration	yr	9	EPA 1991	
	ET	Exposure Time	hr/day	0.25		EPA Region 2 and Andelman-Schaum model
	SA	Skin Surface Area	cm2	3,300	EPA 2001	
	Kp	Permeability Coefficient	cm/hr	Table B6	EPA 2001	
	CW	Chemical Concentration in Water	mg/L	Table 3.5	Measured	

CT: Central Tendency

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002

EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March.

EPA 2001, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Supplemental Guidance for Dermal Risk Assessment (Interim), September, 2001. SA and ET: Exhibit 3-2.

TABLE 4.11.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Vapor Intrusion from On-Site Groundwater
Receptor Population: Industrial/Commercial Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Inhalation	BW	Body Weight	kg	70	EPA 1991	(CS x AF x CF x ED x EF x IN) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	3,285	EPA 1991	
	AF	Attenuation Factor	unitless	8.E-05	EPA 2002	Johnson-Ettinger Model
	CF	Conversion Factor	L/m^3	1.E+03		
	EF	Exposure Frequency	day/yr	219	EPA 1991	
	ED	Exposure Duration	yr	9	EPA 1991	
	IN	Inhalation Rate	m^3/day	13.3	EPA 1997	
	CS	Chemical Concentration in Water	mg/L	Table 3.6	Measured	

CT: Central Tendency

EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March.

EPA 1997, Exposure Factors Handbook, EPA/600/P-95/002Fa, IN: Table 5-23, Long-term, adult, average of male and female

EPA, 2002, Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance), November 2002 EPA/530-F-02-052.

TABLE 4.12.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: On-Site Surface Soil
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	70	EPA 1991	(CS x CF x ED x EF x IR-S) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	365	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	219	EPA 1991	
	ED	Exposure Duration	yr	1	SS	
	IR-S	Ingestion Rate-Soil	mg/kg	330	EPA 2001a	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	
Dermal	BW	Body Weight	kg	70	EPA 1991	(CS x CF x EF x ED x SA x DABS x SSAF) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	365	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	event/yr	219	EPA 1991	Assumes 219 days per year and one event per day
	ED	Exposure Duration	yr	1	SS	
	DABS	Dermal Absorption Factor	unitless	Table B5	EPA 2001	
	SSAF	Soil to Skin Adherence Factor	mg/cm^2	0.2	EPA 2001a	
	SA	Skin Surface Area	cm^2/event	3,300	EPA 2001a	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.2	Measured	
Inhalation	BW	Body Weight	kg	70	EPA 1997	(CS x ED x EF x IN) ÷ (BW x AT x (PEF + VF))
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	365	EPA 1991	
	VF	Volatilization Factor	m^3/kg	calculated, Table B4	EPA 1996	
	PEF	Particulate Emission Factor	m^3/kg	1.36E+09	EPA 2001a	
	EF	Exposure Frequency	day/yr	219	EPA 1991	
	ED	Exposure Duration	yrs	1	SS	
	IN	Inhalation Rate	m^3/day	15	EPA 2001a	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	

CT: Central Tendency
SS : Site-specific parameter based upon professional judgement, see text for explanation

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March.
EPA 1996, Soil Screening Guidance, EPA/540/R-96/018
EPA 1997, Exposure Factors Handbook, EPA/600/P-95/002Fa; SA: see text
EPA 2001, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Supplemental Guidance for Dermal Risk Assessment (Interim), September, 2001
EPA 2001a, Supplemental Guidance for Developing Soil Screening Levels for Superfund, March 2001, OSWER 9355.4-24, Exhibit 1-2, also Exhibit 5-1.

TABLE 4.13.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil
Exposure Point: On-Site Subsurface Soil
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	70	EPA 1991	(CS x CF x ED x EF x IR-S) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	365	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	219	EPA 1991	
	ED	Exposure Duration	yr	1	SS	
	IR-S	Ingestion Rate-Soil	mg/kg	330	EPA 2001a	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.7	Measured	
Dermal	BW	Body Weight	kg	70	EPA 1991	(CS x CF x EF x ED x SA x DABS x SSAF) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	365	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	event/yr	219	EPA 1991	Assumes 219 days per year and one event per day
	ED	Exposure Duration	yr	1	SS	
	DABS	Dermal Absorption Factor	unitless	Table B5	EPA 2001	
	SSAF	Soil to Skin Adherence Factor	mg/cm^2	0.2	EPA 2001a	
	SA	Skin Surface Area	cm^2/event	3,300	EPA 2001a	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.7	Measured	
Inhalation	BW	Body Weight	kg	70	EPA 1997	(CS x ED x EF x IN) ÷ (BW x AT x (PEF + VF))
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	365	EPA 1991	
	VF	Volatilization Factor	m^3/kg	calculated, Table B4	EPA 1996	
	PEF	Particulate Emission Factor	m^3/kg	1.36E+09	EPA 2001a	
	EF	Exposure Frequency	day/yr	219	EPA 1991	
	ED	Exposure Duration	yr	1	SS	
	IN	Inhalation Rate	m^3/day	15	EPA 2001a	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.7	Measured	

CT: Central Tendency
SS : Site-specific parameter based upon professional judgement, see text for explanation

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March.
EPA 1996, Soil Screening Guidance, EPA/540/R-96/018
EPA 1997, Exposure Factors Handbook, EPA/600/P-95/002Fa; see text for Dermal SA; Table 5-23, Upper Percentile, adult hourly average (Inhalation)
EPA 2001, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Supplemental Guidance for Dermal Risk Assessment (Interim), September, 2001
EPA 2001a, Supplemental Guidance for Developing Soil Screening Levels for Superfund, March 2001, OSWER 9355.4-24

TABLE 4.1.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Current and Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: On-Site Surface Soil
Receptor Population: Industrial/Commercial Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	70	EPA 1991	(CS x CF x ED x EF x IR-S) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	9,125	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yr	25	EPA 1991	
	IR-S	Ingestion Rate-Soil	mg/day	100	EPA 2002c	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	
Dermal	BW	Body Weight	kg	70	EPA 1991	(CS x CF x EF x ED x SA x DABS x SSAF) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	9,125	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	event/yr	250	EPA 1991	Assumes 250 days per year and 1 event per day
	ED	Exposure Duration	yr	25	EPA 1991	
	DABS	Dermal Absorption Factor	unitless	Table B5	EPA 2004	
	SSAF	Soil to Skin Adherence Factor	mg/cm^2	0.20	EPA 2002c	
	SA	Skin Surface Area	cm^2/event	3,300	EPA 2002c	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	
Inhalation	BW	Body Weight	kg	70	EPA 1991	(CS x ED x EF x ET x IN) ÷ (BW x AT x (PEF+VF))
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	9,125	EPA 1991	
	VF	Volatilization Factor	m^3/kg	Table B4	EPA 1996	
	PEF	Particulate Emission Factor	m^3/kg	1.36E+09	EPA 2002c	
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yr	25	EPA 1991	
	ET	Exposure Time	hr/day	8	EPA 1991	
	IN	Inhalation Rate	m^3/hr	1.5	EPA 1997	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	

RME: Reasonable Maximum Exposure

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March.
EPA 1996, Soil Screening Guidance, EPA/540/R-96/018
EPA 1997, Exposure Factors Handbook, EPA/600/P-95/002Fa, IN: Table 5-23 for an outdoor worker/moderate activity
EPA 2002c, Supplemental Guidance for Developing Soil Screening Levels for Superfund, December 2002, OSWER 9355.4-24, Equation 4-5
EPA 2004, 'Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final August, 2004

TABLE 4.2.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Current and Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: On-Site Surface Soil
Receptor Population: Trespasser
Receptor Age: Pre-Adolescent (7 to 12 years)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	35	EPA 1997	(CS x CF x ED x EF x IR-S) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	104	SS	
	ED	Exposure Duration	yr	6	EPA 1989	
	IR-S	Ingestion Rate-Soil	mg/day	100	EPA 1997	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	
Dermal	BW	Body Weight	kg	35	EPA 1997	(CS x CF x EF x ED x SA x DABS x SSAF) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	event/yr	104	SS	Assumes 104 days per year and one event per day
	ED	Exposure Duration	yr	6	EPA 1989	
	DABS	Dermal Absorption Factor	unitless	Table B5	EPA 2002c	
	SSAF	Soil to Skin Adherence Factor	mg/cm^2	0.2	EPA 2004	
	SA	Skin Surface Area	cm^2/event	4,800	EPA 1997	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	
Inhalation	BW	Body Weight	kg	35	EPA 1997	(CS x ED x EF x ET x IN) ÷ (BW x AT x (PEF+VF))
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	VF	Volatilization Factor	m^3/kg	calculated, Table B4	EPA 1996	
	PEF	Particulate Emission Factor	m^3/kg	1.36E+09	EPA 2002c	
	EF	Exposure Frequency	day/yr	104	SS	
	ED	Exposure Duration	yr	6	EPA 1989	
	ET	Exposure Time	hr/day	4	SS	
	IN	Inhalation Rate	m^3/hr	1.5	EPA 1997	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	

RME: Reasonable Maximum Exposure
SS : Site-specific parameter based upon professional judgement, see text for explanation

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002

EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March.

EPA 1996, Soil Screening Guidance, EPA/540/R-96/018

EPA 2002c, Supplemental Guidance for Developing Soil Screening Levels for Superfund, December 2002, OSWER 9355.4-24, Equation 4-5 September, 2001

EPA 2004, 'Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, August, 2004

TABLE 4.3.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Current and Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: On-Site Surface Soil
Receptor Population: Trespasser
Receptor Age: Adolescent (13 to 18 years)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	59	EPA 1997	(CS x CF x ED x EF x IR-S) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	156	SS	
	ED	Exposure Duration	yr	6	EPA 1989	
	IR-S	Ingestion Rate-Soil	mg/day	100	EPA 1997	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	
Dermal	BW	Body Weight	kg	59	EPA 1997	(CS x CF x EF x ED x SA x DABS x SSAF) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	event/yr	156	SS	Assumes 156 days per year and one event per day
	ED	Exposure Duration	yr	6	EPA 1989	
	DABS	Dermal Absorption Factor	unitless	Table B5	EPA 2001	
	SSAF	Soil to Skin Adherence Factor	mg/cm^2	0.07	EPA 2002c	
	SA	Skin Surface Area	cm^2/event	6,700	EPA 1997	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	
Inhalation	BW	Body Weight	kg	59	EPA 1997	(CS x ED x EF x ET x IN) ÷ (BW x AT x (PEF+VF))
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	VF	Volatilization Factor	m^3/kg	calculated, Table B4	EPA 1996	
	PEF	Particulate Emission Factor	m^3/kg	1.36E+09	EPA 2002c	
	EF	Exposure Frequency	day/yr	156	SS	
	ED	Exposure Duration	yr	6	EPA 1989	
	ET	Exposure Time	hr/day	4	SS	
	IN	Inhalation Rate	m^3/hr	1.5	EPA 1997	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	

RME: Reasonable Maximum Exposure
SS : Site-specific parameter based upon professional judgement, see text for explanation

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March.
EPA 1996, Soil Screening Guidance, EPA/540/R-96/018
EPA 2002c, Supplemental Guidance for Developing Soil Screening Levels for Superfund, December 2002, OSWER 9355.4-24, Equation 4-5 September, 2001

TABLE 4.4.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Current and Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Pump Branch Creek
Receptor Population: Trespasser
Receptor Age: Pre-adolescent (7 - 12 yrs)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	35	EPA 1991	(CW x ED x EF x IR-W) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	EF	Exposure Frequency	day/yr	104	SS	
	ED	Exposure Duration	yr	6	EPA 1991	
	IR-W	Incidental ingestion Rate-Water	L/d	0.05	EPA 1989	
	CW	Chemical Concentration in Water	mg/L	Table 3.2	measured	
Dermal	BW	Body Weight	kg	35	EPA 1991	(CW x CF x EF x ED x ET x Kp x SA) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	L/cm^3	0.001	EPA 1991	
	EF	Exposure Frequency	day/yr	104	EPA 2004	
	ED	Exposure Duration	yr	6	EPA 1991	
	ET	Exposure Time	hr/day	4	SS	
	SA	Skin Surface Area	cm^2	4,800	EPA 2004	
	Kp	Permeability Coefficient	cm/hr	Table B6	EPA 2004	
	CW	Chemical Concentration in Water	mg/L	Table 3.2	measured	

RME: Reasonable Maximum Exposure
SS: Site-specific parameter based on professional judgement. See text for details

As recommended (EPA 1991), the same equation for the incidental ingestion of soil is used to calculate sediment intake.

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March., for EF, see text
EPA 2004, 'Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, August, 2004

TABLE 4.5.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Current and Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Pump Branch Creek
Receptor Population: Trespasser
Receptor Age: Adolescent (13 - 18 yrs)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	59	EPA 1991	(CW x ED x EF x IR-W) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	EF	Exposure Frequency	day/yr	156	SS	
	ED	Exposure Duration	yr	6	EPA 1991	
	IR-W	Incidental ingestion Rate-Water	L/d	0.05	EPA 1989	
	CW	Chemical Concentration in Water	mg/L	Table 3.2	measured	
Dermal	BW	Body Weight	kg	59	EPA 1991	(CW x CF x EF x ED x ET x Kp x SA) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	L/cm^3	0.001	EPA 1991	
	EF	Exposure Frequency	day/yr	156	EPA 2004	
	ED	Exposure Duration	yr	6	EPA 1991	
	ET	Exposure Time	hr/day	4	SS	
	SA	Skin Surface Area	cm^2	6,700	EPA 2004	
	Kp	Permeability Coefficient	cm/hr	Table B6	EPA 2004	
	CW	Chemical Concentration in Water	mg/L	Table 3.2	measured	

RME: Reasonable Maximum Exposure
SS: Site-specific parameter based on professional judgement. See text for details

As recommended (EPA 1991), the same equation for the incidental ingestion of soil is used to calculate sediment intake.

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March., for EF, see text
EPA 2004, 'Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, August, 2004

TABLE 4.6.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Current and Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Pump Branch Creek
Receptor Population: Trespasser
Receptor Age: Pre-adolescent (7 - 12 years)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	35	EPA 1991	(CS x CF x ED x EF x IR-S) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	104	SS	
	ED	Exposure Duration	yr	6	EPA 1991	
	IR-S	Ingestion Rate-Sediment	mg/day	100	EPA 2002c	
	CS	Chemical Concentration in Sediment	mg/kg	Table 3.3	Measured	
Dermal	BW	Body Weight	kg	35	EPA 1991	(CS x CF x EF x ED x SA x DABS x SSAF) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	104	SS	
	ED	Exposure Duration	yr	6	EPA 1991	
	DABS	Dermal Absorption Factor	unitless	Table B5	EPA 2004	
	SSAF	Sediment to Skin Adherence Factor	mg/cm^2	0.20	EPA 2004	
	SA	Skin Surface Area	cm2/event	4,800	EPA 2004	
	CS	Chemical Concentration in Sediment	mg/kg	Table 3.3	Measured	

RME: Reasonable Maximum Exposure
SS: Site-specific parameter based on professional judgement. See text for details

As recommended (EPA 1991), the same equation for the incidental ingestion of soil is used to calculate sediment intake.

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manu EPA 2002c
Exposure Factors". OSWER Directive 9285.6-03. March., for EF, see text
EPA 2002c, Supplemental Guidance for Developing Soil Screening Levels for Superfund, December 2002, OSWER 9355.4-24, Equation 4-5
September, 2001
EPA 2004, 'Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, August, 2004

TABLE 4.7.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Current and Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Pump Branch Creek
Receptor Population: Tresspasser
Receptor Age: Adolescent (13 - 18 yrs)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	59	EPA 1991	(CS x CF x ED x EF x IR-S) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	156	SS	
	ED	Exposure Duration	yr	6	EPA 1991	
	IR-S	Ingestion Rate-Sediment	mg/day	100	EPA 1991	
	CS	Chemical Concentration in Sediment	mg/kg	Table 3.3	Measured	
Dermal	BW	Body Weight	kg	59.00	EPA 1991	(CS x CF x EF x ED x SA x DABS x SSAF) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	156	SS	
	ED	Exposure Duration	yr	6	EPA 1991	
	DABS	Dermal Absorption Factor	unitless	Table B5	EPA 2004	
	SSAF	Soil to Skin Adherence Factor	mg/cm^2	0.20	EPA 2004	
	SA	Skin Surface Area	cm^2	6,700	EPA 2004	
	CS	Chemical Concentration in Sediment	mg/kg	Table 3.3	Measured	

RME: Reasonable Maximum Exposure
SS: Site-specific parameter based on professional judgement. See text for details
As recommended (EPA 1991), the same equation for the incidental ingestion of soil is used to calculate sediment intake.
EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual EPA 2002c
OSWER Directive 9285.6-03. March., for EF, see text
EPA 2004, 'Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, August, 2004

TABLE 4.8 RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Off-Site Groundwater/ Water Vapors from Showering with Off-Site Groundwater
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	70	EPA 1991	(CW x ED x EF x IR-W) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	8,760	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 1991	
	ED	Exposure Duration	yr	24	EPA 1991	
	IR-W	Ingestion Rate-Water	L/d	2	EPA 1991	
	CW	Chemical Concentration in Water	ug/L	Table 3.4	measured	
Dermal	BW	Body Weight	kg	70	EPA 1991	(CW x CF x EF x ED x ET x Kp x SA) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	8,760	EPA 1991	
	CF	Conversion Factor	L/cm^3	1E-03	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 2004	
	ED	Exposure Duration	yr	24	EPA 1991	
	ET	Exposure Time	hr/day	0.58	EPA 2004	
	SA	Skin Surface Area	cm^2	18,000	EPA 2004	
	Kp	Permeability Coefficient	cm/hr	Table B6	EPA 2004	
	CW	Chemical Concentration in Water	ug/L	Table 3.4	measured	
Inhalation	BW	Body Weight	kg	70	EPA 1991	(C-air x ED x EF x ET x IN) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	10,950	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 1991	
	ED	Exposure Duration	yr	24	EPA 1991	
	ET	Exposure Time	hr/day	0.58	EPA 2004	
	IN	Inhalation Rate	m3/hr	1	EPA 1997	
	C-air	Chemical Concentration in Air	mg/m3	Table B2.RME	----	Andelman-Schaum model

RME: Reasonable Maximum Exposure

EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March.

EPA 1997, Exposure Factors Handbook, EPA/600/P-95/002Fa, SA: Table 6-4, also see explanation in text.

EPA 2004, 'Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, August, 2004

TABLE 4.9 RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater/Air
Exposure Point: Off-Site Groundwater/ Water Vapors from Showering with Off-Site Groundwater
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	15	EPA 1991	(CW x ED x EF x IR-W) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 1991	
	ED	Exposure Duration	yr	6	EPA 1991	
	IR-W	Ingestion Rate-Water	L/d	1.23	EPA 1997	
	CW	Chemical Concentration in Water	mg/L	Table 3.4	measured	
Dermal	BW	Body Weight	kg	15	EPA 1991	(CW x CF x EF x ED x ET x Kp x SA) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	CF	Conversion Factor	L/cm^3	1E-03	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 2004	
	ED	Exposure Duration	yr	6	EPA 1991	
	ET	Exposure Time	hr/day	1	EPA 2004	
	SA	Skin Surface Area	cm^2	6,600	EPA 2004	
	Kp	Permeability Coefficient	cm/hr	Table B6	EPA 2004	
	CW	Chemical Concentration in Water	mg/L	Table 3.4	measured	
Inhalation	BW	Body Weight	kg	15	EPA 1991	(C-air x ED x EF x ET x IN) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	2,190	EPA 1991	
	EF	Exposure Frequency	day/yr	350	EPA 1991	
	ED	Exposure Duration	yr	6	EPA 1997	
	ET	Exposure Time	hr/day	1	EPA 2004	
	IN	Inhalation Rate	m3/hr	1	EPA 1997	
	C-air	Chemical Concentration in Air	mg/m3	Table B2.RME	----	Andelman-Schaum model

RME: Reasonable Maximum Exposure

EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposur Factors". OSWER Directive 9285.6-03. March.

EPA 1997, Exposure Factors Handbook, EPA/600/P-95/002Fa,IR-W: Table 3-6, 90th % time weighted average; IN; recommended short term exposure for light activities

EPA 2004, 'Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, August, 2004

TABLE 4.10.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Hypothetical Future On-site Supply Wells
Receptor Population: Industrial/Commercial Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	70	EPA 1991	(CW x ED x EF x IR-W) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	9,125	EPA 1991	
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yr	25	EPA 1991	
	IR-W	Ingestion Rate-Water	L/d	1	EPA 1991	
	CW	Chemical Concentration in Water	mg/L	Table 3.5	measured	
Dermal	BW	Body Weight	kg	70	EPA 1991	(CW x CF x EF x ED x ET x Kp x SA) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	9,125	EPA 1991	
	CF	Conversion Factor	L/cm3	1E-03	EPA 1989	
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yr	25	EPA 1991	
	ET	Exposure Time	hr/day	0.25		EPA Region 2 and Andelman-Schaum model
	SA	Skin Surface Area	cm2	3,300	EPA 2001	
	Kp	Permeability Coefficient	cm/hr	Table B6	EPA 2001	
	CW	Chemical Concentration in Water	mg/L	Table 3.5	measured	

RME: Reasonable Maximum Exposure

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002

EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March.

EPA 2001, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Supplemental Guidance for Dermal Risk Assessment (Interim), September, 2001. SA and ET: Exhibit 3-2.

TABLE 4.11.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Vapor Intrusion from On-Site Groundwater
Receptor Population: Industrial/Commercial Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Inhalation	BW	Body Weight	kg	70	EPA 1991	(CS x AF x CF x ED x EF x IN) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	9,125	EPA 1991	
	AF	Attenuation Factor	unitless	9.E-04	EPA 2002	Johnson-Ettinger Model (see Table B1)
	CF	Conversion Factor	L/m^3	1.E+03		
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yr	25	EPA 1991	
	IN	Inhalation Rate	m^3/day	13.3	EPA 1997	
	CS	Chemical Concentration in Water	mg/L	Table 3.6	Measured	

RME: Reasonable Maximum Exposure

EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March.

EPA 1997, Exposure Factors Handbook, EPA/600/P-95/002Fa, IN: Table 5-23, Long-term, adult, average of male and female

EPA, 2002, Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance), November 2002, EPA/530-F-02-052.

TABLE 4.12.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: On-Site Surface Soil
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	70	EPA 1991	(CS x CF x ED x EF x IR-S) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	365	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yr	1	SS	
	IR-S	Ingestion Rate-Soil	mg/kg	330	EPA 2002c	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	
Dermal	BW	Body Weight	kg	70	EPA 1991	(CS x CF x EF x ED x SA x DABS x SSAF) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	365	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yr	1	SS	
	DABS	Dermal Absorption Factor	unitless	Table B5	EPA 2001	
	SSAF	Soil to Skin Adherence Factor	mg/cm^2	0.2	EPA 2002c	
	SA	Skin Surface Area	cm^2	3,300	EPA 2002c	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.2	Measured	
Inhalation	BW	Body Weight	kg	70	EPA 1997	(CS x ED x EF x IN) ÷ (BW x AT x (PEF + VF))
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	365	EPA 1991	
	VF	Volatilization Factor	m^3/kg	calculated,Table B4	EPA 1996	
	PEF	Particulate Emission Factor	m^3/kg	3.E+05	EPA 2002c	
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yrs	1	SS	
	IN	Inhalation Rate	m^3/day	15	EPA 2002c	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.1	Measured	

RME: Reasonable Maximum Exposure
SS : Site-specific parameter based upon professional judgement, see text for explanation

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March.
EPA 1996, Soil Screening Guidance, EPA/540/R-96/018
EPA 1997, Exposure Factors Handbook, EPA/600/P-95/002Fa, IN: Table 5-23, Long-term, adult, average of male and female
EPA 2001, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Supplemental Guidance for Dermal Risk Assessment (Interim), September, 2001
EPA 2002c, Supplemental Guidance for Developing Soil Screening Levels for Superfund, December 2002, OSWER 9355.4-24, Equation 4-5

TABLE 4.13.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil
Exposure Point: On-Site Subsurface Soil
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	BW	Body Weight	kg	70	EPA 1991	(CS x CF x ED x EF x IR-S) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	365	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yr	1	SS	
	IR-S	Ingestion Rate-Soil	mg/kg	330	EPA 2002c	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.7	Measured	
Dermal	BW	Body Weight	kg	70	EPA 1991	(CS x CF x EF x ED x SA x DABS x SSAF) ÷ (BW x AT)
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	365	EPA 1991	
	CF	Conversion Factor	kg/mg	1.E-06	EPA 1989	
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yr	1	SS	
	DABS	Dermal Absorption Factor	unitless	Table B5	EPA 2001	
	SSAF	Soil to Skin Adherence Factor	mg/cm^2	0.2	EPA 2002c	
	SA	Skin Surface Area	cm^2	3,300	EPA 2002c	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.7	Measured	
Inhalation	BW	Body Weight	kg	70	EPA 1997	(CS x ED x EF x IN) ÷ (BW x AT x (PEF + VF))
	AT-C	Averaging Time Carcinogen	days	25,550	EPA 1991	
	AT-N	Averaging Time NonCarcinogen	days	365	EPA 1991	
	VF	Volatilization Factor	m^3/kg	calculated, Table B4	EPA 1996	
	PEF	Particulate Emission Factor	m^3/kg	3.E+05	EPA 2002c	
	EF	Exposure Frequency	day/yr	250	EPA 1991	
	ED	Exposure Duration	yr	1	SS	
	IN	Inhalation Rate	m^3/day	15	EPA 2001a	
	CS	Chemical Concentration in Soil	mg/kg	Table 3.7	Measured	

RME: Reasonable Maximum Exposure
SS : Site-specific parameter based upon professional judgement, see text for explanation

EPA 1989, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002
EPA 1991, Risk Assessment Guidance for Superfund Vol 1: Human Health Evaluation Manual (Part A), Supplemental Guidance, "Standard Default Exposure Factors". OSWER Directive 9285.6-03. March.
EPA 1996, Soil Screening Guidance, EPA/540/R-96/018
EPA 1997, Exposure Factors Handbook, EPA/600/P-95/002Fa, IN: Table 5-23, Long-term, adult, average of male and female
EPA 2001, Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Supplemental Guidance for Dermal Risk Assessment (Interim),
EPA 2002c, Supplemental Guidance for Developing Soil Screening Levels for Superfund, December 2002, OSWER 9355.4-24, Equation 4-5 September, 2001

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
Lightman Drum Superfund Site

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (1)		Absorbed RfD for Dermal		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)	
		Value	Units	value	Reference	Value (2)	Units			Source(s) (3)	Date (MM/DD/YYYY)
Volatile Organics											
1,1,1-Trichloroethane	Chronic	---	mg/kg/day	---		---	mg/kg/day	---	---	---	---
1,1,2-Trichloroethane	Chronic	4.00E-03	mg/kg/day	1	A	4.00E-03	mg/kg/day	Blood	1000/1	IRIS	2/1/1995
1,1,2-Trichloroethane	Subchronic	4.00E-02	mg/kg/day	1	A	4.00E-02	mg/kg/day	Blood	1000/1	HEAST	7/31/1997
1,2,3-Trichlorobenzene	Chronic	---	mg/kg/day	---		---	mg/kg/day	---	---	---	---
1,2,4-Trichlorobenzene	Chronic	1.00E-02	mg/kg/day	1	A	1.00E-02	mg/kg/day	Adrenal glands	10/1	IRIS	11/1/1996
1,2-Dichlorobenzene	Chronic	9.00E-02	mg/kg/day	1	A	9.00E-02	mg/kg/day	---	1000/1	IRIS	3/1/1991
1,2-Dichloroethane	Chronic	---	mg/kg/day	1	A	---	mg/kg/day	---	---	---	---
1,4-Dichlorobenzene	Chronic	---	mg/kg/day	1	A	---	mg/kg/day	---	---	---	---
Benzene	Chronic	4.00E-03	mg/kg/day	1	A	4.00E-03	mg/kg/day	Blood	300/1	IRIS	4/17/2003
Chlorobenzene	Chronic	2.00E-02	mg/kg/day	1	A	2.00E-02	mg/kg/day	Liver	1000/1	IRIS	7/1/1993
Chloroform	Chronic	1.00E-02	mg/kg/day	1	A	1.00E-02	mg/kg/day	Liver	1000/1	IRIS	10/19/2001
cis-1,2-Dichloroethene	Chronic	1.00E-02	mg/kg/day	1	A	1.00E-02	mg/kg/day	Blood	---	PPRTV	---
Ethylbenzene	Chronic	1.00E-01	mg/kg/day	1	A	1.00E-01	mg/kg/day	Liver / Kidney	1000/1	IRIS	6/1/1991
Isopropylbenzene	Chronic	1.00E-01	mg/kg/day	1	A	1.00E-01	mg/kg/day	Kidney	1000/1	IRIS	8/1/1997
Tetrachloroethene	Chronic	1.00E-02	mg/kg/day	1	A	1.00E-02	mg/kg/day	Liver	1000/1	IRIS	3/1/1988
Toluene	Chronic	8.00E-02	mg/kg/day	1	A	8.00E-02	mg/kg/day	Kidney	3000/1	IRIS	9/23/2005
Trichloroethene	Chronic	3.00E-04	mg/kg/day	1	A	3.00E-04	mg/kg/day	---	---	NCEA	---
Vinyl Chloride	Chronic	3.00E-03	mg/kg/day	1	A	3.00E-03	mg/kg/day	Liver	30/1	IRIS	8/7/2000
Xylenes (total)	Chronic	2.00E-01	mg/kg/day	1	A	2.00E-01	mg/kg/day	Whole body	1000	IRIS	2/21/2003
Semivolatile Organics											
2,4-Dimethylphenol	Chronic	2.00E-02	mg/kg/day	1	A	---	mg/kg/day	Blood	3000/1	IRIS	11/1/1990
2-Methylnaphthalene	Chronic	4.00E-03	mg/kg/day	1	A	0.004	mg/kg/day	lungs	1000/1	IRIS	12/22/2003
4-Methylphenol	Chronic	5.00E-03	mg/kg/day	1	A	---	mg/kg/day	---	1000/1	HEAST	1993
Acenaphthylene	Chronic	---	mg/kg/day	1	A	---	mg/kg/day	---	---	IRIS	1/1/1991
Benzo(a)Pyrene	Chronic	---	mg/kg/day	1	A	---	mg/kg/day	---	---	IRIS	3/31/1987
Benzo(g,h,i)Perylene	Chronic	---	mg/kg/day	1	A	---	mg/kg/day	---	---	IRIS	12/1/1990
bis(2-Ethylhexyl)Phthalate	Chronic	2.00E-02	mg/kg/day	1	A	2.00E-02	mg/kg/day	Liver	1000/1	IRIS	5/1/1991
Naphthalene	Chronic	2.00E-02	mg/kg/day	1	A	2.00E-02	mg/kg/day	Whole body	3000/1	IRIS	9/17/1998
Phenanthrene	Chronic	---	mg/kg/day	---		---	mg/kg/day	---	---	---	---
Pesticides/PCBs											
beta-BHC	Chronic	---	mg/kg/day	---		---	mg/kg/day	---	---	---	---
delta-BHC	Chronic	3.00E-04	mg/kg/day	1	A	3.00E-04	mg/kg/day	Liver / Kidney	1000/1	IRIS	3/1/1988
Dieldrin	Chronic	5.00E-05	mg/kg/day	1	A	5.00E-05	mg/kg/day	Liver	100/1	IRIS	9/1/1990

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
Lightman Drum Superfund Site

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (1)		Absorbed RfD for Dermal		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)	
		Value	Units	value	Reference	Value (2)	Units			Source(s) (3)	Date (MM/DD/YYYY)
Pesticides/PCBs											
Endosulfan sulfate	Chronic	---	mg/kg/day	---		---	mg/kg/day	---	---	---	---
Endrin aldehyde	Chronic	---	mg/kg/day	---		---	mg/kg/day	---	---	---	---
Heptachlor epoxide	Chronic	1.30E-05	mg/kg/day	1	A	1.30E-05	mg/kg/day	Body weight	1000/1	IRIS	3/1/1991
Chlordane, technical	Chronic	5.00E-04	mg/kg/day	1	A	5.00E-04	mg/kg/day	Liver	300/1	IRIS	2/7/1998
Inorganics											
Aluminum	Chronic	1.00E+00	mg/kg/day	---		---	mg/kg/day	---	---	PPRTV	---
Antimony	Chronic	4.00E-04	mg/kg/day	---		---	mg/kg/day	Blood	1000/1	IRIS	2/1/1991
Arsenic	Chronic	3.00E-04	mg/kg/day	1	A	3.00E-04	mg/kg/day	Skin	3/1	IRIS	2/1/1993
Cadmium	Chronic	1.00E-03	mg/kg/day	---		---	mg/kg/day	---	10/1	IRIS	2/1/1994
Cadmium (food)	Chronic	1.00E-03	mg/kg/day	---		---	mg/kg/day	---	10/1	IRIS	2/1/1994
Cadmium (water)	Chronic	5.00E-04	mg/kg/day	---		---	mg/kg/day	---	10/1	IRIS	2/1/1994
Chromium (III) (Insoluble Salts)	Chronic	1.50E+00	mg/kg/day	---		---	mg/kg/day	---	100/10	IRIS	9/3/1998
Chromium VI (chromic acid mists)	Chronic	3.00E-03	mg/kg/day	---		---	mg/kg/day	---	300/3	IRIS	9/3/1998
Cobalt	Chronic	---	mg/kg/day	---		---	mg/kg/day	---	---	---	---
Iron	Chronic	7.00E-01	mg/kg/day	1	A	---	mg/kg/day	---	---	PPRTV	---
Lead	Chronic	---	mg/kg/day	---		---	mg/kg/day	---	---	---	---
Manganese	Chronic	1.40E-01	mg/kg/day	1	A	---	mg/kg/day	Neurological	1/1	IRIS	5/1/1996
Nickel	Chronic	2.00E-02	mg/kg/day	1	A	---	mg/kg/day	Body weight	300/1	IRIS	12/1/1996
Thallium	Chronic	8.00E-05	mg/kg/day	1	A	8.00E-05	mg/kg/day	Liver, blood, hair loss	3000/1	IRIS	9/1/1990
Vanadium	Chronic	7.00E-03	mg/kg/day	1	A	7.00E-03	mg/kg/day	---	---	HEAST	1987

Notes:

--- Not Available or no value

(1) References for oral absorption efficiency are presented below.

A - EPA recommendation

(2) Dermal RfD values were calculated by multiplying the oral RfD by the Oral Absorption Efficiency for Dermal.

(3) References for RfD:

IRIS: U.S. Environmental Protection Agency (USEPA). Office of Health and Environmental Assessment. Environmental Criteria and Assessment Office. Integrated Risk Information System (IRIS). Cincinnatti, OH.

HEAST: U.S. Environmental Protection Agency (USEPA). Office of Emergency and Remedial Response. Office of Research and Development. Health Effects Assessment Summary Tables (HEAST). Annual and Supplemental Updates. Washington, D.C., 1997c

PPRTV: U.S. Environmental Protection Agency (USEPA). Provisional Peer Reviewed Toxicity Values.

TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
Lightman Drum Superfund Site

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfC : Target Organ(s)	
		Value	Units	Value	Units			Source(s)	Date (MM/DD/YYYY)
Volatile Organics									
1,1,2-Trichloroethane	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	---	---
1,2-Dichlorobenzene	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	---	1985
1,2-Dichloroethane	Chronic	2.4E+00	mg/cu. M	0.694	mg/kg/day	---	---	ATSDR	---
1,4-Dichlorobenzene	Chronic	8E-01 (1)	mg/cu. M	0.229	mg/kg/day	Liver	100/1	IRIS	11/1/1996
1,4-Dichlorobenzene	Subchronic	3E+00 (2)	mg/cu. M	0.710	mg/kg/day	Liver	---	HEAST	7/31/1997
Benzene	Chronic	3E-02 (1)	mg/cu. M	0.009	mg/kg/day	Blood	300/1	IRIS	4/17/2003
Chlorobenzene	Chronic	5.00E-02	mg/cu. M	0.014	mg/kg/day	---	---	PPRTV	1977
Chloroform	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	---	---
cis-1,2-Dichloroethene	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	---	---
2,4-Dimethylphenol	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	---	---
Ethylbenzene	Chronic	1E+00 (2)	mg/cu. M	0.286	mg/kg/day	---	300/1	IRIS	3/1/1991
Isopropylbenzene	Chronic	4E-01 (2)	mg/cu. M	0.114	mg/kg/day	Kidney	1000/1	IRIS	1/1/1997
Tetrachloroethene	Chronic	---	mg/cu. M	---	mg/kg/day	Liver	---	NCEA	---
Toluene	Chronic	5E+00 (1)	mg/cu. M	1.429	mg/kg/day	Neurological	10/1	IRIS	9/23/2005
1,2,3-Trichlorobenzene	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	---	---
1,2,4-Trichlorobenzene	Chronic	---	mg/cu. M	---	mg/kg/day	---	1000/1	---	1993
Trichloroethene	Chronic	4.E-02	mg/cu. M	0.010	mg/kg/day	---	---	NCEA	---
Vinyl Chloride	Chronic	1E-01 (1)	mg/cu. M	0.029	mg/kg/day	Liver	30/1	IRIS	8/7/2000
Xylenes (total)	Chronic	1E-01 (1)	mg/cu. M	0.029	mg/kg/day	Whole body	300/1	IRIS	2/21/2003
Semivolatile Organics									
4-Methylphenol	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	---	---
2-Methylnaphthalene	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	IRIS	12/22/2003
Acenaphthylene	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	IRIS	1/1/1991
Benzo(a)Pyrene	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	IRIS	11/1/1994
Benzo(g,h,i)Perylene	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	IRIS	12/1/1990
bis(2-Ethylhexyl)Phthalate	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	---	---
Phenanthrene	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	---	---
Naphthalene	Chronic	3E-03 (1)	mg/cu. M	0.001	mg/kg/day	Whole body	3000/1	IRIS	9/7/1998
Pesticides/PCBs									
beta-BHC	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	---	---
delta-BHC	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	IRIS	7/1/1992
Dieldrin	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	---	---
Endosulfan sulfate	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	---	---
Endrin aldehyde	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	---	---
Pesticides/PCBs									
Heptachlor epoxide	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	---	---
Chlordane, technical	Chronic	7E-04 (1)	mg/cu. M	2.0E-04	mg/kg/day	Liver	1000/1	IRIS	2/7/1998

TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
Lightman Drum Superfund Site

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfC : Target Organ(s)	
		Value	Units	Value	Units			Source(s)	Date (MM/DD/YYYY)
Inorganics									
Aluminum	Chronic	5.00E-03	mg/cu. M	0.001	mg/kg/day	---	---	NCEA	---
Antimony	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	---	---
Arsenic	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	---	---
Cadmium	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	---	---
Cadmium (food)	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	NCEA	---
Cadmium (water)	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	NCEA	---
Chromium (III)	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	---	---
Chromium (VI)	Chronic	8E-06 (1)	mg/cu. M	2.3E-06	mg/kg/day	Nasal	90/1	IRIS	9/3/1998
Cobalt	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	---	---
Iron	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	---	---
Lead	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	---	---
Manganese	Chronic	5.00E-05	mg/cu. M	1.4E-05	mg/kg/day	Neurological	1000/1	IRIS	12/1/1993
Nickel	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	---	---
Thallium	Chronic		mg/cu. M	---	mg/kg/day	---	---	---	---
Vanadium	Chronic	---	mg/cu. M	---	mg/kg/day	---	---	---	---

Notes:

(1) Values from IRIS

(2) Values from HEAST

--- Not available or no value

IRIS: U.S. Environmental Protection Agency (USEPA). Office of Health and Environmental Assessment. Environmental Criteria and Assessment Office. Integrated Risk Information System (IRIS). Cincinnatti, OH.

HEAST: U.S. Environmental Protection Agency (USEPA). Office of Emergency and Remedial Response. Office of Research and Development. Health Effects Assessment Summary Tables (HEAST). Annual and Supplemental Updates. Washington, D.C. 1997c

NCEA: Recommendation of the Superfund Technical Support Center (STSC) at the National Center for Environmental Assessment (NCEA)

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
Lightman Drum Superfund Site

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (1)		Absorbed Cancer Slope Factor for Dermal		Weight of Evidence/ Cancer Guideline Description (2)	Oral CSF	
	Value	Units	Value	Reference	Value	Units		Source(s) (3)	Date (MM/DD/YYYY)
Volatile Organics									
1,1,2-Trichloroethane	5.70E-02	$(mg/kg\text{-}day)^{-1}$	1	A	0.057	$(mg/kg\text{-}day)^{-1}$	C	IRIS	2/1/1994
1,2,3-Trichlorobenzene	---	$(mg/kg\text{-}day)^{-1}$	---	0	---	$(mg/kg\text{-}day)^{-1}$	---	---	---
1,2,4-Trichlorobenzene	---	$(mg/kg\text{-}day)^{-1}$	1	A	---	$(mg/kg\text{-}day)^{-1}$	D	IRIS	3/1/1991
1,2-Dichloroethane	---	$(mg/kg\text{-}day)^{-1}$	1	A	---	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	1/1/1991
1,2-Dichlorobenzene	---	$(mg/kg\text{-}day)^{-1}$	1	A	---	$(mg/kg\text{-}day)^{-1}$	D	IRIS	1/1/1991
1,4-Dichlorobenzene	---	$(mg/kg\text{-}day)^{-1}$	1	A	---	$(mg/kg\text{-}day)^{-1}$	---	---	---
Benzene	5.50E-02	$(mg/kg\text{-}day)^{-1}$	1	A	0.055	$(mg/kg\text{-}day)^{-1}$	A	IRIS	1/19/2000
Chlorobenzene	---	$(mg/kg\text{-}day)^{-1}$	1	A	---	$(mg/kg\text{-}day)^{-1}$	D	IRIS	3/1/1991
Chloroform (4)	---	$(mg/kg\text{-}day)^{-1}$	1	A	---	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	10/19/2001
cis-1,2-Dichloroethene	---	$(mg/kg\text{-}day)^{-1}$	1	A	---	$(mg/kg\text{-}day)^{-1}$	D	IRIS	2/1/1995
Ethylbenzene	---	$(mg/kg\text{-}day)^{-1}$	1	A	---	$(mg/kg\text{-}day)^{-1}$	D	IRIS	8/1/1991
Isopropylbenzene	---	$(mg/kg\text{-}day)^{-1}$	1	A	---	$(mg/kg\text{-}day)^{-1}$	D	IRIS	8/1/1997
Tetrachloroethene (5)	5.40E-01	$(mg/kg\text{-}day)^{-1}$	1	A	0.540	$(mg/kg\text{-}day)^{-1}$	---	Cal EPA	
Toluene	---	$(mg/kg\text{-}day)^{-1}$	1	A	---	$(mg/kg\text{-}day)^{-1}$	---	IRIS	9/23/2005
Trichloroethene	4.00E-01	$(mg/kg\text{-}day)^{-1}$	1	A	0.400	$(mg/kg\text{-}day)^{-1}$	---	NCEA	
Vinyl Chloride (6)	7.00E-01	$(mg/kg\text{-}day)^{-1}$	1	A	0.700	$(mg/kg\text{-}day)^{-1}$	A	IRIS	8/7/2000
Xylenes (total)	---	$(mg/kg\text{-}day)^{-1}$	1	A	---	$(mg/kg\text{-}day)^{-1}$	NA	IRIS	2/21/2003
Semivolatile Organics									
2,4-Dimethylphenol	---	$(mg/kg\text{-}day)^{-1}$	1	A	---	$(mg/kg\text{-}day)^{-1}$	---		
2-Methylnaphthalene	---	$(mg/kg\text{-}day)^{-1}$	1	A	---	$(mg/kg\text{-}day)^{-1}$	---	IRIS	12/22/2003
4-Methylphenol	---	$(mg/kg\text{-}day)^{-1}$	1	A	---	$(mg/kg\text{-}day)^{-1}$	C	IRIS	8/1/1991
Acenaphthylene	---	$(mg/kg\text{-}day)^{-1}$	1	A	---	$(mg/kg\text{-}day)^{-1}$	D	IRIS	1/1/1991
Benzo(a)Pyrene	7.3	$(mg/kg\text{-}day)^{-1}$	1	A	7.300	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	11/1/1994
Benzo(g,h,i)Perylene	---	$(mg/kg\text{-}day)^{-1}$	1	A	---	$(mg/kg\text{-}day)^{-1}$	D	IRIS	12/1/1990
bis(2-Ethylhexyl)Phthalate	1.40E-02	$(mg/kg\text{-}day)^{-1}$	1	A	0.014	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2/1/1993
Naphthalene	---	$(mg/kg\text{-}day)^{-1}$	1	A	---	$(mg/kg\text{-}day)^{-1}$	C	IRIS	9/7/1998
Phenanthrene	---	$(mg/kg\text{-}day)^{-1}$	1	A	---	$(mg/kg\text{-}day)^{-1}$	D	IRIS	10/1/1990

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
Lightman Drum Superfund Site

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (1)		Absorbed Cancer Slope Factor for Dermal		Weight of Evidence/ Cancer Guideline Description (2)	Oral CSF	
	Value	Units	Value	Reference	Value	Units		Source(s) (3)	Date (MM/DD/YYYY)
Pesticides/PCBs									
beta-BHC	---	(mg/kg-day)$^{-1}$	1	A	---	(mg/kg-day)$^{-1}$	---		
delta-BHC	---	(mg/kg-day)$^{-1}$	1	A	---	(mg/kg-day)$^{-1}$	D	IRIS	10/1/1993
Dieldrin	1.60E+01	(mg/kg-day)$^{-1}$	1	A	16.000	(mg/kg-day)-1	B2	IRIS	7/1/1993
Endusulfan sulfate	---	(mg/kg-day)$^{-1}$	1	A	---	(mg/kg-day)$^{-1}$	---		
Endrin aldehyde	---	(mg/kg-day)$^{-1}$	1	A	---	(mg/kg-day)$^{-1}$	---		
Heptachlor epoxide	9.10E+00	(mg/kg-day)$^{-1}$	1	A	9.100	(mg/kg-day)$^{-1}$	B2	IRIS	7/1/1993
Chlordane, technical	3.50E-01	(mg/kg-day)$^{-1}$	1	A	0.350	(mg/kg-day)$^{-1}$	B2	IRIS	2/7/1998
Inorganics									
Aluminum	---	(mg/kg-day)$^{-1}$	1	A	---	(mg/kg-day)$^{-1}$	---		
Antimony	---	(mg/kg-day)$^{-1}$	1	A	---	(mg/kg-day)$^{-1}$	---		
Arsenic	1.50E+00	(mg/kg-day)$^{-1}$	1	A	3.659	(mg/kg-day)$^{-1}$	A	IRIS	4/10/1998
Cadmium	---	(mg/kg-day)$^{-1}$	---		---	(mg/kg-day)-1	B1	IRIS	6/1/1992
Cadmium (food)	---	(mg/kg-day)$^{-1}$	---		---	(mg/kg-day)$^{-1}$	B1	IRIS	
Cadmium (water)	---	(mg/kg-day)$^{-1}$	---		---	(mg/kg-day)$^{-1}$	B1	IRIS	
Chromium (III) (Insoluble Salts)	---	(mg/kg-day)$^{-1}$	---		---	(mg/kg-day)$^{-1}$	D		
Chromium VI (chromic acid mists)	---	(mg/kg-day)$^{-1}$	---		---	(mg/kg-day)$^{-1}$	A		
Cobalt	---	(mg/kg-day)$^{-1}$	1	A	---	(mg/kg-day)$^{-1}$	---		
Iron	---	(mg/kg-day)$^{-1}$	1	A	---	(mg/kg-day)$^{-1}$	---		
Lead	---	(mg/kg-day)$^{-1}$	1	A	---	(mg/kg-day)$^{-1}$	B2	IRIS	11/1/1993
Manganese	---	(mg/kg-day)$^{-1}$	1	A	---	(mg/kg-day)$^{-1}$	D	IRIS	21/1/1996
Nickel	---	(mg/kg-day)$^{-1}$	1	A	---	(mg/kg-day)$^{-1}$	---	IRIS	8/1/1994
Thallium	---	(mg/kg-day)$^{-1}$	1	A	---	(mg/kg-day)$^{-1}$	D	IRIS	9/1/1990
Vanadium	---	(mg/kg-day)$^{-1}$	1	A	---	(mg/kg-day)$^{-1}$	---		

TABLE 6.1

CANCER TOXICITY DATA -- ORAL/DERMAL

Lightman Drum Superfund Site

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (1)		Absorbed Cancer Slope Factor for Dermal		Weight of Evidence/ Cancer Guideline Description (2)	Oral CSF	
	Value	Units	Value	Reference	Value	Units		Source(s) (3)	Date (MM/DD/YYYY)

Notes:

--- Not Available or no value

(1) References for oral absorption efficiency

A - EPA recommendation

(2) EPA Cancer Classifications are:

Group A -- Carcinogenic to Humans;

Group B -- Probably Carcinogenic to Humans; B1 for agents for which there is limited evidence of carcinogenicity from epidemiologic studies; B2 for agents for which there is "sufficient" evidence from animal studies and for which there is "inadequate evidence" or "no data" from epidemiologic studies.

Group C --Possibly Carcinogenic to Humans;

Group D -- Not Classifiable as to Human Carcinogenicity;

Group E -- Evidence of Noncarcinogenicity for Humans.

(3) References for Oral CSF are:

IRIS: U.S. Environmental Protection Agency (USEPA). Office of Health and Environmental Assessment. Environmental Criteria and Assessment Office. Integrated Risk Information System (IRIS). Cincinnatti, OH.

HEAST: U.S. Environmental Protection Agency (USEPA). Office of Emergency and Remedial Response. Office of Research and Development. Health Effects Assessment Summary Tables (HEAST). Annual and Supplemental Updates. Washington, D.C.

Cal EPA: California Environmental Protection Agency (USEPA). Toxicity Values.

NCEA: U.S. Environmental Protection Agency (USEPA). National Center for Environmental Assessment (NCEA). Superfund Technical Support Center. Cincinnatti, OH.

(4) RfD for Chloroform of 1E-2 mg/kg-day is considered protective of the oral cancer route (IRIS)

(5) EPA recommendation for Oral CSF

(6) EPA Region 3 Memo. An additional slope factor of 7.2E-1 $(mg/kg\text{-}day)^{-1}$ will be applied for child receptors.

TABLE 6.2
CANCER TOXICITY DATA -- INHALATION
Lightman Drum Superfund Site

Chemical of Potential Concern	Unit Risk		Inhalation Cancer Slope Factor		Weight of Evidence/ Cancer Guideline Description (3)	Unit Risk : Inhalation CSF	
	Value	Units	Value (1)	Units		Source(s) (4)	Date (MM/DD/YYYY)
Volatile Organics							
1,1,2-Trichloroethane	1.60E-02	(mg/m3)-1	5.60E-02	$(mg/kg\text{-}day)^{-1}$	C	IRIS	2/1/1994
1,2,3-Trichlorobenzene	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	---		
1,2,4-Trichlorobenzene	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	D	IRIS	3/1/1991
1,2-Dichlorobenzene	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	D	IRIS	1/1/1991
1,2-Dichloroethane	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	1/1/1991
1,4-Dichlorobenzene	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	---		
Benzene	7.80E-03	(mg/m3)-1	2.73E-02	$(mg/kg\text{-}day)^{-1}$	A	IRIS	1/19/2000
Chlorobenzene	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	D	IRIS	3/1/1991
Chloroform	2.3E-02	(mg/m3)-1	8.05E-02	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	10/19/2001
cis-1,2-Dichloroethene	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	D	IRIS	2/1/1995
Ethylbenzene	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	D	IRIS	8/1/1991
Isopropylbenzene	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	D	IRIS	8/1/1997
Tetrachloroethene	5.9E-03	(mg/m3)-1	2.10E-02	$(mg/kg\text{-}day)^{-1}$	---	Cal EPA	
Toluene	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	---	IRIS	9/23/2005
Trichloroethene	1.1E-01	(mg/m3)-1	4.00E-01	$(mg/kg\text{-}day)^{-1}$	---	NCEA	
Vinyl Chloride (2)	4.29E-03	(mg/m3)-1	1.50E-02	$(mg/kg\text{-}day)^{-1}$	A	IRIS	8/7/2000
Xylenes (total)	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	---		
Semivolatile Organics							
2,4-Dimethylphenol	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	---		
2-Methylnaphthalene	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	---	IRIS	12/22/03
4-Methylphenol	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	C	IRIS	08/01/91
Acenaphthylene	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	D	IRIS	01/01/91
Benzo(a)Pyrene	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	11/01/94
Benzo(g,h,i)Perylene	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	D	IRIS	12/1/1990
bis(2-Ethylhexyl)Phthalate	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2/1/1993
bis(2-Ethylhexyl)Phthalate	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2/1/1993
Naphthalene	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	C	IRIS	09/17/98
Phenanthrene	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	D	IRIS	10/01/90
Pesticides/PCBs							
beta-BHC	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	---		
delta-BHC	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	D	IRIS	10/01/93
Dieldrin	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	---		
Endosulfan sulfate	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	---		
Endrin aldehyde	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	---		
Chlordane, technical	1.00E-04	(mg/m3)-1	3.50E-04	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	02/07/98

TABLE 6.2

CANCER TOXICITY DATA -- INHALATION

Lightman Drum Superfund Site

Chemical of Potential Concern	Unit Risk		Inhalation Cancer Slope Factor		Weight of Evidence/ Cancer Guideline Description (3)	Unit Risk : Inhalation CSF	
	Value	Units	Value (1)	Units		Source(s) (4)	Date (MM/DD/YYYY)
Inorganics							
Aluminum	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	---		
Antimony	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	---	IRIS	8/1/1994
Arsenic	4.30E+00	(mg/m3)-1	1.51E+01	$(mg/kg\text{-}day)^{-1}$	A	IRIS	4/10/1998
Cadmium	1.80E+00	(mg/m3)-1	6.30E+00	$(mg/kg\text{-}day)^{-1}$	B1	IRIS	6/1/1992
Chromium (III)	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	D	IRIS	9/3/1998
Chromium (VI)	1.20E+01	(mg/m3)-1	4.20E+01	$(mg/kg\text{-}day)^{-1}$	A	IRIS	9/3/1998
Cobalt	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	---		
Iron	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	---		
Lead	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	11/1/1993
Manganese	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	D	IRIS	12/1/1996
Nickel	2.40E-04	(mg/m3)-1	8.40E-04	$(mg/kg\text{-}day)^{-1}$	A	IRIS	1/1/1991
Thallium	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	D	IRIS	9/1/1990
Vanadium	---	(mg/m3)-1	---	$(mg/kg\text{-}day)^{-1}$	---		

Notes:

(1) The Inhalation Slope Factor was calculated from inhalation unit risk as described in Supplemental Guidance from RAGS: Region 4 Bulletins, Human Health Risk Assessment (Interim Guidance) (November 1995).

(2) EPA recommendation. For the child receptor, an additional slope factor of 1.5e-2 $(mg/kg\text{-}day)^{-1}$ will be applied

--- = Not Applicable or no value

(3) EPA Cancer Classifications are:

Group A -- Carcinogenic to Humans;

Group B -- Probably Carcinogenic to Humans; B1 for agents for which there is limited evidence of carcinogenicity from epidemiologic studies; B2 for agents for which there is "sufficient" evidence from animal studies and for which there is "inadequate evidence" or "no data" from epidemiologic studies.

Group C --Possibly Carcinogenic to Humans;

Group D -- Not Classifiable as to Human Carcinogenicity;

Group E -- Evidence of Noncarcinogenicity for Humans.

(3) References for inhalation CSF are:

IRIS: U.S. Environmental Protection Agency (USEPA). Office of Health and Environmental Assessment. Environmental Criteria and Assessment Office. Integrated Risk Information System (IRIS). Cincinnatti, OH.

Cal EPA: California Environmental Protection Agency (USEPA). Toxicity Values.

NCEA: U.S. Environmental Protection Agency (USEPA). National Center for Environmental Assessment (NCEA). Superfund Technical Support Center. Cincinnatti, OH.

TABLE 7.1.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Current
Receptor Population:	Industrial/Commercial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	On-Site Surface Soil	Ingestion	Phenanthrene	6E+03	mg/Kg	2.15E-03	mg/kg/day	---	(mg/kg-day)-1		6.01E-03	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E+03	mg/Kg	4.54E-04	mg/kg/day	---	(mg/kg-day)-1		1.27E-03	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	1.69E-03	mg/kg/day	---	(mg/kg-day)-1		4.72E-03	mg/kg/day	1.0E+00	mg/kg/day	4.7E-03
				Arsenic	2E+00	mg/Kg	5.70E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	8.5E-07	1.59E-06	mg/kg/day	3.0E-04	mg/kg/day	5.3E-03
				Chromium	2E+02	mg/Kg	7.47E-05	mg/kg/day	---	(mg/kg-day)-1		2.09E-04	mg/kg/day	3.0E-03	mg/kg/day	7.0E-02
				Iron	6E+03	mg/Kg	2.02E-03	mg/kg/day	---	(mg/kg-day)-1		5.64E-03	mg/kg/day	7.0E-01	mg/kg/day	8.1E-03
				Lead	1E+01	mg/Kg	5.23E-06	mg/kg/day	---	(mg/kg-day)-1		1.46E-05	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	3.61E-06	mg/kg/day	---	(mg/kg-day)-1		1.01E-05	mg/kg/day	7.0E-03	mg/kg/day	1.4E-03
			Exp. Route Total								8.5E-07					8.9E-02
			Dermal	Phenanthrene	6E+03	mg/Kg	1.42E-03	mg/kg/day	---	(mg/kg-day)-1		3.97E-03	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E+03	mg/Kg	4.20E-04	mg/kg/day	---	(mg/kg-day)-1		1.18E-03	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Arsenic	2E+00	mg/Kg	1.13E-07	mg/kg/day	3.7E+00	(mg/kg-day)-1	4.1E-07	3.16E-07	mg/kg/day	3.0E-04	mg/kg/day	1.1E-03
				Chromium	2E+02	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Iron	6E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Lead	1E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	7.0E-03	mg/kg/day	
			Exp. Route Total								4.1E-07					1.1E-03
			Inhalation	Phenanthrene	6E+03	mg/Kg	1.89E-07	mg/kg/day	---	(mg/kg-day)-1		5.30E-07	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E+03	mg/Kg	4.01E-08	mg/kg/day	---	(mg/kg-day)-1		1.12E-07	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	1.49E-07	mg/kg/day	---	(mg/kg-day)-1		4.17E-07	mg/kg/day	1.4E-03	mg/kg/day	2.9E-04
				Arsenic	2E+00	mg/Kg	5.03E-11	mg/kg/day	1.5E+01	(mg/kg-day)-1	7.6E-10	1.41E-10	mg/kg/day	---	mg/kg/day	
				Chromium	2E+02	mg/Kg	6.59E-09	mg/kg/day	4.2E+01	(mg/kg-day)-1	2.8E-07	1.84E-08	mg/kg/day	2.3E-06	mg/kg/day	8.1E-03
				Iron	6E+03	mg/Kg	1.78E-07	mg/kg/day	---	(mg/kg-day)-1		4.98E-07	mg/kg/day	---	mg/kg/day	
				Lead	1E+01	mg/Kg	4.61E-10	mg/kg/day	---	(mg/kg-day)-1		1.29E-09	mg/kg/day	---	mg/kg/day	
				Nickel	4E+00	mg/Kg	1.38E-10	mg/kg/day	8.4E-04	(mg/kg-day)-1	1.2E-13	3.87E-10	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	3.18E-10	mg/kg/day	---	(mg/kg-day)-1		8.91E-10	mg/kg/day	---	mg/kg/day	
			Exp. Route Total								2.8E-07					8.3E-03
		Exposure Point Total									1.5E-06					9.9E-02
	Exposure Medium Total										1.5E-06					9.9E-02
Medium and Receptor Total											1.5E-06					9.9E-02

TABLE 7.2.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Current and Future
Receptor Population:	Trespasser
Receptor Age:	Pre-adolescent (7-12 yrs)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	On-Site Surface Soil	Ingestion	Phenanthrene	6E-03	mg/Kg	4.28E-10	mg/kg/day	---	(mg/kg-day)-1		5.00E-09	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E-03	mg/Kg	9.07E-11	mg/kg/day	---	(mg/kg-day)-1		1.06E-09	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	3.37E-04	mg/kg/day	---	(mg/kg-day)-1		3.93E-03	mg/kg/day	1.0E+00	mg/kg/day	3.9E-03
				Arsenic	2E+00	mg/Kg	1.14E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	1.7E-07	1.33E-06	mg/kg/day	3.0E-04	mg/kg/day	4.4E-03
				Chromium	2E+02	mg/Kg	1.49E-05	mg/kg/day	---	(mg/kg-day)-1		1.74E-04	mg/kg/day	3.0E-03	mg/kg/day	5.8E-02
				Iron	6E+03	mg/Kg	4.02E-04	mg/kg/day	---	(mg/kg-day)-1		4.70E-03	mg/kg/day	7.0E-01	mg/kg/day	6.7E-03
				Lead	1E+01	mg/Kg	1.04E-06	mg/kg/day	---	(mg/kg-day)-1		1.22E-05	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	7.20E-07	mg/kg/day	---	(mg/kg-day)-1		8.40E-06	mg/kg/day	7.0E-03	mg/kg/day	1.2E-03
			Exp. Route Total								1.7E-07					7.4E-02
			Dermal	Phenanthrene	6E-03	mg/Kg	4.11E-10	mg/kg/day	---	(mg/kg-day)-1		4.80E-09	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E-03	mg/Kg	1.22E-10	mg/kg/day	---	(mg/kg-day)-1		1.42E-09	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Arsenic	2E+00	mg/Kg	3.28E-08	mg/kg/day	3.7E+00	(mg/kg-day)-1	1.2E-07	3.82E-07	mg/kg/day	3.0E-04	mg/kg/day	1.3E-03
				Chromium	2E+02	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Iron	6E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Lead	1E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	7.0E-03	mg/kg/day	
			Exp. Route Total								1.2E-07					1.3E-03
			Inhalation	Phenanthrene	6E-03	mg/Kg	1.89E-14	mg/kg/day	---	(mg/kg-day)-1		2.21E-13	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E-03	mg/Kg	4.00E-15	mg/kg/day	---	(mg/kg-day)-1		4.67E-14	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	1.49E-08	mg/kg/day	---	(mg/kg-day)-1		1.73E-07	mg/kg/day	1.4E-03	mg/kg/day	1.2E-04
				Arsenic	2E+00	mg/Kg	5.02E-12	mg/kg/day	1.5E+01	(mg/kg-day)-1	7.6E-11	5.85E-11	mg/kg/day	---	mg/kg/day	
				Chromium	2E+02	mg/Kg	6.58E-10	mg/kg/day	4.2E+01	(mg/kg-day)-1	2.8E-08	7.67E-09	mg/kg/day	2.3E-06	mg/kg/day	3.4E-03
				Iron	6E+03	mg/Kg	1.78E-08	mg/kg/day	---	(mg/kg-day)-1		2.07E-07	mg/kg/day	---	mg/kg/day	
				Lead	1E+01	mg/Kg	4.61E-11	mg/kg/day	---	(mg/kg-day)-1		5.37E-10	mg/kg/day	---	mg/kg/day	
				Nickel	4E+00	mg/Kg	1.38E-11	mg/kg/day	8.4E-04	(mg/kg-day)-1	1.2E-14	1.61E-10	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	3.18E-11	mg/kg/day	---	(mg/kg-day)-1		3.71E-10	mg/kg/day	---	mg/kg/day	
			Exp. Route Total								2.8E-08					3.5E-03
		Exposure Point Total									3.2E-07					7.9E-02
	Exposure Medium Total										3.2E-07					7.9E-02
Medium Total											3.2E-07					7.9E-02

TABLE 7.2.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Current and Future
Receptor Population:	Trespasser
Receptor Age:	Pre-adolescent (7-12 yrs)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Pump Branch Creek	Ingestion	Acenaphthylene	4E-02	mg/Kg	2.55E-09	mg/kg/day	---	(mg/kg-day)-1		2.97E-08	mg/kg/day	---	mg/kg/day	
				Benzo(a)Pyrene	2E-01	mg/Kg	1.08E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	7.9E-08	1.26E-07	mg/kg/day	---	mg/kg/day	
				Benzo(g,h,i)Perylene	7E-02	mg/Kg	4.88E-09	mg/kg/day	---	(mg/kg-day)-1		5.70E-08	mg/kg/day	---	mg/kg/day	
				Phenanthrene	2E-01	mg/Kg	1.12E-08	mg/kg/day	---	(mg/kg-day)-1		1.30E-07	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	8E-03	mg/Kg	5.86E-10	mg/kg/day	---	(mg/kg-day)-1		6.84E-09	mg/kg/day	---	mg/kg/day	
				Aluminum	9E+03	mg/Kg	6.60E-04	mg/kg/day	---	(mg/kg-day)-1		7.70E-03	mg/kg/day	1.0E+00	mg/kg/day	7.7E-03
				Arsenic	1E+01	mg/Kg	7.05E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	1.1E-06	8.22E-06	mg/kg/day	3.0E-04	mg/kg/day	2.7E-02
				Iron	1E+04	mg/Kg	7.46E-04	mg/kg/day	---	(mg/kg-day)-1		8.71E-03	mg/kg/day	7.0E-01	mg/kg/day	1.2E-02
				Lead	2E+02	mg/Kg	1.15E-05	mg/kg/day	---	(mg/kg-day)-1		1.34E-04	mg/kg/day	---	mg/kg/day	
				Vanadium	4E+01	mg/Kg	2.56E-06	mg/kg/day	---	(mg/kg-day)-1		2.99E-05	mg/kg/day	3.0E-03	mg/kg/day	1.0E-02
			Exp. Route Total								1.1E-06					5.8E-02
			Dermal	Acenaphthylene	4E-02	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Benzo(a)Pyrene	2E-01	mg/Kg	---	mg/kg/day	7.3E+00	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Benzo(g,h,i)Perylene	7E-02	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Phenanthrene	2E-01	mg/Kg	1.07E-08	mg/kg/day	---	(mg/kg-day)-1		1.25E-07	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	8E-03	mg/Kg	7.88E-10	mg/kg/day	---	(mg/kg-day)-1		9.19E-09	mg/kg/day	---	mg/kg/day	
				Aluminum	9E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Arsenic	1E+01	mg/Kg	2.03E-07	mg/kg/day	3.7E+00	(mg/kg-day)-1	7.4E-07	2.37E-06	mg/kg/day	3.0E-04	mg/kg/day	7.9E-03
				Iron	1E+04	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Lead	2E+02	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Vanadium	4E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	7.0E-03	mg/kg/day	
			Exp. Route Total								7.4E-07					7.9E-03
		Exposure Point Total									1.9E-06					6.5E-02
	Exposure Medium Total										1.9E-06					6.5E-02
Medium Total											1.9E-06					6.5E-02
Surface Water	Surface Water	Pump Branch Creek	Ingestion	Arsenic	1E-02	mg/L	3.84E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	5.8E-07	4.48E-06	mg/kg/day	3.0E-04	mg/kg/day	1.5E-02
				Iron	2E+01	mg/L	7.85E-04	mg/kg/day	---	(mg/kg-day)-1		9.16E-03	mg/kg/day	7.0E-01	mg/kg/day	1.3E-02
				Lead	2E-02	mg/L	7.95E-07	mg/kg/day	---	(mg/kg-day)-1		9.28E-06	mg/kg/day	---	mg/kg/day	
				Vanadium	1E-02	mg/L	4.81E-07	mg/kg/day	---	(mg/kg-day)-1		5.62E-06	mg/kg/day	7.0E-03	mg/kg/day	8.0E-04
			Exp. Route Total								5.8E-07					2.9E-02
			Dermal	Arsenic	1E-02	mg/Kg	1.47E-07	mg/kg/day	3.7E+00	(mg/kg-day)-1	5.4E-07	1.72E-06	mg/kg/day	3.0E-04	mg/kg/day	5.7E-03
				Iron	2E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Lead	2E-02	mg/Kg	3.05E-08	mg/kg/day	---	(mg/kg-day)-1		3.56E-07	mg/kg/day	---	mg/kg/day	
				Vanadium	1E-02	mg/Kg	1.85E-07	mg/kg/day	---	(mg/kg-day)-1		2.16E-06	mg/kg/day	7.0E-03	mg/kg/day	3.1E-04
			Exp. Route Total								5.4E-07					6.0E-03
		Exposure Point Total									1.1E-06					3.5E-02
	Exposure Medium Total										1.1E-06					3.5E-02
Medium Total											1.1E-06					3.5E-02
Receptor Total											3.3E-06					1.8E-01

TABLE 7.3.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Current and Future
Receptor Population:	Trespasser
Receptor Age:	Adolescent (13-18 yrs)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	On-Site Surface Soil	Ingestion	Phenanthrene	6E-03	mg/Kg	3.81E-10	mg/kg/day	---	(mg/kg-day)-1		4.45E-09	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E-03	mg/Kg	8.07E-11	mg/kg/day	---	(mg/kg-day)-1		9.42E-10	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	3.00E-04	mg/kg/day	---	(mg/kg-day)-1		3.50E-03	mg/kg/day	1.0E+00	mg/kg/day	3.5E-03
				Arsenic	2E+00	mg/Kg	1.01E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	1.5E-07	1.18E-06	mg/kg/day	3.0E-04	mg/kg/day	3.9E-03
				Chromium	2E+02	mg/Kg	1.33E-05	mg/kg/day	---	(mg/kg-day)-1		1.55E-04	mg/kg/day	3.0E-03	mg/kg/day	5.2E-02
				Iron	6E+03	mg/Kg	3.58E-04	mg/kg/day	---	(mg/kg-day)-1		4.18E-03	mg/kg/day	7.0E-01	mg/kg/day	6.0E-03
				Lead	1E+01	mg/Kg	9.29E-07	mg/kg/day	---	(mg/kg-day)-1		1.08E-05	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	6.41E-07	mg/kg/day	---	(mg/kg-day)-1		7.48E-06	mg/kg/day	7.0E-03	mg/kg/day	1.1E-03
			Exp. Route Total								1.5E-07					6.6E-02
			Dermal	Phenanthrene	6E-03	mg/Kg	1.79E-10	mg/kg/day	---	(mg/kg-day)-1		2.09E-09	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E-03	mg/Kg	5.30E-11	mg/kg/day	---	(mg/kg-day)-1		6.18E-10	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Arsenic	2E+00	mg/Kg	1.42E-08	mg/kg/day	3.7E+00	(mg/kg-day)-1	5.2E-08	1.66E-07	mg/kg/day	3.0E-04	mg/kg/day	5.5E-04
				Chromium	2E+02	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Iron	6E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Lead	1E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	7.0E-03	mg/kg/day	
			Exp. Route Total								5.2E-08					5.5E-04
			Inhalation	Phenanthrene	6E-03	mg/Kg	1.89E-13	mg/kg/day	---	(mg/kg-day)-1		1.96E-13	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E-03	mg/Kg	3.56E-15	mg/kg/day	---	(mg/kg-day)-1		4.15E-14	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	1.32E-08	mg/kg/day	---	(mg/kg-day)-1		1.54E-07	mg/kg/day	1.4E-03	mg/kg/day	1.1E-04
				Arsenic	2E+00	mg/Kg	4.47E-12	mg/kg/day	1.5E+01	(mg/kg-day)-1	6.7E-11	5.21E-11	mg/kg/day	---	mg/kg/day	
				Chromium	2E+02	mg/Kg	5.85E-10	mg/kg/day	4.2E+01	(mg/kg-day)-1	2.5E-08	6.83E-09	mg/kg/day	2.3E-06	mg/kg/day	3.0E-03
				Iron	6E+03	mg/Kg	1.58E-08	mg/kg/day	---	(mg/kg-day)-1		1.84E-07	mg/kg/day	---	mg/kg/day	
				Lead	1E+01	mg/Kg	4.10E-11	mg/kg/day	---	(mg/kg-day)-1		4.78E-10	mg/kg/day	---	mg/kg/day	
				Nickel	4E+00	mg/Kg	1.23E-11	mg/kg/day	8.4E-04	(mg/kg-day)-1	1.0E-14	1.43E-10	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	2.83E-11	mg/kg/day	---	(mg/kg-day)-1		3.30E-10	mg/kg/day	---	mg/kg/day	
			Exp. Route Total								2.5E-08					3.1E-03
		Exposure Point Total									2.3E-07					7.0E-02
	Exposure Medium Total										2.3E-07					7.0E-02
Medium Total											2.3E-07					7.0E-02

TABLE 7.3.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Current and Future
Receptor Population:	Trespasser
Receptor Age:	Adolescent (13-18 yrs)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Pump Branch Creek	Ingestion	Acenaphthylene	4E-02	mg/Kg	2.27E-09	mg/kg/day	---	(mg/kg-day)-1		2.64E-08	mg/kg/day	---	mg/kg/day	
				Benzo(a)Pyrene	2E-01	mg/Kg	9.62E-09	mg/kg/day	7.3E+00	(mg/kg-day)-1	7.0E-08	1.12E-07	mg/kg/day	---	mg/kg/day	
				Benzo(g,h,i)Perylene	7E-02	mg/Kg	4.35E-09	mg/kg/day	---	(mg/kg-day)-1		5.07E-08	mg/kg/day	---	mg/kg/day	
				Phenanthrene	2E-01	mg/Kg	9.93E-09	mg/kg/day	---	(mg/kg-day)-1		1.16E-07	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	8E-03	mg/Kg	5.22E-10	mg/kg/day	---	(mg/kg-day)-1		6.08E-09	mg/kg/day	---	mg/kg/day	
				Aluminum	9E+03	mg/Kg	5.87E-04	mg/kg/day	---	(mg/kg-day)-1		6.85E-03	mg/kg/day	1.0E+00	mg/kg/day	6.8E-03
				Arsenic	1E+01	mg/Kg	6.27E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	9.4E-07	7.32E-06	mg/kg/day	3.0E-04	mg/kg/day	2.4E-02
				Iron	1E+04	mg/Kg	6.64E-04	mg/kg/day	---	(mg/kg-day)-1		7.75E-03	mg/kg/day	7.0E-01	mg/kg/day	1.1E-02
				Lead	2E+02	mg/Kg	1.02E-05	mg/kg/day	---	(mg/kg-day)-1		1.20E-04	mg/kg/day	---	mg/kg/day	
				Vanadium	4E+01	mg/Kg	2.28E-06	mg/kg/day	---	(mg/kg-day)-1		2.66E-05	mg/kg/day	7.0E-03	mg/kg/day	3.8E-03
			Exp. Route Total								1.0E-06					4.6E-02
			Dermal	Acenaphthylene	4E-02	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Benzo(a)Pyrene	2E-01	mg/Kg	---	mg/kg/day	7.3E+00	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Benzo(g,h,i)Perylene	7E-02	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Phenanthrene	2E-01	mg/Kg	1.33E-08	mg/kg/day	---	(mg/kg-day)-1		1.55E-07	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	8E-03	mg/Kg	9.78E-10	mg/kg/day	---	(mg/kg-day)-1		1.14E-08	mg/kg/day	---	mg/kg/day	
				Aluminum	9E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Arsenic	1E+01	mg/Kg	2.52E-07	mg/kg/day	3.7E+00	(mg/kg-day)-1	9.2E-07	2.94E-06	mg/kg/day	3.0E-04	mg/kg/day	9.8E-03
				Iron	1E+04	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Lead	2E+02	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Vanadium	4E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	7.0E-03	mg/kg/day	
			Exp. Route Total								9.2E-07					9.8E-03
		Exposure Point Total									1.9E-06					5.6E-02
	Exposure Medium Total										1.9E-06					5.6E-02
Medium Total											1.9E-06					5.6E-02
Surface Water	Surface Water	Pump Branch Creek	Ingestion	Arsenic	1E-02	mg/L	3.42E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	5.1E-07	3.98E-06	mg/kg/day	3.0E-04	mg/kg/day	1.3E-02
				Iron	2E+01	mg/L	6.99E-04	mg/kg/day	---	(mg/kg-day)-1		8.15E-03	mg/kg/day	7.0E-01	mg/kg/day	1.2E-02
				Lead	2E-02	mg/L	7.08E-07	mg/kg/day	---	(mg/kg-day)-1		8.26E-06	mg/kg/day	---	mg/kg/day	
				Vanadium	1E-02	mg/L	4.28E-07	mg/kg/day	---	(mg/kg-day)-1		5.00E-06	mg/kg/day	7.0E-03	mg/kg/day	7.1E-04
			Exp. Route Total								5.1E-07					2.6E-02
			Dermal	Arsenic	1E-02	mg/Kg	1.83E-07	mg/kg/day	3.7E+00	(mg/kg-day)-1	6.7E-07	2.14E-06	mg/kg/day	3.0E-04	mg/kg/day	7.1E-03
				Iron	2E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Lead	2E-02	mg/Kg	3.79E-08	mg/kg/day	---	(mg/kg-day)-1		4.43E-07	mg/kg/day	---	mg/kg/day	
				Vanadium	1E-02	mg/Kg	2.30E-07	mg/kg/day	---	(mg/kg-day)-1		2.68E-06	mg/kg/day	7.0E-03	mg/kg/day	3.8E-04
			Exp. Route Total								6.7E-07					7.5E-03
		Exposure Point Total									1.2E-06					3.3E-02
	Exposure Medium Total										1.2E-06					3.3E-02
Medium Total											1.2E-06					3.3E-02
Receptor Total											3.3E-06					1.6E-01

TABLE 7.4.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	Groundwater/ Water Vapors from Showering with Groundwater	Ingestion	1,1,2-Trichloroethane	1E-03	mg/L	1.19E-05	mg/kg/day	---	(mg/kg-day)-1		3.48E-05	mg/kg/day	---	(mg/kg-day)-1	
				1,2,3-Trichlorobenzene	1E-01	mg/L	1.35E-03	mg/kg/day	---	(mg/kg-day)-1		3.93E-03	mg/kg/day	---	mg/kg/day	
				1,2,4-Trichlorobenzene	1E-01	mg/L	1.30E-03	mg/kg/day	---	(mg/kg-day)-1		3.78E-03	mg/kg/day	1.0E-02	mg/kg/day	3.8E-01
				1,2-Dichlorobenzene	2E-02	mg/L	2.02E-04	mg/kg/day	---	(mg/kg-day)-1		5.90E-04	mg/kg/day	9.0E-02	mg/kg/day	6.6E-03
				1,4-Dichlorobenzene	3E-02	mg/L	3.10E-04	mg/kg/day	---	(mg/kg-day)-1		9.03E-04	mg/kg/day	---	mg/kg/day	
				Benzene	4E-02	mg/L	3.97E-04	mg/kg/day	5.5E-02	(mg/kg-day)-1	2.2E-05	1.16E-03	mg/kg/day	4.0E-03	mg/kg/day	2.9E-01
				Chlorobenzene	2E-02	mg/L	2.10E-04	mg/kg/day	---	(mg/kg-day)-1		6.12E-04	mg/kg/day	2.0E-02	mg/kg/day	3.1E-02
				Chloroform	1E-03	mg/L	1.05E-05	mg/kg/day	---	(mg/kg-day)-1		3.07E-05	mg/kg/day	1.0E-02	mg/kg/day	3.1E-03
				cis-1,2-Dichloroethene	5E-01	mg/L	4.36E-03	mg/kg/day	---	(mg/kg-day)-1		1.27E-02	mg/kg/day	1.0E-02	mg/kg/day	1.3E+00
				Ethylbenzene	8E-01	mg/L	7.79E-03	mg/kg/day	---	(mg/kg-day)-1		2.27E-02	mg/kg/day	1.0E-01	mg/kg/day	2.3E-01
				Tetrachloroethene	1E+00	mg/L	1.26E-02	mg/kg/day	5.4E-01	(mg/kg-day)-1	6.8E-03	3.68E-02	mg/kg/day	1.0E-02	mg/kg/day	3.7E+00
				Toluene	1E-01	mg/L	1.40E-03	mg/kg/day	---	(mg/kg-day)-1		4.08E-03	mg/kg/day	8.0E-02	mg/kg/day	5.1E-02
				Trichloroethene	8E-01	mg/L	7.12E-03	mg/kg/day	4.0E-01	(mg/kg-day)-1	2.8E-03	2.08E-02	mg/kg/day	3.0E-04	mg/kg/day	6.9E+01
				Vinyl Chloride	2E-03	mg/L	1.57E-05	mg/kg/day	7.0E-01	(mg/kg-day)-1	1.1E-05	4.58E-05	mg/kg/day	3.0E-03	mg/kg/day	1.5E-02
				Xylenes (total)	1E+01	mg/L	1.08E-01	mg/kg/day	---	(mg/kg-day)-1		3.16E-01	mg/kg/day	2.0E-01	mg/kg/day	1.6E+00
				2,4-Dimethylphenol	7E-02	mg/L	6.58E-04	mg/kg/day	---	(mg/kg-day)-1		1.92E-03	mg/kg/day	2.0E-02	mg/kg/day	9.6E-02
				4-Methylphenol	3E-01	mg/L	2.39E-03	mg/kg/day	---	(mg/kg-day)-1		6.99E-03	mg/kg/day	5.0E-03	mg/kg/day	1.4E+00
				bis(2-Ethylhexyl)Phthalate	3E-03	mg/L	2.36E-05	mg/kg/day	1.4E-02	(mg/kg-day)-1	3.3E-07	6.88E-05	mg/kg/day	2.0E-02	mg/kg/day	3.4E-03
				Naphthalene	3E-03	mg/L	2.99E-05	mg/kg/day	---	(mg/kg-day)-1		8.71E-05	mg/kg/day	2.0E-02	mg/kg/day	4.4E-03
				Iron	1E+01	mg/L	1.02E-01	mg/kg/day	---	(mg/kg-day)-1		2.99E-01	mg/kg/day	7.0E-01	mg/kg/day	4.3E-01
				Antimony	8E-03	mg/L	7.05E-05	mg/kg/day	3.5E-01	(mg/kg-day)-1	2.5E-05	2.05E-04	mg/kg/day	5.0E-04	mg/kg/day	4.1E-01
				Arsenic	3E-03	mg/L	3.10E-05	mg/kg/day	1.5E+00	(mg/kg-day)-1	4.6E-05	9.04E-05	mg/kg/day	3.0E-04	mg/kg/day	3.0E-01
				Cadmium	4E-02	mg/L	3.33E-04	mg/kg/day	---	(mg/kg-day)-1		9.72E-04	mg/kg/day	1.0E-03	mg/kg/day	9.7E-01
				Chromium	6E-03	mg/L	5.98E-05	mg/kg/day	---	(mg/kg-day)-1		1.75E-04	mg/kg/day	3.0E-03	mg/kg/day	5.8E-02
				Lead	4E-03	mg/L	4.04E-05	mg/kg/day	---	(mg/kg-day)-1		1.18E-04	mg/kg/day	---	mg/kg/day	
				Manganese	1E-01	mg/L	1.28E-03	mg/kg/day	---	(mg/kg-day)-1		3.72E-03	mg/kg/day	1.4E-01	mg/kg/day	2.7E-02
				Nickel	1E-02	mg/L	1.16E-04	mg/kg/day	---	(mg/kg-day)-1		3.39E-04	mg/kg/day	2.0E-02	mg/kg/day	1.7E-02
				Thallium	9E-03	mg/L	8.05E-05	mg/kg/day	---	(mg/kg-day)-1		2.35E-04	mg/kg/day	8.0E-05	mg/kg/day	2.9E+00
				Vanadium	8E-03	mg/L	7.70E-05	mg/kg/day	---	(mg/kg-day)-1		2.25E-04	mg/kg/day	3.0E-03	mg/kg/day	7.5E-02
			Exp. Route Total								9.8E-03					8.3E+01

TABLE 7.4.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	Groundwater/ Water Vapors from Showering with Groundwater	Dermal	1,1,2-Trichloroethane	1E-03	mg/L	3.99E-07	mg/kg/day	---	(mg/kg-day)-1		1.16E-06	mg/kg/day	---	(mg/kg-day)-1	
				1,2,3-Trichlorobenzene	1E-01	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				1,2,4-Trichlorobenzene	1E-01	mg/L	4.47E-04	mg/kg/day	---	(mg/kg-day)-1		1.30E-03	mg/kg/day	1.0E-02	mg/kg/day	1.3E-01
				1,2-Dichlorobenzene	2E-02	mg/L	4.33E-05	mg/kg/day	---	(mg/kg-day)-1		1.26E-04	mg/kg/day	9.0E-02	mg/kg/day	1.4E-03
				1,4-Dichlorobenzene	3E-02	mg/L	6.79E-05	mg/kg/day	---	(mg/kg-day)-1		1.98E-04	mg/kg/day	---	mg/kg/day	
				Benzene	4E-02	mg/L	3.11E-05	mg/kg/day	5.5E-02	(mg/kg-day)-1	1.7E-06	9.06E-05	mg/kg/day	4.0E-03	mg/kg/day	2.3E-02
				Chlorobenzene	2E-02	mg/L	3.07E-05	mg/kg/day	---	(mg/kg-day)-1		8.95E-05	mg/kg/day	2.0E-02	mg/kg/day	4.5E-03
				Chloroform	1E-03	mg/L	3.73E-07	mg/kg/day	---	(mg/kg-day)-1		1.09E-06	mg/kg/day	1.0E-02	mg/kg/day	1.1E-04
				cis-1,2-Dichloroethene	5E-01	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	1.0E-02	mg/kg/day	
				Ethylbenzene	8E-01	mg/L	1.99E-03	mg/kg/day	---	(mg/kg-day)-1		5.81E-03	mg/kg/day	1.0E-01	mg/kg/day	5.8E-02
				Tetrachloroethene	1E+00	mg/L	2.17E-03	mg/kg/day	5.4E-01	(mg/kg-day)-1	1.2E-03	6.34E-03	mg/kg/day	1.0E-02	mg/kg/day	6.3E-01
				Toluene	1E-01	mg/L	2.26E-04	mg/kg/day	---	(mg/kg-day)-1		6.60E-04	mg/kg/day	8.0E-02	mg/kg/day	8.2E-03
				Trichloroethene	8E-01	mg/L	4.46E-04	mg/kg/day	4.0E-01	(mg/kg-day)-1	1.8E-04	1.30E-03	mg/kg/day	3.0E-04	mg/kg/day	4.3E+00
				Vinyl Chloride	2E-03	mg/L	4.59E-07	mg/kg/day	7.0E-01	(mg/kg-day)-1	3.2E-07	1.34E-06	mg/kg/day	3.0E-03	mg/kg/day	4.5E-04
				Xylenes (total)	1E+01	mg/L	2.99E-02	mg/kg/day	---	(mg/kg-day)-1		8.73E-02	mg/kg/day	2.0E-01	mg/kg/day	4.4E-01
				2,4-Dimethylphenol	7E-02	mg/L	3.78E-05	mg/kg/day	---	(mg/kg-day)-1		1.10E-04	mg/kg/day	2.0E-02	mg/kg/day	5.5E-03
				4-Methylphenol	3E-01	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	5.0E-03	mg/kg/day	
				bis(2-Ethylhexyl)Phthalate	3E-03	mg/L	---	mg/kg/day	1.4E-02	(mg/kg-day)-1		---	mg/kg/day	2.0E-02	mg/kg/day	
				Naphthalene	3E-03	mg/L	7.33E-06	mg/kg/day	---	(mg/kg-day)-1		2.14E-05	mg/kg/day	2.0E-02	mg/kg/day	1.1E-03
				Iron	1E+01	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	7.0E-01	mg/kg/day	
				Antimony	8E-03	mg/L	3.68E-07	mg/kg/day	3.5E-01	(mg/kg-day)-1	1.3E-07	1.07E-06	mg/kg/day	5.0E-04	mg/kg/day	2.1E-03
				Arsenic	3E-03	mg/L	1.62E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	2.4E-07	4.72E-07	mg/kg/day	3.0E-04	mg/kg/day	1.6E-03
				Cadmium	4E-02	mg/L	1.74E-06	mg/kg/day	---	(mg/kg-day)-1		5.08E-06	mg/kg/day	1.0E-03	mg/kg/day	5.1E-03
				Chromium	6E-03	mg/L	6.25E-07	mg/kg/day	---	(mg/kg-day)-1		1.82E-06	mg/kg/day	3.0E-03	mg/kg/day	6.1E-04
				Lead	4E-03	mg/L	2.11E-08	mg/kg/day	---	(mg/kg-day)-1		6.15E-08	mg/kg/day	7.0E-01	mg/kg/day	8.8E-08
				Manganese	1E-01	mg/L	6.66E-06	mg/kg/day	3.5E-01	(mg/kg-day)-1	2.3E-06	1.94E-05	mg/kg/day	5.0E-04	mg/kg/day	3.9E-02
				Nickel	1E-02	mg/L	---	mg/kg/day	1.5E+00	(mg/kg-day)-1		---	mg/kg/day	3.0E-04	mg/kg/day	
				Thallium	9E-03	mg/L	4.20E-07	mg/kg/day	---	(mg/kg-day)-1		1.23E-06	mg/kg/day	1.0E-03	mg/kg/day	1.2E-03
				Vanadium	8E-03	mg/L	4.02E-07	mg/kg/day	---	(mg/kg-day)-1		1.17E-06	mg/kg/day	3.0E-03	mg/kg/day	3.9E-04
			Exp. Route Total								1.4E-03					5.7E+00
		Exposure Point Total									1.1E-02					8.9E+01
	Exposure Medium Total										1.1E-02					8.9E+01

TABLE 7.4.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Air	Groundwater/ Water Vapors from Showering with Groundwater	Inhalation	1,1,2-Trichloroethane	7E-03	mg/m3	1.84E-05	mg/kg/day	5.7E-02	(mg/kg-day)-1	1.0E-06	4.29E-05	mg/kg/day	4.0E-03	(mg/kg-day)-1	1.1E-02
				1,2,3-Trichlorobenzene	7E-01	mg/m3	2.00E-03	mg/kg/day	---	(mg/kg-day)-1		4.66E-03	mg/kg/day	---	(mg/kg-day)-1	
				1,2,4-Trichlorobenzene	7E-01	mg/m3	1.91E-03	mg/kg/day	---	(mg/kg-day)-1		4.45E-03	mg/kg/day	1.0E-02	(mg/kg-day)-1	4.4E-01
				1,2-Dichlorobenzene	1E-01	mg/m3	2.94E-04	mg/kg/day	---	(mg/kg-day)-1		6.86E-04	mg/kg/day	9.0E-02	(mg/kg-day)-1	7.6E-03
				1,4-Dichlorobenzene	2E-01	mg/m3	4.51E-04	mg/kg/day	---	(mg/kg-day)-1		1.05E-03	mg/kg/day	---	(mg/kg-day)-1	
				Benzene	2E-01	mg/m3	6.71E-04	mg/kg/day	5.5E-02	(mg/kg-day)-1	3.7E-05	1.57E-03	mg/kg/day	4.0E-03	(mg/kg-day)-1	3.9E-01
				Chlorobenzene	1E-01	mg/m3	3.27E-04	mg/kg/day	---	(mg/kg-day)-1		7.64E-04	mg/kg/day	2.0E-02	(mg/kg-day)-1	3.8E-02
				Chloroform	7E-03	mg/m3	1.80E-05	mg/kg/day	---	(mg/kg-day)-1		4.21E-05	mg/kg/day	1.0E-02	(mg/kg-day)-1	4.2E-03
				cis-1,2-Dichloroethene	3E+00	mg/m3	7.24E-03	mg/kg/day	---	(mg/kg-day)-1		1.69E-02	mg/kg/day	1.0E-02	(mg/kg-day)-1	1.7E+00
				Ethylbenzene	4E+00	mg/m3	1.13E-02	mg/kg/day	---	(mg/kg-day)-1		2.64E-02	mg/kg/day	1.0E-01	(mg/kg-day)-1	2.6E-01
				Tetrachloroethene	7E+00	mg/m3	1.90E-02	mg/kg/day	5.4E-01	(mg/kg-day)-1	1.0E-02	4.43E-02	mg/kg/day	1.0E-02	(mg/kg-day)-1	4.4E+00
				Toluene	8E-01	mg/m3	2.17E-03	mg/kg/day	---	(mg/kg-day)-1		5.06E-03	mg/kg/day	8.0E-02	(mg/kg-day)-1	6.3E-02
				Trichloroethene	4E+00	mg/m3	1.15E-02	mg/kg/day	4.0E-01	(mg/kg-day)-1	4.6E-03	2.68E-02	mg/kg/day	3.0E-04	(mg/kg-day)-1	8.9E+01
				Vinyl Chloride	2E-03	mg/m3	6.64E-06	mg/kg/day	7.0E-01	(mg/kg-day)-1	4.6E-06	1.55E-05	mg/kg/day	---	(mg/kg-day)-1	
				Xylenes (total)	7E+01	mg/m3	1.78E-01	mg/kg/day	---	(mg/kg-day)-1		4.14E-01	mg/kg/day	---	(mg/kg-day)-1	
			Exp. Route Total								1.5E-02					9.7E+01
		Exposure Point Total									1.5E-02					9.7E+01
	Exposure Medium Total										1.5E-02					9.7E+01
Medium and Receptor Total											2.6E-02					1.9E+02

TABLE 7.5.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	Groundwater/ Water Vapors from Showering with Groundwater	Ingestion	1,1,2-Trichloroethane	1E-03	mg/L	8.57E-06	mg/kg/day	5.7E-02	(mg/kg-day)-1	4.9E-07	1.00E-04	mg/kg/day	4.0E-03	(mg/kg-day)-1	2.5E-02
				1,2,3-Trichlorobenzene	1E-01	mg/L	9.69E-04	mg/kg/day	---	(mg/kg-day)-1		1.13E-02	mg/kg/day	---	(mg/kg-day)-1	
				1,2,4-Trichlorobenzene	1E-01	mg/L	9.32E-04	mg/kg/day	---	(mg/kg-day)-1		1.09E-02	mg/kg/day	1.0E-02	(mg/kg-day)-1	1.1E+00
				1,2-Dichlorobenzene	2E-02	mg/L	1.45E-04	mg/kg/day	---	(mg/kg-day)-1		1.70E-03	mg/kg/day	9.0E-02	(mg/kg-day)-1	1.9E-02
				1,4-Dichlorobenzene	3E-02	mg/L	2.23E-04	mg/kg/day	---	(mg/kg-day)-1		2.60E-03	mg/kg/day	---	(mg/kg-day)-1	
				Benzene	4E-02	mg/L	2.85E-04	mg/kg/day	5.5E-02	(mg/kg-day)-1	1.6E-05	3.33E-03	mg/kg/day	4.0E-03	(mg/kg-day)-1	8.3E-01
				Chlorobenzene	2E-02	mg/L	1.51E-04	mg/kg/day	---	(mg/kg-day)-1		1.76E-03	mg/kg/day	2.0E-02	(mg/kg-day)-1	8.8E-02
				Chloroform	1E-03	mg/L	7.56E-06	mg/kg/day	---	(mg/kg-day)-1		8.82E-05	mg/kg/day	1.0E-02	(mg/kg-day)-1	8.8E-03
				cis-1,2-Dichloroethene	5E-01	mg/L	3.13E-03	mg/kg/day	---	(mg/kg-day)-1		3.65E-02	mg/kg/day	1.0E-02	(mg/kg-day)-1	3.7E+00
				Ethylbenzene	8E-01	mg/L	5.60E-03	mg/kg/day	---	(mg/kg-day)-1		6.53E-02	mg/kg/day	1.0E-01	(mg/kg-day)-1	6.5E-01
				Tetrachloroethene	1E+00	mg/L	9.06E-03	mg/kg/day	5.4E-01	(mg/kg-day)-1	4.9E-03	1.06E-01	mg/kg/day	1.0E-02	(mg/kg-day)-1	1.1E+01
				Toluene	1E-01	mg/L	1.00E-03	mg/kg/day	---	(mg/kg-day)-1		1.17E-02	mg/kg/day	8.0E-02	(mg/kg-day)-1	1.5E-01
				Trichloroethene	8E-01	mg/L	5.12E-03	mg/kg/day	4.0E-01	(mg/kg-day)-1	2.0E-03	5.97E-02	mg/kg/day	3.0E-04	(mg/kg-day)-1	2.0E+02
				Vinyl Chloride	2E-03	mg/L	1.13E-05	mg/kg/day	7.0E-01	(mg/kg-day)-1	7.9E-06	1.32E-04	mg/kg/day	3.0E-03	(mg/kg-day)-1	4.4E-02
				Xylenes (total)	1E+01	mg/L	7.77E-02	mg/kg/day	---	(mg/kg-day)-1		9.07E-01	mg/kg/day	2.0E-01	(mg/kg-day)-1	4.5E+00
				2,4-Dimethylphenol	7E-02	mg/L	4.73E-04	mg/kg/day	---	(mg/kg-day)-1		5.51E-03	mg/kg/day	2.0E-02	(mg/kg-day)-1	2.8E-01
				4-Methylphenol	3E-01	mg/L	1.72E-03	mg/kg/day	---	(mg/kg-day)-1		2.01E-02	mg/kg/day	5.0E-03	(mg/kg-day)-1	4.0E+00
				bis(2-Ethylhexyl)Phthalate	3E-03	mg/L	1.69E-05	mg/kg/day	1.4E-02	(mg/kg-day)-1	2.4E-07	1.98E-04	mg/kg/day	2.0E-02	(mg/kg-day)-1	9.9E-03
				Naphthalene	3E-03	mg/L	2.15E-05	mg/kg/day	---	(mg/kg-day)-1		2.50E-04	mg/kg/day	2.0E-02	(mg/kg-day)-1	1.3E-02
				Iron	1E+01	mg/L	7.36E-02	mg/kg/day	---	(mg/kg-day)-1		8.58E-01	mg/kg/day	7.0E-01	(mg/kg-day)-1	1.2E+00
				Antimony	8E-03	mg/L	5.06E-05	mg/kg/day	---	(mg/kg-day)-1		5.91E-04	mg/kg/day	4.0E-04	(mg/kg-day)-1	1.5E+00
				Arsenic	3E-03	mg/L	2.23E-05	mg/kg/day	1.5E+00	(mg/kg-day)-1	3.3E-05	2.60E-04	mg/kg/day	3.0E-04	(mg/kg-day)-1	8.7E-01
				Cadmium	4E-02	mg/L	2.40E-04	mg/kg/day	---	(mg/kg-day)-1		2.80E-03	mg/kg/day	1.0E-03	(mg/kg-day)-1	2.8E+00
				Chromium	6E-03	mg/L	4.30E-05	mg/kg/day	---	(mg/kg-day)-1		5.02E-04	mg/kg/day	3.0E-03	(mg/kg-day)-1	1.7E-01
				Lead	4E-03	mg/L	2.90E-05	mg/kg/day	---	(mg/kg-day)-1		3.39E-04	mg/kg/day	---	(mg/kg-day)-1	
				Manganese	1E-01	mg/L	9.17E-04	mg/kg/day	---	(mg/kg-day)-1		1.07E-02	mg/kg/day	1.4E-01	(mg/kg-day)-1	7.6E-02
				Nickel	1E-02	mg/L	8.36E-05	mg/kg/day	---	(mg/kg-day)-1		9.76E-04	mg/kg/day	2.0E-02	mg/kg/day	4.9E-02
				Thallium	9E-03	mg/L	5.79E-05	mg/kg/day	---	(mg/kg-day)-1		6.75E-04	mg/kg/day	8.0E-05	mg/kg/day	8.4E+00
				Vanadium	8E-03	mg/L	5.54E-05	mg/kg/day	---	(mg/kg-day)-1		6.46E-04	mg/kg/day	3.0E-03	mg/kg/day	2.2E-01
			Exp. Route Total								7.0E-03					2.4E+02

TABLE 7.5.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	Groundwater/ Water Vapors from Showering with Groundwater	Dermal	1,1,2-Trichloroethane	1E-03	mg/L	2.94E-07	mg/kg/day	5.7E-02	(mg/kg-day)-1	1.7E-08	3.43E-06	mg/kg/day	4.0E-03	(mg/kg-day)-1	8.6E-04
				1,2,3-Trichlorobenzene	1E-01	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	(mg/kg-day)-1	
				1,2,4-Trichlorobenzene	1E-01	mg/L	3.30E-04	mg/kg/day	---	(mg/kg-day)-1		3.85E-03	mg/kg/day	1.0E-02	(mg/kg-day)-1	3.8E-01
				1,2-Dichlorobenzene	2E-02	mg/L	3.20E-05	mg/kg/day	---	(mg/kg-day)-1		3.73E-04	mg/kg/day	9.0E-02	(mg/kg-day)-1	4.1E-03
				1,4-Dichlorobenzene	3E-02	mg/L	5.01E-05	mg/kg/day	---	(mg/kg-day)-1		5.84E-04	mg/kg/day	---	(mg/kg-day)-1	
				Benzene	4E-02	mg/L	2.29E-05	mg/kg/day	5.5E-02	(mg/kg-day)-1	1.3E-06	2.67E-04	mg/kg/day	4.0E-03	(mg/kg-day)-1	6.7E-02
				Chlorobenzene	2E-02	mg/L	2.26E-05	mg/kg/day	---	(mg/kg-day)-1		2.64E-04	mg/kg/day	2.0E-02	(mg/kg-day)-1	1.3E-02
				Chloroform	1E-03	mg/L	2.75E-07	mg/kg/day	---	(mg/kg-day)-1		3.21E-06	mg/kg/day	1.0E-02	(mg/kg-day)-1	3.2E-04
				cis-1,2-Dichloroethene	5E-01	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	1.0E-02	(mg/kg-day)-1	
				Ethylbenzene	8E-01	mg/L	1.47E-03	mg/kg/day	---	(mg/kg-day)-1		1.71E-02	mg/kg/day	1.0E-01	(mg/kg-day)-1	1.7E-01
				Tetrachloroethene	1E+00	mg/L	1.60E-03	mg/kg/day	5.4E-01	(mg/kg-day)-1	8.7E-04	1.87E-02	mg/kg/day	1.0E-02	(mg/kg-day)-1	1.9E+00
				Toluene	1E-01	mg/L	1.67E-04	mg/kg/day	---	(mg/kg-day)-1		1.95E-03	mg/kg/day	8.0E-02	(mg/kg-day)-1	2.4E-02
				Trichloroethene	8E-01	mg/L	3.29E-04	mg/kg/day	4.0E-01	(mg/kg-day)-1	1.3E-04	3.84E-03	mg/kg/day	3.0E-04	(mg/kg-day)-1	1.3E+01
				Vinyl Chloride	2E-03	mg/L	3.38E-07	mg/kg/day	7.0E-01	(mg/kg-day)-1	2.4E-07	3.95E-06	mg/kg/day	3.0E-03	(mg/kg-day)-1	1.3E-03
				Xylenes (total)	1E+01	mg/L	2.21E-02	mg/kg/day	---	(mg/kg-day)-1		2.58E-01	mg/kg/day	2.0E-01	(mg/kg-day)-1	1.3E+00
				2,4-Dimethylphenol	7E-02	mg/L	2.78E-05	mg/kg/day	---	(mg/kg-day)-1		3.25E-04	mg/kg/day	2.0E-02	(mg/kg-day)-1	1.6E-02
				4-Methylphenol	3E-01	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	5.0E-03	(mg/kg-day)-1	
				bis(2-Ethylhexyl)Phthalate	3E-03	mg/L	---	mg/kg/day	1.4E-02	(mg/kg-day)-1		---	mg/kg/day	2.0E-02	(mg/kg-day)-1	
				Naphthalene	3E-03	mg/L	5.41E-06	mg/kg/day	---	(mg/kg-day)-1		6.31E-05	mg/kg/day	2.0E-02	(mg/kg-day)-1	3.2E-03
				Iron	1E+01	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	7.0E-01	(mg/kg-day)-1	
				Antimony	8E-03	mg/L	2.71E-07	mg/kg/day	---	(mg/kg-day)-1		3.16E-06	mg/kg/day	4.0E-04	(mg/kg-day)-1	7.9E-03
				Arsenic	3E-03	mg/L	1.19E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	1.8E-07	1.39E-06	mg/kg/day	3.0E-04	(mg/kg-day)-1	4.6E-03
				Cadmium	4E-02	mg/L	1.28E-06	mg/kg/day	---	(mg/kg-day)-1		1.50E-05	mg/kg/day	1.0E-03	(mg/kg-day)-1	1.5E-02
				Chromium	6E-03	mg/L	4.61E-07	mg/kg/day	---	(mg/kg-day)-1		5.38E-06	mg/kg/day	3.0E-03	(mg/kg-day)-1	1.8E-03
				Lead	4E-03	mg/L	1.56E-08	mg/kg/day	---	(mg/kg-day)-1		1.81E-07	mg/kg/day	---	(mg/kg-day)-1	
				Manganese	1E-01	mg/L	4.91E-06	mg/kg/day	---	(mg/kg-day)-1		5.73E-05	mg/kg/day	1.4E-01	(mg/kg-day)-1	4.1E-04
				Nickel	1E-02	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	2.0E-02	mg/kg/day	
				Thallium	9E-03	mg/L	3.10E-07	mg/kg/day	---	(mg/kg-day)-1		3.62E-06	mg/kg/day	8.0E-05	mg/kg/day	4.5E-02
				Vanadium	8E-03	mg/L	2.97E-07	mg/kg/day	---	(mg/kg-day)-1		3.46E-06	mg/kg/day	3.0E-03	mg/kg/day	1.2E-03
			Exp. Route Total								1.0E-03					1.7E+01
	Exposure Medium Total										8.0E-03					2.6E+02

TABLE 7.5.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Air	Groundwater/ Water Vapors from Showering with Groundwater	Inhalation	1,1,2-Trichloroethane	7E-03	mg/m3	3.70E-05	mg/kg/day	5.7E-02	(mg/kg-day)-1	2.1E-06	4.32E-04	mg/kg/day	4.0E-03	(mg/kg-day)-1	1.1E-01
				1,2,3-Trichlorobenzene	7E-01	mg/m3	4.02E-03	mg/kg/day	---	(mg/kg-day)-1		4.69E-02	mg/kg/day	---	(mg/kg-day)-1	
				1,2,4-Trichlorobenzene	7E-01	mg/m3	3.83E-03	mg/kg/day	---	(mg/kg-day)-1		4.47E-02	mg/kg/day	1.0E-02	(mg/kg-day)-1	4.5E+00
				1,2-Dichlorobenzene	1E-01	mg/m3	5.92E-04	mg/kg/day	---	(mg/kg-day)-1		6.90E-03	mg/kg/day	9.0E-02	(mg/kg-day)-1	7.7E-02
				1,4-Dichlorobenzene	2E-01	mg/m3	9.08E-04	mg/kg/day	---	(mg/kg-day)-1		1.06E-02	mg/kg/day	---	(mg/kg-day)-1	
				Benzene	2E-01	mg/m3	1.35E-03	mg/kg/day	5.5E-02	(mg/kg-day)-1	7.4E-05	1.58E-02	mg/kg/day	4.0E-03	(mg/kg-day)-1	3.9E+00
				Chlorobenzene	1E-01	mg/m3	6.58E-04	mg/kg/day	---	(mg/kg-day)-1		7.68E-03	mg/kg/day	2.0E-02	(mg/kg-day)-1	3.8E-01
				Chloroform	7E-03	mg/m3	3.63E-05	mg/kg/day	---	(mg/kg-day)-1		4.23E-04	mg/kg/day	1.0E-02	(mg/kg-day)-1	4.2E-02
				cis-1,2-Dichloroethene	3E+00	mg/m3	1.46E-02	mg/kg/day	---	(mg/kg-day)-1		1.70E-01	mg/kg/day	1.0E-02	(mg/kg-day)-1	1.7E+01
				Ethylbenzene	4E+00	mg/m3	2.28E-02	mg/kg/day	---	(mg/kg-day)-1		2.66E-01	mg/kg/day	1.0E-01	(mg/kg-day)-1	2.7E+00
				Tetrachloroethene	7E+00	mg/m3	3.82E-02	mg/kg/day	5.4E-01	(mg/kg-day)-1	2.1E-02	4.46E-01	mg/kg/day	1.0E-02	(mg/kg-day)-1	4.5E+01
				Toluene	8E-01	mg/m3	4.37E-03	mg/kg/day	---	(mg/kg-day)-1		5.09E-02	mg/kg/day	8.0E-02	(mg/kg-day)-1	6.4E-01
				Trichloroethene	4E+00	mg/m3	2.31E-02	mg/kg/day	4.0E-01	(mg/kg-day)-1	9.2E-03	2.70E-01	mg/kg/day	3.0E-04	(mg/kg-day)-1	9.0E+02
				Vinyl Chloride	2E-03	mg/m3	1.33E-05	mg/kg/day	7.0E-01	(mg/kg-day)-1	9.3E-06	1.56E-04	mg/kg/day	3.0E-03	(mg/kg-day)-1	5.2E-02
				Xylenes (total)	7E+01	mg/m3	3.57E-01	mg/kg/day	---	(mg/kg-day)-1		4.17E+00	mg/kg/day	2.0E-01	(mg/kg-day)-1	2.1E+01
			Exp. Route Total								3.0E-02					9.9E+02
		Exposure Point Total									3.8E-02					9.9E+02
	Exposure Medium Total										3.8E-02					9.9E+02
Medium and Receptor Total											4.6E-02					1.3E+03
Receptor Total											4.6E-02					1.3E+03

TABLE 7.6.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Industrial/Commercial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	Hypothetical Future On-Site Supply Wells	Ingestion	1,2,3-Trichlorobenzene	1E-01	mg/L	5.13E-04	mg/kg/day	---	(mg/kg-day)-1		1.44E-03	mg/kg/day	---	mg/kg/day	
				1,2,4-Trichlorobenzene	2E-01	mg/L	7.70E-04	mg/kg/day	---	(mg/kg-day)-1		2.16E-03	mg/kg/day	1.0E-02	mg/kg/day	2.2E-01
				1,2-Dichlorobenzene	3E-02	mg/L	1.19E-04	mg/kg/day	---	(mg/kg-day)-1		3.34E-04	mg/kg/day	9.0E-02	mg/kg/day	3.7E-03
				1,4-Dichlorobenzene	5E-02	mg/L	1.80E-04	mg/kg/day	---	(mg/kg-day)-1		5.05E-04	mg/kg/day	---	mg/kg/day	
				Benzene	4E-03	mg/L	1.39E-05	mg/kg/day	5.5E-02	(mg/kg-day)-1	7.7E-07	3.90E-05	mg/kg/day	4.0E-03	mg/kg/day	9.8E-03
				Chlorobenzene	3E-02	mg/L	1.12E-04	mg/kg/day	---	(mg/kg-day)-1		3.13E-04	mg/kg/day	2.0E-02	mg/kg/day	1.6E-02
				Chloroform	2E-03	mg/L	5.49E-06	mg/kg/day	---	(mg/kg-day)-1		1.54E-05	mg/kg/day	1.0E-02	mg/kg/day	1.5E-03
				cis-1,2-Dichloroethene	6E-01	mg/L	2.25E-03	mg/kg/day	---	(mg/kg-day)-1		6.29E-03	mg/kg/day	1.0E-02	mg/kg/day	6.3E-01
				Ethylbenzene	1E+00	mg/L	4.60E-03	mg/kg/day	---	(mg/kg-day)-1		1.29E-02	mg/kg/day	1.0E-01	mg/kg/day	1.3E-01
				Tetrachloroethene	2E+00	mg/L	6.61E-03	mg/kg/day	5.4E-01	(mg/kg-day)-1	3.6E-03	1.85E-02	mg/kg/day	1.0E-02	mg/kg/day	1.9E+00
				Toluene	2E-01	mg/L	8.30E-04	mg/kg/day	---	(mg/kg-day)-1		2.32E-03	mg/kg/day	8.0E-02	mg/kg/day	2.9E-02
				Trichloroethene	1E+00	mg/L	4.11E-03	mg/kg/day	4.0E-01	(mg/kg-day)-1	1.6E-03	1.15E-02	mg/kg/day	3.0E-04	mg/kg/day	3.8E+01
				Vinyl Chloride	3E-03	mg/L	8.88E-06	mg/kg/day	7.0E-01	(mg/kg-day)-1	6.2E-06	2.49E-05	mg/kg/day	3.0E-03	mg/kg/day	8.3E-03
				Xylenes (total)	2E+01	mg/L	6.43E-02	mg/kg/day	---	(mg/kg-day)-1		1.80E-01	mg/kg/day	2.0E-01	mg/kg/day	9.0E-01
				2,4-Dimethylphenol	1E-01	mg/L	3.88E-04	mg/kg/day	---	(mg/kg-day)-1		1.09E-03	mg/kg/day	2.0E-02	mg/kg/day	5.4E-02
				2-Methylnaphthalene	3E-03	mg/L	1.13E-05	mg/kg/day	---	(mg/kg-day)-1		3.17E-05	mg/kg/day	---	mg/kg/day	
				4-Methylphenol	4E-01	mg/L	1.42E-03	mg/kg/day	---	(mg/kg-day)-1		3.98E-03	mg/kg/day	5.0E-03	mg/kg/day	8.0E-01
				Naphthalene	4E-03	mg/L	1.57E-05	mg/kg/day	---	(mg/kg-day)-1		4.38E-05	mg/kg/day	2.0E-02	mg/kg/day	2.2E-03
				Antimony	1E-03	mg/L	5.03E-06	mg/kg/day	---	(mg/kg-day)-1		1.41E-05	mg/kg/day	---	mg/kg/day	
				Arsenic	1E-03	mg/L	4.30E-06	mg/kg/day	---	(mg/kg-day)-1		1.20E-05	mg/kg/day	---	mg/kg/day	
				Cadmium	5E-02	mg/L	1.89E-04	mg/kg/day	---	(mg/kg-day)-1		5.30E-04	mg/kg/day	1.0E-03	mg/kg/day	5.3E-01
				Chromium	5E-03	mg/L	1.85E-05	mg/kg/day	---	(mg/kg-day)-1		5.17E-05	mg/kg/day	3.0E-03	mg/kg/day	1.7E-02
				Iron	1E+01	mg/L	3.98E-02	mg/kg/day	---	(mg/kg-day)-1		1.11E-01	mg/kg/day	7.0E-01	mg/kg/day	1.6E-01
				Manganese	9E-02	mg/L	3.26E-04	mg/kg/day	---	(mg/kg-day)-1		9.13E-04	mg/kg/day	---	mg/kg/day	
				Nickel	1E-02	mg/L	4.09E-05	mg/kg/day	---	(mg/kg-day)-1		1.14E-04	mg/kg/day	3.0E-03	mg/kg/day	3.8E-02
				Vanadium	1E-03	mg/L	4.16E-06	mg/kg/day	---	(mg/kg-day)-1		1.16E-05	mg/kg/day	7.0E-03	mg/kg/day	1.7E-03
			Exp. Route Total								5.2E-03					4.4E+01

TABLE 7.6.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Industrial/Commercial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	Hypothetical Future On-Site Supply Wells	Dermal	1,2,3-Trichlorobenzene	1E-01	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				1,2,4-Trichlorobenzene	2E-01	mg/L	4.19E-05	mg/kg/day	---	(mg/kg-day)-1		1.17E-04	mg/kg/day	1.0E-02	mg/kg/day	1.2E-02
				1,2-Dichlorobenzene	3E-02	mg/L	4.04E-06	mg/kg/day	---	(mg/kg-day)-1		1.13E-05	mg/kg/day	9.0E-02	mg/kg/day	1.3E-04
				1,4-Dichlorobenzene	5E-02	mg/L	6.25E-06	mg/kg/day	---	(mg/kg-day)-1		1.75E-05	mg/kg/day	---	mg/kg/day	
				Benzene	4E-03	mg/L	1.73E-07	mg/kg/day	5.5E-02	(mg/kg-day)-1	9.5E-09	4.83E-07	mg/kg/day	4.0E-03	mg/kg/day	1.2E-04
				Chlorobenzene	3E-02	mg/L	2.58E-06	mg/kg/day	---	(mg/kg-day)-1		7.22E-06	mg/kg/day	2.0E-02	mg/kg/day	3.6E-04
				Chloroform	2E-03	mg/L	3.08E-08	mg/kg/day	---	(mg/kg-day)-1		8.62E-08	mg/kg/day	1.0E-02	mg/kg/day	8.6E-06
				cis-1,2-Dichloroethene	6E-01	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	1.0E-02	mg/kg/day	
				Ethylbenzene	1E+00	mg/L	1.86E-04	mg/kg/day	---	(mg/kg-day)-1		5.21E-04	mg/kg/day	1.0E-01	mg/kg/day	5.2E-03
				Tetrachloroethene	2E+00	mg/L	1.80E-04	mg/kg/day	5.4E-01	(mg/kg-day)-1	9.7E-05	5.04E-04	mg/kg/day	1.0E-02	mg/kg/day	5.0E-02
				Toluene	2E-01	mg/L	2.12E-05	mg/kg/day	---	(mg/kg-day)-1		5.94E-05	mg/kg/day	8.0E-02	mg/kg/day	7.4E-04
				Trichloroethene	1E+00	mg/L	4.07E-05	mg/kg/day	4.0E-01	(mg/kg-day)-1	1.6E-05	1.14E-04	mg/kg/day	3.0E-04	mg/kg/day	3.8E-01
				Vinyl Chloride	3E-03	mg/L	4.10E-08	mg/kg/day	7.0E-01	(mg/kg-day)-1	2.9E-08	1.15E-07	mg/kg/day	3.0E-03	mg/kg/day	3.8E-05
				Xylenes (total)	2E+01	mg/L	2.81E-03	mg/kg/day	---	(mg/kg-day)-1		7.88E-03	mg/kg/day	2.0E-01	mg/kg/day	3.9E-02
				2,4-Dimethylphenol	1E-01	mg/L	3.52E-06	mg/kg/day	---	(mg/kg-day)-1		9.85E-06	mg/kg/day	2.0E-02	mg/kg/day	4.9E-04
				2-Methylnaphthalene	3E-03	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				4-Methylphenol	4E-01	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	5.0E-03	mg/kg/day	
				Naphthalene	4E-03	mg/L	6.07E-07	mg/kg/day	---	(mg/kg-day)-1		1.70E-06	mg/kg/day	2.0E-02	mg/kg/day	8.5E-05
				Antimony	1E-03	mg/L	4.15E-09	mg/kg/day	---	(mg/kg-day)-1		1.16E-08	mg/kg/day	---	mg/kg/day	
				Arsenic	1E-03	mg/L	3.55E-09	mg/kg/day	---	(mg/kg-day)-1		9.93E-09	mg/kg/day	---	mg/kg/day	
				Cadmium	5E-02	mg/L	1.56E-07	mg/kg/day	---	(mg/kg-day)-1		4.37E-07	mg/kg/day	1.0E-03	mg/kg/day	4.4E-04
				Chromium	5E-03	mg/L	3.04E-08	mg/kg/day	---	(mg/kg-day)-1		8.52E-08	mg/kg/day	3.0E-03	mg/kg/day	2.8E-05
				Iron	1E+01	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	7.0E-01	mg/kg/day	
				Manganese	9E-02	mg/L	2.69E-07	mg/kg/day	---	(mg/kg-day)-1		7.53E-07	mg/kg/day	---	mg/kg/day	
				Nickel	1E-02	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	3.0E-03	mg/kg/day	
				Vanadium	1E-03	mg/L	3.43E-09	mg/kg/day	---	(mg/kg-day)-1		9.61E-09	mg/kg/day	7.0E-03	mg/kg/day	1.4E-06
			Exp. Route Total								1.1E-04					4.9E-01
		Exposure Point Total									5.3E-03					4.4E+01
	Exposure Medium Total										5.3E-03					4.4E+01

TABLE 7.6.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Industrial/Commercial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Air	Vapor Intrusion from On-Site Groundwater	Inhalation	Benzene	4E+00	ug/L	1.71E-04	mg/kg/day	5.5E-02	(mg/kg-day)-1	9.4E-06	4.77E-04	mg/kg/day	4.0E-03	mg/kg/day	1.2E-01
				cis-1,2-Dichloroethene	6E+02	ug/L	2.75E-02	mg/kg/day	---	(mg/kg-day)-1		7.69E-02	mg/kg/day	1.0E-02	mg/kg/day	7.7E+00
				Ethylbenzene	1E+03	ug/L	5.63E-02	mg/kg/day	---	(mg/kg-day)-1		1.58E-01	mg/kg/day	1.0E-01	mg/kg/day	1.6E+00
				Isopropylbenzene	2E+01	ug/L	8.81E-04	mg/kg/day	---	(mg/kg-day)-1		2.47E-03	mg/kg/day	1.0E-01	mg/kg/day	2.5E-02
				Tetrachloroethene	2E+03	ug/L	8.09E-02	mg/kg/day	5.4E-01	(mg/kg-day)-1	4.4E-02	2.26E-01	mg/kg/day	1.0E-02	mg/kg/day	2.3E+01
				Trichloroethene	1E+03	ug/L	5.03E-02	mg/kg/day	4.0E-01	(mg/kg-day)-1	2.0E-02	1.41E-01	mg/kg/day	3.0E-04	mg/kg/day	4.7E+02
				Vinyl Chloride	3E+00	ug/L	1.09E-04	mg/kg/day	7.0E-01	(mg/kg-day)-1	7.6E-05	3.04E-04	mg/kg/day	3.0E-03	mg/kg/day	1.0E-01
				Xylenes (total)	2E+04	ug/L	7.87E-01	mg/kg/day	---	(mg/kg-day)-1		2.20E+00	mg/kg/day	2.0E-01	mg/kg/day	1.1E+01
			Exp. Route Total								6.4E-02					5.1E+02
		Exposure Point Total									6.4E-02					5.1E+02
	Exposure Medium Total										6.4E-02					5.1E+02
Medium Total											6.9E-02					5.6E+02
Surface Soil	Surface Soil	On-Site Surface Soil	Ingestion	Phenanthrene	6E-03	mg/Kg	2E-09	mg/kg/day	---	(mg/kg-day)-1		6.01E-09	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E-03	mg/Kg	5E-10	mg/kg/day	---	(mg/kg-day)-1		1.27E-09	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	2E-03	mg/kg/day	---	(mg/kg-day)-1		4.72E-03	mg/kg/day	1.0E+00	mg/kg/day	4.7E-03
				Arsenic	2E+00	mg/Kg	6E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	8.5E-07	1.59E-06	mg/kg/day	3.0E-04	mg/kg/day	5.3E-03
				Chromium	2E+02	mg/Kg	7E-05	mg/kg/day	---	(mg/kg-day)-1		2.09E-04	mg/kg/day	3.0E-03	mg/kg/day	7.0E-02
				Iron	6E+03	mg/Kg	2E-03	mg/kg/day	---	(mg/kg-day)-1		5.64E-03	mg/kg/day	7.0E-01	mg/kg/day	8.1E-03
				Lead	1E+01	mg/Kg	5E-06	mg/kg/day	---	(mg/kg-day)-1		1.46E-05	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	4E-06	mg/kg/day	---	(mg/kg-day)-1		1.01E-05	mg/kg/day	7.0E-03	mg/kg/day	1.4E-03
			Exp. Route Total								8.5E-07					8.9E-02
			Dermal	Phenanthrene	6E-03	mg/Kg	1E-09	mg/kg/day	---	(mg/kg-day)-1		3.97E-09	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E-03	mg/Kg	4E-10	mg/kg/day	---	(mg/kg-day)-1		1.18E-09	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Arsenic	2E+00	mg/Kg	1E-07	mg/kg/day	3.7E+00	(mg/kg-day)-1	4.1E-07	3.16E-07	mg/kg/day	3.0E-04	mg/kg/day	1.1E-03
				Chromium	2E+02	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Iron	6E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Lead	1E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	7.0E-03	mg/kg/day	
			Exp. Route Total								4.1E-07					1.1E-03
			Inhalation	Phenanthrene	6E-03	mg/Kg	2E-13	mg/kg/day	---	(mg/kg-day)-1		5.30E-13	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E-03	mg/Kg	4E-14	mg/kg/day	---	(mg/kg-day)-1		1.12E-13	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	1E-07	mg/kg/day	---	(mg/kg-day)-1		4.17E-07	mg/kg/day	1.4E-03	mg/kg/day	2.9E-04
				Arsenic	2E+00	mg/Kg	5E-11	mg/kg/day	1.5E+01	(mg/kg-day)-1	7.6E-10	1.41E-10	mg/kg/day	---	mg/kg/day	
				Chromium	2E+02	mg/Kg	7E-09	mg/kg/day	4.2E+01	(mg/kg-day)-1	2.8E-07	1.84E-08	mg/kg/day	2.3E-06	mg/kg/day	8.1E-03
				Iron	6E+03	mg/Kg	2E-07	mg/kg/day	---	(mg/kg-day)-1		4.98E-07	mg/kg/day	---	mg/kg/day	
				Lead	1E+01	mg/Kg	5E-10	mg/kg/day	---	(mg/kg-day)-1		1.29E-09	mg/kg/day	---	mg/kg/day	
				Nickel	4E+00	mg/Kg	1E-10	mg/kg/day	8.4E-04	(mg/kg-day)-1	1.2E-13	3.87E-10	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	3E-10	mg/kg/day	---	(mg/kg-day)-1		8.91E-10	mg/kg/day	---	mg/kg/day	
			Exp. Route Total								2.8E-07					8.3E-03
		Exposure Point Total									1.3E-06					9.0E-02
	Exposure Medium Total										1.3E-06					9.0E-02
Medium Total											1.3E-06					9.0E-02
Receptor Total											6.9E-02					5.6E+02

TABLE 7.7.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	On-Site Surface Soil	Ingestion	Phenanthrene	6E-03	mg/Kg	2.83E-10	mg/kg/day	---	(mg/kg-day)-1		1.98E-08	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E-03	mg/Kg	6.00E-11	mg/kg/day	---	(mg/kg-day)-1		4.20E-09	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	2.23E-04	mg/kg/day	---	(mg/kg-day)-1		1.56E-02	mg/kg/day	1.0E+00	mg/kg/day	1.6E-02
				Arsenic	2E+00	mg/Kg	7.52E-08	mg/kg/day	1.5E+00	(mg/kg-day)-1	1.1E-07	5.26E-06	mg/kg/day	3.0E-04	mg/kg/day	1.8E-02
				Chromium	2E+02	mg/Kg	9.86E-06	mg/kg/day	---	(mg/kg-day)-1		6.90E-04	mg/kg/day	3.0E-03	mg/kg/day	2.3E-01
				Iron	6E+03	mg/Kg	2.66E-04	mg/kg/day	---	(mg/kg-day)-1		1.86E-02	mg/kg/day	7.0E-01	mg/kg/day	2.7E-02
				Lead	1E+01	mg/Kg	6.90E-07	mg/kg/day	---	(mg/kg-day)-1		4.83E-05	mg/kg/day	---	mg/kg/day	
				Nickel	4E+00	mg/Kg	2.07E-07	mg/kg/day	---	(mg/kg-day)-1		1.45E-05	mg/kg/day	2.0E-02	mg/kg/day	7.2E-04
				Vanadium	1E+01	mg/Kg	4.76E-07	mg/kg/day	---	(mg/kg-day)-1		3.33E-05	mg/kg/day	7.0E-03	mg/kg/day	4.8E-03
			Exp. Route Total								1.1E-07					3.0E-01
			Dermal	Phenanthrene	6E-03	mg/Kg	5.66E-11	mg/kg/day	---	(mg/kg-day)-1		3.97E-09	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E-03	mg/Kg	1.68E-11	mg/kg/day	---	(mg/kg-day)-1		1.18E-09	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Arsenic	2E+00	mg/Kg	4.51E-09	mg/kg/day	3.7E+00	(mg/kg-day)-1	1.7E-08	3.16E-07	mg/kg/day	3.0E-04	mg/kg/day	1.1E-03
				Chromium	2E+02	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Iron	6E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Lead	1E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Nickel	4E+00	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	7.0E-03	mg/kg/day	
			Exp. Route Total								1.7E-08					1.1E-03
			Inhalation	Phenanthrene	6E-03	mg/Kg	4.34E-11	mg/kg/day	---	(mg/kg-day)-1		3.04E-09	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E-03	mg/Kg	9.19E-12	mg/kg/day	---	(mg/kg-day)-1		6.43E-10	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	3.41E-05	mg/kg/day	---	(mg/kg-day)-1		2.39E-03	mg/kg/day	1.4E-03	mg/kg/day	1.7E+00
				Arsenic	2E+00	mg/Kg	1.15E-08	mg/kg/day	1.5E+01	(mg/kg-day)-1	1.7E-07	8.07E-07	mg/kg/day	---	mg/kg/day	
				Chromium	2E+02	mg/Kg	1.51E-06	mg/kg/day	4.2E+01	(mg/kg-day)-1	6.3E-05	1.06E-04	mg/kg/day	2.3E-06	mg/kg/day	4.6E+01
				Iron	6E+03	mg/Kg	4.08E-05	mg/kg/day	---	(mg/kg-day)-1		2.85E-03	mg/kg/day	---	mg/kg/day	
				Lead	1E+01	mg/Kg	1.06E-07	mg/kg/day	---	(mg/kg-day)-1		7.40E-06	mg/kg/day	---	mg/kg/day	
				Nickel	4E+00	mg/Kg	3.17E-08	mg/kg/day	8.4E-04	(mg/kg-day)-1	2.7E-11	2.22E-06	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	7.30E-08	mg/kg/day	---	(mg/kg-day)-1		5.11E-06	mg/kg/day	---	mg/kg/day	
			Exp. Route Total								6.4E-05					4.8E+01
		Exposure Point Total									6.4E-05					4.8E+01
	Exposure Medium Total										6.4E-05					4.8E+01
Medium Total											6.4E-05					4.8E+01

TABLE 7.7.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Subsurface Soil	Subsurface Soil	On-Site Subsurface Soil	Ingestion	Arsenic	7E-01	mg/Kg	3.37E-08	mg/kg/day	1.5E+00	(mg/kg-day)-1	5.1E-08	2.36E-06	mg/kg/day	3.0E-04	mg/kg/day	7.9E-03
				Chromium	9E+00	mg/Kg	4.11E-07	mg/kg/day	---	(mg/kg-day)-1		2.88E-05	mg/kg/day	3.0E-03	mg/kg/day	9.6E-03
				Iron	5E+03	mg/Kg	2.50E-04	mg/kg/day	---	(mg/kg-day)-1		1.75E-02	mg/kg/day	7.0E-01	mg/kg/day	2.5E-02
				Nickel	6E-01	mg/Kg	2.91E-08	mg/kg/day	---	(mg/kg-day)-1		2.03E-06	mg/kg/day	2.0E-02	mg/kg/day	1.0E-04
				Vanadium	6E+00	mg/Kg	2.81E-07	mg/kg/day	---	(mg/kg-day)-1		1.97E-05	mg/kg/day	7.0E-03	mg/kg/day	2.8E-03
			Exp. Route Total								5.1E-08					4.5E-02
			Dermal	Arsenic	7E-01	mg/Kg	2.02E-09	mg/kg/day	3.7E+00	(mg/kg-day)-1	7.4E-09	1.41E-07	mg/kg/day	3.0E-04	mg/kg/day	4.7E-04
				Chromium	9E+00	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Iron	5E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Nickel	6E-01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Vanadium	6E+00	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	7.0E-03	mg/kg/day	
			Exp. Route Total								7.4E-09					4.7E-04
			Inhalation	Arsenic	7E-01	mg/Kg	5.16E-09	mg/kg/day	1.5E+01	(mg/kg-day)-1	7.8E-08	3.61E-07	mg/kg/day	---	mg/kg/day	
				Chromium	9E+00	mg/Kg	6.30E-08	mg/kg/day	4.2E+01	(mg/kg-day)-1	2.6E-06	4.41E-06	mg/kg/day	2.3E-06	mg/kg/day	1.9E+00
				Iron	5E+03	mg/Kg	3.84E-05	mg/kg/day	---	(mg/kg-day)-1		2.69E-03	mg/kg/day	---	mg/kg/day	
				Nickel	6E-01	mg/Kg	4.45E-09	mg/kg/day	8.4E-04	(mg/kg-day)-1	3.7E-12	3.12E-07	mg/kg/day	---	mg/kg/day	
				Vanadium	6E+00	mg/Kg	4.31E-08	mg/kg/day	---	(mg/kg-day)-1		3.01E-06	mg/kg/day	---	mg/kg/day	
			Exp. Route Total								2.7E-06					1.9E+00
		Exposure Point Total									2.8E-06					2.0E+00
	Exposure Medium Total										2.8E-06					2.0E+00
Medium Total											2.8E-06					2.0E+00
Receptor Total											6.7E-05					5.0E+01

TABLE 7.1.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Current
Receptor Population:	Industrial/Commercial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	On-Site Surface Soil	Ingestion	Phenanthrene	6E+03	mg/Kg	6.77E-04	mg/kg/day	---	(mg/kg-day)-1		5.26E-03	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E+03	mg/Kg	1.43E-04	mg/kg/day	---	(mg/kg-day)-1		1.11E-03	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	5.32E-04	mg/kg/day	---	(mg/kg-day)-1		4.14E-03	mg/kg/day	1.0E+00	mg/kg/day	4.1E-03
				Arsenic	2E+00	mg/Kg	1.80E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	2.7E-07	1.40E-06	mg/kg/day	3.0E-04	mg/kg/day	4.7E-03
				Chromium	2E+02	mg/Kg	2.35E-05	mg/kg/day	---	(mg/kg-day)-1		1.83E-04	mg/kg/day	3.0E-03	mg/kg/day	6.1E-02
				Iron	6E+03	mg/Kg	6.36E-04	mg/kg/day	---	(mg/kg-day)-1		4.94E-03	mg/kg/day	7.0E-01	mg/kg/day	7.1E-03
				Lead	1E+01	mg/Kg	1.65E-06	mg/kg/day	---	(mg/kg-day)-1		1.28E-05	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	1.14E-06	mg/kg/day	---	(mg/kg-day)-1		8.85E-06	mg/kg/day	7.0E-03	mg/kg/day	1.3E-03
			Exp. Route Total								2.7E-07					7.8E-02
			Dermal	Phenanthrene	6E+03	mg/Kg	4.47E-05	mg/kg/day	---	(mg/kg-day)-1		3.47E-04	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E+03	mg/Kg	1.32E-05	mg/kg/day	---	(mg/kg-day)-1		1.03E-04	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Arsenic	2E+00	mg/Kg	3.56E-09	mg/kg/day	3.7E+00	(mg/kg-day)-1	1.3E-08	2.77E-08	mg/kg/day	3.0E-04	mg/kg/day	9.2E-05
				Chromium	2E+02	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Iron	6E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Lead	1E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	7.0E-03	mg/kg/day	
			Exp. Route Total								1.3E-08					9.2E-05
			Inhalation	Phenanthrene	6E+03	mg/Kg	5.97E-08	mg/kg/day	---	(mg/kg-day)-1		4.64E-07	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E+03	mg/Kg	1.26E-08	mg/kg/day	---	(mg/kg-day)-1		9.83E-08	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	4.69E-08	mg/kg/day	---	(mg/kg-day)-1		3.65E-07	mg/kg/day	1.4E-03	mg/kg/day	2.6E-04
				Arsenic	2E+00	mg/Kg	1.58E-11	mg/kg/day	1.5E+01	(mg/kg-day)-1	2.4E-10	1.23E-10	mg/kg/day	---	mg/kg/day	
				Chromium	2E+02	mg/Kg	2.08E-09	mg/kg/day	4.2E+01	(mg/kg-day)-1	8.7E-08	1.62E-08	mg/kg/day	2.3E-06	mg/kg/day	7.1E-03
				Iron	6E+03	mg/Kg	5.61E-08	mg/kg/day	---	(mg/kg-day)-1		4.36E-07	mg/kg/day	---	mg/kg/day	
				Lead	1E+01	mg/Kg	1.45E-10	mg/kg/day	---	(mg/kg-day)-1		1.13E-09	mg/kg/day	---	mg/kg/day	
				Nickel	4E+00	mg/Kg	4.36E-11	mg/kg/day	8.4E-04	(mg/kg-day)-1	3.7E-14	3.39E-10	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	1.00E-10	mg/kg/day	---	(mg/kg-day)-1		7.81E-10	mg/kg/day	---	mg/kg/day	
			Exp. Route Total								8.7E-08					7.3E-03
		Exposure Point Total									3.7E-07					8.6E-02
	Exposure Medium Total										3.7E-07					8.6E-02
Medium and Receptor Total											3.7E-07					8.6E-02

TABLE 7.2.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Current and Future
Receptor Population:	Trespasser
Receptor Age:	Pre-adolescent (7-12 yrs)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	On-Site Surface Soil	Ingestion	Phenanthrene	6E-03	mg/Kg	2.14E-10	mg/kg/day	---	(mg/kg-day)-1		2.50E-09	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E-03	mg/Kg	4.54E-11	mg/kg/day	---	(mg/kg-day)-1		5.29E-10	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	1.68E-04	mg/kg/day	---	(mg/kg-day)-1		1.96E-03	mg/kg/day	1.0E+00	mg/kg/day	2.0E-03
				Arsenic	2E+00	mg/Kg	5.69E-08	mg/kg/day	1.5E+00	(mg/kg-day)-1	8.5E-08	6.63E-07	mg/kg/day	3.0E-04	mg/kg/day	2.2E-03
				Chromium	2E+02	mg/Kg	7.45E-06	mg/kg/day	---	(mg/kg-day)-1		8.70E-05	mg/kg/day	3.0E-03	mg/kg/day	2.9E-02
				Iron	6E+03	mg/Kg	2.01E-04	mg/kg/day	---	(mg/kg-day)-1		2.35E-03	mg/kg/day	7.0E-01	mg/kg/day	3.4E-03
				Lead	1E+01	mg/Kg	5.22E-07	mg/kg/day	---	(mg/kg-day)-1		6.09E-06	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	3.60E-07	mg/kg/day	---	(mg/kg-day)-1		4.20E-06	mg/kg/day	7.0E-03	mg/kg/day	6.0E-04
			Exp. Route Total								8.5E-08					3.7E-02
			Dermal	Phenanthrene	6E-03	mg/Kg	2.06E-10	mg/kg/day	---	(mg/kg-day)-1		2.40E-09	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E-03	mg/Kg	6.10E-11	mg/kg/day	---	(mg/kg-day)-1		7.11E-10	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Arsenic	2E+00	mg/Kg	1.64E-08	mg/kg/day	3.7E+00	(mg/kg-day)-1	6.0E-08	1.91E-07	mg/kg/day	3.0E-04	mg/kg/day	6.4E-04
				Chromium	2E+02	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Iron	6E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Lead	1E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	7.0E-03	mg/kg/day	
			Exp. Route Total								6.0E-08					6.4E-04
			Inhalation	Phenanthrene	6E-03	mg/Kg	7.56E-15	mg/kg/day	---	(mg/kg-day)-1		8.82E-14	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E-03	mg/Kg	1.60E-15	mg/kg/day	---	(mg/kg-day)-1		1.87E-14	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	5.94E-09	mg/kg/day	---	(mg/kg-day)-1		6.93E-08	mg/kg/day	1.4E-03	mg/kg/day	4.9E-05
				Arsenic	2E+00	mg/Kg	2.01E-12	mg/kg/day	1.5E+01	(mg/kg-day)-1	3.0E-11	2.34E-11	mg/kg/day	---	mg/kg/day	
				Chromium	2E+02	mg/Kg	2.63E-10	mg/kg/day	4.2E+01	(mg/kg-day)-1	1.1E-08	3.07E-09	mg/kg/day	2.3E-06	mg/kg/day	1.3E-03
				Iron	6E+03	mg/Kg	7.10E-09	mg/kg/day	---	(mg/kg-day)-1		8.29E-08	mg/kg/day	---	mg/kg/day	
				Lead	1E+01	mg/Kg	1.84E-11	mg/kg/day	---	(mg/kg-day)-1		2.15E-10	mg/kg/day	---	mg/kg/day	
				Nickel	4E+00	mg/Kg	5.52E-12	mg/kg/day	8.4E-04	(mg/kg-day)-1	4.6E-15	6.44E-11	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	1.27E-11	mg/kg/day	---	(mg/kg-day)-1		1.48E-10	mg/kg/day	---	mg/kg/day	
			Exp. Route Total								1.1E-08					1.4E-03
		Exposure Point Total									1.6E-07					3.9E-02
	Exposure Medium Total										1.6E-07					3.9E-02
Medium Total											1.6E-07					3.9E-02

TABLE 7.2.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Current and Future
Receptor Population:	Trespasser
Receptor Age:	Pre-adolescent (7-12 yrs)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Pump Branch Creek	Ingestion	Acenaphthylene	4E-02	mg/Kg	1.27E-09	mg/kg/day	---	(mg/kg-day)-1		1.49E-08	mg/kg/day	---	mg/kg/day	
				Benzo(a)Pyrene	2E-01	mg/Kg	5.41E-09	mg/kg/day	7.3E+00	(mg/kg-day)-1	3.9E-08	6.31E-08	mg/kg/day	---	mg/kg/day	
				Benzo(g,h,i)Perylene	7E-02	mg/Kg	2.44E-09	mg/kg/day	---	(mg/kg-day)-1		2.85E-08	mg/kg/day	---	mg/kg/day	
				Phenanthrene	2E-01	mg/Kg	5.58E-09	mg/kg/day	---	(mg/kg-day)-1		6.51E-08	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	8E-03	mg/Kg	2.93E-10	mg/kg/day	---	(mg/kg-day)-1		3.42E-09	mg/kg/day	---	mg/kg/day	
				Aluminum	9E+03	mg/Kg	3.30E-04	mg/kg/day	---	(mg/kg-day)-1		3.85E-03	mg/kg/day	1.0E+00	mg/kg/day	3.8E-03
				Arsenic	1E+01	mg/Kg	3.52E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	5.3E-07	4.11E-06	mg/kg/day	3.0E-04	mg/kg/day	1.4E-02
				Iron	1E+04	mg/Kg	3.73E-04	mg/kg/day	---	(mg/kg-day)-1		4.35E-03	mg/kg/day	7.0E-01	mg/kg/day	6.2E-03
				Lead	2E+02	mg/Kg	5.76E-06	mg/kg/day	---	(mg/kg-day)-1		6.72E-05	mg/kg/day	---	mg/kg/day	
				Vanadium	4E+01	mg/Kg	1.28E-06	mg/kg/day	---	(mg/kg-day)-1		1.49E-05	mg/kg/day	3.0E-03	mg/kg/day	5.0E-03
			Exp. Route Total								5.7E-07					2.9E-02
			Dermal	Acenaphthylene	4E-02	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Benzo(a)Pyrene	2E-01	mg/Kg	---	mg/kg/day	7.3E+00	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Benzo(g,h,i)Perylene	7E-02	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Phenanthrene	2E-01	mg/Kg	5.36E-09	mg/kg/day	---	(mg/kg-day)-1		6.25E-08	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	8E-03	mg/Kg	3.94E-10	mg/kg/day	---	(mg/kg-day)-1		4.60E-09	mg/kg/day	---	mg/kg/day	
				Aluminum	9E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Arsenic	1E+01	mg/Kg	1.01E-07	mg/kg/day	3.7E+00	(mg/kg-day)-1	3.7E-07	1.18E-06	mg/kg/day	3.0E-04	mg/kg/day	3.9E-03
				Iron	1E+04	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Lead	2E+02	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Vanadium	4E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	7.0E-03	mg/kg/day	
			Exp. Route Total								3.7E-07					3.9E-03
		Exposure Point Total									9.4E-07					3.3E-02
	Exposure Medium Total										9.4E-07					3.3E-02
Medium Total											9.4E-07					3.3E-02
Surface Water	Surface Water	Pump Branch Creek	Ingestion	Arsenic	1E-02	mg/L	1.92E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	2.9E-07	2.24E-06	mg/kg/day	3.0E-04	mg/kg/day	7.5E-03
				Iron	2E+01	mg/L	3.93E-04	mg/kg/day	---	(mg/kg-day)-1		4.58E-03	mg/kg/day	7.0E-01	mg/kg/day	6.5E-03
				Lead	2E-02	mg/L	3.98E-07	mg/kg/day	---	(mg/kg-day)-1		4.64E-06	mg/kg/day	---	mg/kg/day	
				Vanadium	1E-02	mg/L	2.41E-07	mg/kg/day	---	(mg/kg-day)-1		2.81E-06	mg/kg/day	7.0E-03	mg/kg/day	4.0E-04
			Exp. Route Total								2.9E-07					1.4E-02
			Dermal	Arsenic	1E-02	mg/Kg	7.37E-08	mg/kg/day	3.7E+00	(mg/kg-day)-1	2.7E-07	8.60E-07	mg/kg/day	3.0E-04	mg/kg/day	2.9E-03
				Iron	2E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Lead	2E-02	mg/Kg	1.53E-08	mg/kg/day	---	(mg/kg-day)-1		1.78E-07	mg/kg/day	---	mg/kg/day	
				Vanadium	1E-02	mg/Kg	9.24E-08	mg/kg/day	---	(mg/kg-day)-1		1.08E-06	mg/kg/day	7.0E-03	mg/kg/day	1.5E-04
			Exp. Route Total								2.7E-07					3.0E-03
		Exposure Point Total									5.6E-07					1.7E-02
	Exposure Medium Total										5.6E-07					1.7E-02
Medium Total											5.6E-07					1.7E-02
Receptor Total											1.7E-06					8.9E-02

TABLE 7.3.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Current and Future
Receptor Population:	Trespasser
Receptor Age:	Adolescent (13-18 yrs)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	On-Site Surface Soil	Ingestion	Phenanthrene	6E-03	mg/Kg	1.91E-10	mg/kg/day	---	(mg/kg-day)-1		2.22E-09	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E-03	mg/Kg	4.04E-11	mg/kg/day	---	(mg/kg-day)-1		4.71E-10	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	1.50E-04	mg/kg/day	---	(mg/kg-day)-1		1.75E-03	mg/kg/day	1.0E+00	mg/kg/day	1.7E-03
				Arsenic	2E+00	mg/Kg	5.06E-08	mg/kg/day	1.5E+00	(mg/kg-day)-1	7.6E-08	5.90E-07	mg/kg/day	3.0E-04	mg/kg/day	2.0E-03
				Chromium	2E+02	mg/Kg	6.63E-06	mg/kg/day	---	(mg/kg-day)-1		7.74E-05	mg/kg/day	3.0E-03	mg/kg/day	2.6E-02
				Iron	6E+03	mg/Kg	1.79E-04	mg/kg/day	---	(mg/kg-day)-1		2.09E-03	mg/kg/day	7.0E-01	mg/kg/day	3.0E-03
				Lead	1E+01	mg/Kg	4.64E-07	mg/kg/day	---	(mg/kg-day)-1		5.42E-06	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	3.20E-07	mg/kg/day	---	(mg/kg-day)-1		3.74E-06	mg/kg/day	7.0E-03	mg/kg/day	5.3E-04
			Exp. Route Total								7.6E-08					3.3E-02
			Dermal	Phenanthrene	6E-03	mg/Kg	8.94E-11	mg/kg/day	---	(mg/kg-day)-1		1.04E-09	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E-03	mg/Kg	2.65E-11	mg/kg/day	---	(mg/kg-day)-1		3.09E-10	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Arsenic	2E+00	mg/Kg	7.12E-09	mg/kg/day	3.7E+00	(mg/kg-day)-1	2.6E-08	8.31E-08	mg/kg/day	3.0E-04	mg/kg/day	2.8E-04
				Chromium	2E+02	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Iron	6E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Lead	1E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	7.0E-03	mg/kg/day	
			Exp. Route Total								2.6E-08					2.8E-04
			Inhalation	Phenanthrene	6E-03	mg/Kg	5.97E-14	mg/kg/day	---	(mg/kg-day)-1		9.81E-14	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E-03	mg/Kg	1.78E-15	mg/kg/day	---	(mg/kg-day)-1		2.08E-14	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	6.61E-09	mg/kg/day	---	(mg/kg-day)-1		7.71E-08	mg/kg/day	1.4E-03	mg/kg/day	5.4E-05
				Arsenic	2E+00	mg/Kg	2.23E-12	mg/kg/day	1.5E+01	(mg/kg-day)-1	3.4E-11	2.60E-11	mg/kg/day	---	mg/kg/day	
				Chromium	2E+02	mg/Kg	2.93E-10	mg/kg/day	4.2E+01	(mg/kg-day)-1	1.2E-08	3.41E-09	mg/kg/day	2.3E-06	mg/kg/day	1.5E-03
				Iron	6E+03	mg/Kg	7.90E-09	mg/kg/day	---	(mg/kg-day)-1		9.22E-08	mg/kg/day	---	mg/kg/day	
				Lead	1E+01	mg/Kg	2.05E-11	mg/kg/day	---	(mg/kg-day)-1		2.39E-10	mg/kg/day	---	mg/kg/day	
				Nickel	4E+00	mg/Kg	6.14E-12	mg/kg/day	8.4E-04	(mg/kg-day)-1	5.2E-15	7.16E-11	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	1.41E-11	mg/kg/day	---	(mg/kg-day)-1		1.65E-10	mg/kg/day	---	mg/kg/day	
			Exp. Route Total								1.2E-08					1.5E-03
		Exposure Point Total									1.1E-07					3.5E-02
	Exposure Medium Total										1.1E-07					3.5E-02
Medium Total											1.1E-07					3.5E-02

TABLE 7.3.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Current and Future
Receptor Population: Trespasser
Receptor Age: Adolescent (13-18 yrs)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment	Pump Branch Creek	Ingestion	Acenaphthylene	4E-02	mg/Kg	1.13E-09	mg/kg/day	---	(mg/kg-day)-1		1.32E-08	mg/kg/day	---	mg/kg/day	
				Benzo(a)Pyrene	2E-01	mg/Kg	4.81E-09	mg/kg/day	7.3E+00	(mg/kg-day)-1	3.5E-08	5.61E-08	mg/kg/day	---	mg/kg/day	
				Benzo(g,h,i)Perylene	7E-02	mg/Kg	2.17E-09	mg/kg/day	---	(mg/kg-day)-1		2.54E-08	mg/kg/day	---	mg/kg/day	
				Phenanthrene	2E-01	mg/Kg	4.97E-09	mg/kg/day	---	(mg/kg-day)-1		5.80E-08	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	8E-03	mg/Kg	2.61E-10	mg/kg/day	---	(mg/kg-day)-1		3.04E-09	mg/kg/day	---	mg/kg/day	
				Aluminum	9E+03	mg/Kg	2.94E-04	mg/kg/day	---	(mg/kg-day)-1		3.42E-03	mg/kg/day	1.0E+00	mg/kg/day	3.4E-03
				Arsenic	1E+01	mg/Kg	3.14E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	4.7E-07	3.66E-06	mg/kg/day	3.0E-04	mg/kg/day	1.2E-02
				Iron	1E+04	mg/Kg	3.32E-04	mg/kg/day	---	(mg/kg-day)-1		3.87E-03	mg/kg/day	7.0E-01	mg/kg/day	5.5E-03
				Lead	2E+02	mg/Kg	5.12E-06	mg/kg/day	---	(mg/kg-day)-1		5.98E-05	mg/kg/day	---	mg/kg/day	
				Vanadium	4E+01	mg/Kg	1.14E-06	mg/kg/day	---	(mg/kg-day)-1		1.33E-05	mg/kg/day	7.0E-03	mg/kg/day	1.9E-03
			Exp. Route Total								5.1E-07					2.3E-02
			Dermal	Acenaphthylene	4E-02	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Benzo(a)Pyrene	2E-01	mg/Kg	---	mg/kg/day	7.3E+00	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Benzo(g,h,i)Perylene	7E-02	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Phenanthrene	2E-01	mg/Kg	6.66E-09	mg/kg/day	---	(mg/kg-day)-1		7.77E-08	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	8E-03	mg/Kg	4.89E-10	mg/kg/day	---	(mg/kg-day)-1		5.71E-09	mg/kg/day	---	mg/kg/day	
				Aluminum	9E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Arsenic	1E+01	mg/Kg	1.26E-07	mg/kg/day	3.7E+00	(mg/kg-day)-1	4.6E-07	1.47E-06	mg/kg/day	3.0E-04	mg/kg/day	4.9E-03
				Iron	1E+04	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Lead	2E+02	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Vanadium	4E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	7.0E-03	mg/kg/day	
			Exp. Route Total								4.6E-07					4.9E-03
		Exposure Point Total									9.7E-07					2.8E-02
	Exposure Medium Total										9.7E-07					2.8E-02
Medium Total											9.7E-07					2.8E-02
Surface Water	Surface Water	Pump Branch Creek	Ingestion	Arsenic	1E-02	mg/L	1.71E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	2.6E-07	1.99E-06	mg/kg/day	3.0E-04	mg/kg/day	6.6E-03
				Iron	2E+01	mg/L	3.49E-04	mg/kg/day	---	(mg/kg-day)-1		4.07E-03	mg/kg/day	7.0E-01	mg/kg/day	5.8E-03
				Lead	2E-02	mg/L	3.54E-07	mg/kg/day	---	(mg/kg-day)-1		4.13E-06	mg/kg/day	---	mg/kg/day	
				Vanadium	1E-02	mg/L	2.14E-07	mg/kg/day	---	(mg/kg-day)-1		2.50E-06	mg/kg/day	7.0E-03	mg/kg/day	3.6E-04
			Exp. Route Total								2.6E-07					1.3E-02
			Dermal	Arsenic	1E-02	mg/Kg	9.15E-08	mg/kg/day	3.7E+00	(mg/kg-day)-1	3.3E-07	1.07E-06	mg/kg/day	3.0E-04	mg/kg/day	3.6E-03
				Iron	2E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Lead	2E-02	mg/Kg	1.90E-08	mg/kg/day	---	(mg/kg-day)-1		2.21E-07	mg/kg/day	---	mg/kg/day	
				Vanadium	1E-02	mg/Kg	1.15E-07	mg/kg/day	---	(mg/kg-day)-1		1.34E-06	mg/kg/day	7.0E-03	mg/kg/day	1.9E-04
			Exp. Route Total								3.3E-07					3.8E-03
		Exposure Point Total									5.9E-07					1.7E-02
	Exposure Medium Total										5.9E-07					1.7E-02
Medium Total											5.9E-07					1.7E-02
Receptor Total											1.7E-06					7.9E-02

TABLE 7.4.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	Groundwater/ Water Vapors from Showering with Groundwater	Ingestion	1,1,2-Trichloroethane	1E-03	mg/L	1.05E-06	mg/kg/day	---	(mg/kg-day)-1		2.45E-05	mg/kg/day	---	(mg/kg-day)-1	
				1,2,3-Trichlorobenzene	1E-01	mg/L	1.19E-04	mg/kg/day	---	(mg/kg-day)-1		2.77E-03	mg/kg/day	---	mg/kg/day	
				1,2,4-Trichlorobenzene	1E-01	mg/L	1.14E-04	mg/kg/day	---	(mg/kg-day)-1		2.67E-03	mg/kg/day	1.0E-02	mg/kg/day	2.7E-01
				1,2-Dichlorobenzene	2E-02	mg/L	1.78E-05	mg/kg/day	---	(mg/kg-day)-1		4.16E-04	mg/kg/day	9.0E-02	mg/kg/day	4.6E-03
				1,4-Dichlorobenzene	3E-02	mg/L	2.73E-05	mg/kg/day	---	(mg/kg-day)-1		6.37E-04	mg/kg/day	---	mg/kg/day	
				Benzene	4E-02	mg/L	3.49E-05	mg/kg/day	5.5E-02	(mg/kg-day)-1	1.9E-06	8.15E-04	mg/kg/day	4.0E-03	mg/kg/day	2.0E-01
				Chlorobenzene	2E-02	mg/L	1.85E-05	mg/kg/day	---	(mg/kg-day)-1		4.32E-04	mg/kg/day	2.0E-02	mg/kg/day	2.2E-02
				Chloroform	1E-03	mg/L	9.27E-07	mg/kg/day	---	(mg/kg-day)-1		2.16E-05	mg/kg/day	1.0E-02	mg/kg/day	2.2E-03
				cis-1,2-Dichloroethene	5E-01	mg/L	3.84E-04	mg/kg/day	---	(mg/kg-day)-1		8.96E-03	mg/kg/day	1.0E-02	mg/kg/day	9.0E-01
				Ethylbenzene	8E-01	mg/L	6.87E-04	mg/kg/day	---	(mg/kg-day)-1		1.60E-02	mg/kg/day	1.0E-01	mg/kg/day	1.6E-01
				Tetrachloroethene	1E+00	mg/L	1.11E-03	mg/kg/day	5.4E-01	(mg/kg-day)-1	6.0E-04	2.59E-02	mg/kg/day	1.0E-02	mg/kg/day	2.6E+00
				Toluene	1E-01	mg/L	1.23E-04	mg/kg/day	---	(mg/kg-day)-1		2.88E-03	mg/kg/day	8.0E-02	mg/kg/day	3.6E-02
				Trichloroethene	8E-01	mg/L	6.27E-04	mg/kg/day	4.0E-01	(mg/kg-day)-1	2.5E-04	1.46E-02	mg/kg/day	3.0E-04	mg/kg/day	4.9E+01
				Vinyl Chloride	2E-03	mg/L	1.38E-06	mg/kg/day	7.0E-01	(mg/kg-day)-1	9.7E-07	3.23E-05	mg/kg/day	3.0E-03	mg/kg/day	1.1E-02
				Xylenes (total)	1E+01	mg/L	9.53E-03	mg/kg/day	---	(mg/kg-day)-1		2.22E-01	mg/kg/day	2.0E-01	mg/kg/day	1.1E+00
				2,4-Dimethylphenol	7E-02	mg/L	5.79E-05	mg/kg/day	---	(mg/kg-day)-1		1.35E-03	mg/kg/day	2.0E-02	mg/kg/day	6.8E-02
				4-Methylphenol	3E-01	mg/L	2.11E-04	mg/kg/day	---	(mg/kg-day)-1		4.92E-03	mg/kg/day	5.0E-03	mg/kg/day	9.8E-01
				bis(2-Ethylhexyl)Phthalate	3E-03	mg/L	2.08E-06	mg/kg/day	1.4E-02	(mg/kg-day)-1	2.9E-08	4.85E-05	mg/kg/day	2.0E-02	mg/kg/day	2.4E-03
				Naphthalene	3E-03	mg/L	2.63E-06	mg/kg/day	---	(mg/kg-day)-1		6.14E-05	mg/kg/day	2.0E-02	mg/kg/day	3.1E-03
				Iron	1E+01	mg/L	9.02E-03	mg/kg/day	---	(mg/kg-day)-1		2.10E-01	mg/kg/day	7.0E-01	mg/kg/day	3.0E-01
				Antimony	8E-03	mg/L	6.21E-06	mg/kg/day	3.5E-01	(mg/kg-day)-1	2.2E-06	1.45E-04	mg/kg/day	5.0E-04	mg/kg/day	2.9E-01
				Arsenic	3E-03	mg/L	2.73E-06	mg/kg/day	1.5E+00	(mg/kg-day)-1	4.1E-06	6.37E-05	mg/kg/day	3.0E-04	mg/kg/day	2.1E-01
				Cadmium	4E-02	mg/L	2.94E-05	mg/kg/day	---	(mg/kg-day)-1		6.85E-04	mg/kg/day	1.0E-03	mg/kg/day	6.9E-01
				Chromium	6E-03	mg/L	5.27E-06	mg/kg/day	---	(mg/kg-day)-1		1.23E-04	mg/kg/day	3.0E-03	mg/kg/day	4.1E-02
				Lead	4E-03	mg/L	3.56E-06	mg/kg/day	---	(mg/kg-day)-1		8.31E-05	mg/kg/day	---	mg/kg/day	
				Manganese	1E-01	mg/L	1.12E-04	mg/kg/day	---	(mg/kg-day)-1		2.62E-03	mg/kg/day	1.4E-01	mg/kg/day	1.9E-02
				Nickel	1E-02	mg/L	1.03E-05	mg/kg/day	---	(mg/kg-day)-1		2.39E-04	mg/kg/day	2.0E-02	mg/kg/day	1.2E-02
				Thallium	9E-03	mg/L	7.09E-06	mg/kg/day	---	(mg/kg-day)-1		1.66E-04	mg/kg/day	8.0E-05	mg/kg/day	2.1E+00
				Vanadium	8E-03	mg/L	6.79E-06	mg/kg/day	---	(mg/kg-day)-1		1.58E-04	mg/kg/day	3.0E-03	mg/kg/day	5.3E-02
			Exp. Route Total								8.6E-04					5.9E+01

TABLE 7.4.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	Groundwater/ Water Vapors from Showering with Groundwater	Dermal	1,1,2-Trichloroethane	1E-03	mg/L	2.15E-08	mg/kg/day	---	(mg/kg-day)-1		5.01E-07	mg/kg/day	---	(mg/kg-day)-1	
				1,2,3-Trichlorobenzene	1E-01	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				1,2,4-Trichlorobenzene	1E-01	mg/L	2.41E-05	mg/kg/day	---	(mg/kg-day)-1		5.62E-04	mg/kg/day	1.0E-02	mg/kg/day	5.6E-02
				1,2-Dichlorobenzene	2E-02	mg/L	2.33E-06	mg/kg/day	---	(mg/kg-day)-1		5.45E-05	mg/kg/day	9.0E-02	mg/kg/day	6.1E-04
				1,4-Dichlorobenzene	3E-02	mg/L	3.66E-06	mg/kg/day	---	(mg/kg-day)-1		8.54E-05	mg/kg/day	---	mg/kg/day	
				Benzene	4E-02	mg/L	1.67E-06	mg/kg/day	5.5E-02	(mg/kg-day)-1	9.2E-08	3.90E-05	mg/kg/day	4.0E-03	mg/kg/day	9.8E-03
				Chlorobenzene	2E-02	mg/L	1.65E-06	mg/kg/day	---	(mg/kg-day)-1		3.86E-05	mg/kg/day	2.0E-02	mg/kg/day	1.9E-03
				Chloroform	1E-03	mg/L	2.01E-08	mg/kg/day	---	(mg/kg-day)-1		4.69E-07	mg/kg/day	1.0E-02	mg/kg/day	4.7E-05
				cis-1,2-Dichloroethene	5E-01	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	1.0E-02	mg/kg/day	
				Ethylbenzene	8E-01	mg/L	1.07E-04	mg/kg/day	---	(mg/kg-day)-1		2.51E-03	mg/kg/day	1.0E-01	mg/kg/day	2.5E-02
				Tetrachloroethene	1E+00	mg/L	1.17E-04	mg/kg/day	5.4E-01	(mg/kg-day)-1	6.3E-05	2.73E-03	mg/kg/day	1.0E-02	mg/kg/day	2.7E-01
				Toluene	1E-01	mg/L	1.22E-05	mg/kg/day	---	(mg/kg-day)-1		2.84E-04	mg/kg/day	8.0E-02	mg/kg/day	3.6E-03
				Trichloroethene	8E-01	mg/L	2.40E-05	mg/kg/day	4.0E-01	(mg/kg-day)-1	9.6E-06	5.61E-04	mg/kg/day	3.0E-04	mg/kg/day	1.9E+00
				Vinyl Chloride	2E-03	mg/L	2.47E-08	mg/kg/day	7.0E-01	(mg/kg-day)-1	1.7E-08	5.76E-07	mg/kg/day	3.0E-03	mg/kg/day	1.9E-04
				Xylenes (total)	1E+01	mg/L	1.61E-03	mg/kg/day	---	(mg/kg-day)-1		3.76E-02	mg/kg/day	2.0E-01	mg/kg/day	1.9E-01
				2,4-Dimethylphenol	7E-02	mg/L	2.03E-06	mg/kg/day	---	(mg/kg-day)-1		4.75E-05	mg/kg/day	2.0E-02	mg/kg/day	2.4E-03
				4-Methylphenol	3E-01	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	5.0E-03	mg/kg/day	
				bis(2-Ethylhexyl)Phthalate	3E-03	mg/L	---	mg/kg/day	1.4E-02	(mg/kg-day)-1		---	mg/kg/day	2.0E-02	mg/kg/day	
				Naphthalene	3E-03	mg/L	3.95E-07	mg/kg/day	---	(mg/kg-day)-1		9.21E-06	mg/kg/day	2.0E-02	mg/kg/day	4.6E-04
				Iron	1E+01	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	7.0E-01	mg/kg/day	
				Antimony	8E-03	mg/L	1.98E-08	mg/kg/day	3.5E-01	(mg/kg-day)-1	6.9E-09	4.62E-07	mg/kg/day	5.0E-04	mg/kg/day	9.2E-04
				Arsenic	3E-03	mg/L	8.72E-09	mg/kg/day	1.5E+00	(mg/kg-day)-1	1.3E-08	2.03E-07	mg/kg/day	3.0E-04	mg/kg/day	6.8E-04
				Cadmium	4E-02	mg/L	9.38E-08	mg/kg/day	---	(mg/kg-day)-1		2.19E-06	mg/kg/day	1.0E-03	mg/kg/day	2.2E-03
				Chromium	6E-03	mg/L	3.37E-08	mg/kg/day	---	(mg/kg-day)-1		7.85E-07	mg/kg/day	3.0E-03	mg/kg/day	2.6E-04
				Lead	4E-03	mg/L	1.14E-09	mg/kg/day	---	(mg/kg-day)-1		2.65E-08	mg/kg/day	7.0E-01	mg/kg/day	3.8E-08
				Manganese	1E-01	mg/L	3.59E-07	mg/kg/day	3.5E-01	(mg/kg-day)-1	1.3E-07	8.37E-06	mg/kg/day	5.0E-04	mg/kg/day	1.7E-02
				Nickel	1E-02	mg/L	---	mg/kg/day	1.5E+00	(mg/kg-day)-1		---	mg/kg/day	3.0E-04	mg/kg/day	
				Thallium	9E-03	mg/L	2.26E-08	mg/kg/day	---	(mg/kg-day)-1		5.28E-07	mg/kg/day	1.0E-03	mg/kg/day	5.3E-04
				Vanadium	8E-03	mg/L	2.17E-08	mg/kg/day	---	(mg/kg-day)-1		5.05E-07	mg/kg/day	3.0E-03	mg/kg/day	1.7E-04
			Exp. Route Total								7.3E-05					2.5E+00
		Exposure Point Total									9.3E-04					6.1E+01
	Exposure Medium Total										9.3E-04					6.1E+01

TABLE 7.4.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Air	Groundwater/ Water Vapors from Showering with Groundwater	Inhalation	1,1,2-Trichloroethane	7E-03	mg/m3	9.91E-07	mg/kg/day	5.7E-02	(mg/kg-day)-1	5.6E-08	2.31E-05	mg/kg/day	4.0E-03	(mg/kg-day)-1	5.8E-03
				1,2,3-Trichlorobenzene	7E-01	mg/m3	1.08E-04	mg/kg/day	---	(mg/kg-day)-1		2.51E-03	mg/kg/day	---	(mg/kg-day)-1	
				1,2,4-Trichlorobenzene	7E-01	mg/m3	1.03E-04	mg/kg/day	---	(mg/kg-day)-1		2.40E-03	mg/kg/day	1.0E-02	(mg/kg-day)-1	2.4E-01
				1,2-Dichlorobenzene	1E-01	mg/m3	1.58E-05	mg/kg/day	---	(mg/kg-day)-1		3.70E-04	mg/kg/day	9.0E-02	(mg/kg-day)-1	4.1E-03
				1,4-Dichlorobenzene	2E-01	mg/m3	2.43E-05	mg/kg/day	---	(mg/kg-day)-1		5.67E-04	mg/kg/day	---	(mg/kg-day)-1	
				Benzene	2E-01	mg/m3	3.62E-05	mg/kg/day	5.5E-02	(mg/kg-day)-1	2.0E-06	8.44E-04	mg/kg/day	4.0E-03	(mg/kg-day)-1	2.1E-01
				Chlorobenzene	1E-01	mg/m3	1.76E-05	mg/kg/day	---	(mg/kg-day)-1		4.12E-04	mg/kg/day	2.0E-02	(mg/kg-day)-1	2.1E-02
				Chloroform	7E-03	mg/m3	9.71E-07	mg/kg/day	---	(mg/kg-day)-1		2.27E-05	mg/kg/day	1.0E-02	(mg/kg-day)-1	2.3E-03
				cis-1,2-Dichloroethene	3E+00	mg/m3	3.90E-04	mg/kg/day	---	(mg/kg-day)-1		9.10E-03	mg/kg/day	1.0E-02	(mg/kg-day)-1	9.1E-01
				Ethylbenzene	4E+00	mg/m3	6.11E-04	mg/kg/day	---	(mg/kg-day)-1		1.42E-02	mg/kg/day	1.0E-01	(mg/kg-day)-1	1.4E-01
				Tetrachloroethene	7E+00	mg/m3	1.02E-03	mg/kg/day	5.4E-01	(mg/kg-day)-1	5.5E-04	2.39E-02	mg/kg/day	1.0E-02	(mg/kg-day)-1	2.4E+00
				Toluene	8E-01	mg/m3	1.17E-04	mg/kg/day	---	(mg/kg-day)-1		2.73E-03	mg/kg/day	8.0E-02	(mg/kg-day)-1	3.4E-02
				Trichloroethene	4E+00	mg/m3	6.19E-04	mg/kg/day	4.0E-01	(mg/kg-day)-1	2.5E-04	1.44E-02	mg/kg/day	3.0E-04	(mg/kg-day)-1	4.8E+01
				Vinyl Chloride	2E-03	mg/m3	3.58E-07	mg/kg/day	7.0E-01	(mg/kg-day)-1	2.5E-07	8.34E-06	mg/kg/day	---	(mg/kg-day)-1	
				Xylenes (total)	7E+01	mg/m3	9.56E-03	mg/kg/day	---	(mg/kg-day)-1		2.23E-01	mg/kg/day	---	(mg/kg-day)-1	
			Exp. Route Total								8.0E-04					5.2E+01
		Exposure Point Total									8.0E-04					5.2E+01
	Exposure Medium Total										8.0E-04					5.2E+01
Medium and Receptor Total											1.7E-03					1.1E+02

TABLE 7.5.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	Groundwater/ Water Vapors from Showering with Groundwater	Ingestion	1,1,2-Trichloroethane	1E-03	mg/L	4.66E-06	mg/kg/day	5.7E-02	(mg/kg-day)-1	2.7E-07	5.44E-05	mg/kg/day	4.0E-03	(mg/kg-day)-1	1.4E-02
				1,2,3-Trichlorobenzene	1E-01	mg/L	5.27E-04	mg/kg/day	---	(mg/kg-day)-1		6.15E-03	mg/kg/day	---	(mg/kg-day)-1	
				1,2,4-Trichlorobenzene	1E-01	mg/L	5.07E-04	mg/kg/day	---	(mg/kg-day)-1		5.92E-03	mg/kg/day	1.0E-02	(mg/kg-day)-1	5.9E-01
				1,2-Dichlorobenzene	2E-02	mg/L	7.91E-05	mg/kg/day	---	(mg/kg-day)-1		9.23E-04	mg/kg/day	9.0E-02	(mg/kg-day)-1	1.0E-02
				1,4-Dichlorobenzene	3E-02	mg/L	1.21E-04	mg/kg/day	---	(mg/kg-day)-1		1.41E-03	mg/kg/day	---	(mg/kg-day)-1	
				Benzene	4E-02	mg/L	1.55E-04	mg/kg/day	5.5E-02	(mg/kg-day)-1	8.5E-06	1.81E-03	mg/kg/day	4.0E-03	(mg/kg-day)-1	4.5E-01
				Chlorobenzene	2E-02	mg/L	8.21E-05	mg/kg/day	---	(mg/kg-day)-1		9.57E-04	mg/kg/day	2.0E-02	(mg/kg-day)-1	4.8E-02
				Chloroform	1E-03	mg/L	4.11E-06	mg/kg/day	---	(mg/kg-day)-1		4.80E-05	mg/kg/day	1.0E-02	(mg/kg-day)-1	4.8E-03
				cis-1,2-Dichloroethene	5E-01	mg/L	1.70E-03	mg/kg/day	---	(mg/kg-day)-1		1.99E-02	mg/kg/day	1.0E-02	(mg/kg-day)-1	2.0E+00
				Ethylbenzene	8E-01	mg/L	3.05E-03	mg/kg/day	---	(mg/kg-day)-1		3.55E-02	mg/kg/day	1.0E-01	(mg/kg-day)-1	3.6E-01
				Tetrachloroethene	1E+00	mg/L	4.93E-03	mg/kg/day	5.4E-01	(mg/kg-day)-1	2.7E-03	5.75E-02	mg/kg/day	1.0E-02	(mg/kg-day)-1	5.8E+00
				Toluene	1E-01	mg/L	5.46E-04	mg/kg/day	---	(mg/kg-day)-1		6.38E-03	mg/kg/day	8.0E-02	(mg/kg-day)-1	8.0E-02
				Trichloroethene	8E-01	mg/L	2.78E-03	mg/kg/day	4.0E-01	(mg/kg-day)-1	1.1E-03	3.25E-02	mg/kg/day	3.0E-04	(mg/kg-day)-1	1.1E+02
				Vinyl Chloride	2E-03	mg/L	6.13E-06	mg/kg/day	7.0E-01	(mg/kg-day)-1	4.3E-06	7.15E-05	mg/kg/day	3.0E-03	(mg/kg-day)-1	2.4E-02
				Xylenes (total)	1E+01	mg/L	4.23E-02	mg/kg/day	---	(mg/kg-day)-1		4.93E-01	mg/kg/day	2.0E-01	(mg/kg-day)-1	2.5E+00
				2,4-Dimethylphenol	7E-02	mg/L	2.57E-04	mg/kg/day	---	(mg/kg-day)-1		3.00E-03	mg/kg/day	2.0E-02	(mg/kg-day)-1	1.5E-01
				4-Methylphenol	3E-01	mg/L	9.36E-04	mg/kg/day	---	(mg/kg-day)-1		1.09E-02	mg/kg/day	5.0E-03	(mg/kg-day)-1	2.2E+00
				bis(2-Ethylhexyl)Phthalate	3E-03	mg/L	9.21E-06	mg/kg/day	1.4E-02	(mg/kg-day)-1	1.3E-07	1.08E-04	mg/kg/day	2.0E-02	(mg/kg-day)-1	5.4E-03
				Naphthalene	3E-03	mg/L	1.17E-05	mg/kg/day	---	(mg/kg-day)-1		1.36E-04	mg/kg/day	2.0E-02	(mg/kg-day)-1	6.8E-03
				Iron	1E+01	mg/L	4.00E-02	mg/kg/day	---	(mg/kg-day)-1		4.67E-01	mg/kg/day	7.0E-01	(mg/kg-day)-1	6.7E-01
				Antimony	8E-03	mg/L	2.75E-05	mg/kg/day	---	(mg/kg-day)-1		3.21E-04	mg/kg/day	4.0E-04	(mg/kg-day)-1	8.0E-01
				Arsenic	3E-03	mg/L	1.21E-05	mg/kg/day	1.5E+00	(mg/kg-day)-1	1.8E-05	1.41E-04	mg/kg/day	3.0E-04	(mg/kg-day)-1	4.7E-01
				Cadmium	4E-02	mg/L	1.30E-04	mg/kg/day	---	(mg/kg-day)-1		1.52E-03	mg/kg/day	1.0E-03	(mg/kg-day)-1	1.5E+00
				Chromium	6E-03	mg/L	2.34E-05	mg/kg/day	---	(mg/kg-day)-1		2.73E-04	mg/kg/day	3.0E-03	(mg/kg-day)-1	9.1E-02
				Lead	4E-03	mg/L	1.58E-05	mg/kg/day	---	(mg/kg-day)-1		1.84E-04	mg/kg/day	---	(mg/kg-day)-1	
				Manganese	1E-01	mg/L	4.98E-04	mg/kg/day	---	(mg/kg-day)-1		5.82E-03	mg/kg/day	1.4E-01	(mg/kg-day)-1	4.2E-02
				Nickel	1E-02	mg/L	4.55E-05	mg/kg/day	---	(mg/kg-day)-1		5.31E-04	mg/kg/day	2.0E-02	mg/kg/day	2.7E-02
				Thallium	9E-03	mg/L	3.15E-05	mg/kg/day	---	(mg/kg-day)-1		3.67E-04	mg/kg/day	8.0E-05	mg/kg/day	4.6E+00
				Vanadium	8E-03	mg/L	3.01E-05	mg/kg/day	---	(mg/kg-day)-1		3.51E-04	mg/kg/day	3.0E-03	mg/kg/day	1.2E-01
			Exp. Route Total								3.8E-03					1.3E+02

TABLE 7.5.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	Groundwater/ Water Vapors from Showering with Groundwater	Dermal	1,1,2-Trichloroethane	1E-03	mg/L	9.70E-08	mg/kg/day	5.7E-02	(mg/kg-day)-1	5.5E-09	1.13E-06	mg/kg/day	4.0E-03	(mg/kg-day)-1	2.8E-04
				1,2,3-Trichlorobenzene	1E-01	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	(mg/kg-day)-1	
				1,2,4-Trichlorobenzene	1E-01	mg/L	1.09E-04	mg/kg/day	---	(mg/kg-day)-1		1.27E-03	mg/kg/day	1.0E-02	(mg/kg-day)-1	1.3E-01
				1,2-Dichlorobenzene	2E-02	mg/L	1.05E-05	mg/kg/day	---	(mg/kg-day)-1		1.23E-04	mg/kg/day	9.0E-02	(mg/kg-day)-1	1.4E-03
				1,4-Dichlorobenzene	3E-02	mg/L	1.65E-05	mg/kg/day	---	(mg/kg-day)-1		1.93E-04	mg/kg/day	---	(mg/kg-day)-1	
				Benzene	4E-02	mg/L	7.56E-06	mg/kg/day	5.5E-02	(mg/kg-day)-1	4.2E-07	8.82E-05	mg/kg/day	4.0E-03	(mg/kg-day)-1	2.2E-02
				Chlorobenzene	2E-02	mg/L	7.47E-06	mg/kg/day	---	(mg/kg-day)-1		8.71E-05	mg/kg/day	2.0E-02	(mg/kg-day)-1	4.4E-03
				Chloroform	1E-03	mg/L	9.09E-08	mg/kg/day	---	(mg/kg-day)-1		1.06E-06	mg/kg/day	1.0E-02	(mg/kg-day)-1	1.1E-04
				cis-1,2-Dichloroethene	5E-01	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	1.0E-02	(mg/kg-day)-1	
				Ethylbenzene	8E-01	mg/L	4.85E-04	mg/kg/day	---	(mg/kg-day)-1		5.66E-03	mg/kg/day	1.0E-01	(mg/kg-day)-1	5.7E-02
				Tetrachloroethene	1E+00	mg/L	5.29E-04	mg/kg/day	5.4E-01	(mg/kg-day)-1	2.9E-04	6.17E-03	mg/kg/day	1.0E-02	(mg/kg-day)-1	6.2E-01
				Toluene	1E-01	mg/L	5.51E-05	mg/kg/day	---	(mg/kg-day)-1		6.42E-04	mg/kg/day	8.0E-02	(mg/kg-day)-1	8.0E-03
				Trichloroethene	8E-01	mg/L	1.09E-04	mg/kg/day	4.0E-01	(mg/kg-day)-1	4.3E-05	1.27E-03	mg/kg/day	3.0E-04	(mg/kg-day)-1	4.2E+00
				Vinyl Chloride	2E-03	mg/L	1.12E-07	mg/kg/day	7.0E-01	(mg/kg-day)-1	7.8E-08	1.30E-06	mg/kg/day	3.0E-03	(mg/kg-day)-1	4.3E-04
				Xylenes (total)	1E+01	mg/L	7.28E-03	mg/kg/day	---	(mg/kg-day)-1		8.50E-02	mg/kg/day	2.0E-01	(mg/kg-day)-1	4.2E-01
				2,4-Dimethylphenol	7E-02	mg/L	9.19E-06	mg/kg/day	---	(mg/kg-day)-1		1.07E-04	mg/kg/day	2.0E-02	(mg/kg-day)-1	5.4E-03
				4-Methylphenol	3E-01	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	5.0E-03	(mg/kg-day)-1	
				bis(2-Ethylhexyl)Phthalate	3E-03	mg/L	---	mg/kg/day	1.4E-02	(mg/kg-day)-1		---	mg/kg/day	2.0E-02	(mg/kg-day)-1	
				Naphthalene	3E-03	mg/L	1.78E-06	mg/kg/day	---	(mg/kg-day)-1		2.08E-05	mg/kg/day	2.0E-02	(mg/kg-day)-1	1.0E-03
				Iron	1E+01	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	7.0E-01	(mg/kg-day)-1	
				Antimony	8E-03	mg/L	8.95E-08	mg/kg/day	---	(mg/kg-day)-1		1.04E-06	mg/kg/day	4.0E-04	(mg/kg-day)-1	2.6E-03
				Arsenic	3E-03	mg/L	3.94E-08	mg/kg/day	1.5E+00	(mg/kg-day)-1	5.9E-08	4.59E-07	mg/kg/day	3.0E-04	(mg/kg-day)-1	1.5E-03
				Cadmium	4E-02	mg/L	4.24E-07	mg/kg/day	---	(mg/kg-day)-1		4.94E-06	mg/kg/day	1.0E-03	(mg/kg-day)-1	4.9E-03
				Chromium	6E-03	mg/L	1.52E-07	mg/kg/day	---	(mg/kg-day)-1		1.77E-06	mg/kg/day	3.0E-03	(mg/kg-day)-1	5.9E-04
				Lead	4E-03	mg/L	5.13E-09	mg/kg/day	---	(mg/kg-day)-1		5.99E-08	mg/kg/day	---	(mg/kg-day)-1	
				Manganese	1E-01	mg/L	1.62E-06	mg/kg/day	---	(mg/kg-day)-1		1.89E-05	mg/kg/day	1.4E-01	(mg/kg-day)-1	1.4E-04
				Nickel	1E-02	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	2.0E-02	mg/kg/day	
				Thallium	9E-03	mg/L	1.02E-07	mg/kg/day	---	(mg/kg-day)-1		1.19E-06	mg/kg/day	8.0E-05	mg/kg/day	1.5E-02
				Vanadium	8E-03	mg/L	9.79E-08	mg/kg/day	---	(mg/kg-day)-1		1.14E-06	mg/kg/day	3.0E-03	mg/kg/day	3.8E-04
			Exp. Route Total								3.3E-04					5.5E+00
	Exposure Medium Total										4.1E-03					1.4E+02

TABLE 7.5.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Air	Groundwater/ Water Vapors from Showering with Groundwater	Inhalation	1,1,2-Trichloroethane	7E-03	mg/m3	9.25E-06	mg/kg/day	5.7E-02	(mg/kg-day)-1	5.3E-07	1.08E-04	mg/kg/day	4.0E-03	(mg/kg-day)-1	2.7E-02
				1,2,3-Trichlorobenzene	7E-01	mg/m3	1.01E-03	mg/kg/day	---	(mg/kg-day)-1		1.17E-02	mg/kg/day	---	(mg/kg-day)-1	
				1,2,4-Trichlorobenzene	7E-01	mg/m3	9.58E-04	mg/kg/day	---	(mg/kg-day)-1		1.12E-02	mg/kg/day	1.0E-02	(mg/kg-day)-1	1.1E+00
				1,2-Dichlorobenzene	1E-01	mg/m3	1.48E-04	mg/kg/day	---	(mg/kg-day)-1		1.73E-03	mg/kg/day	9.0E-02	(mg/kg-day)-1	1.9E-02
				1,4-Dichlorobenzene	2E-01	mg/m3	2.27E-04	mg/kg/day	---	(mg/kg-day)-1		2.65E-03	mg/kg/day	---	(mg/kg-day)-1	
				Benzene	2E-01	mg/m3	3.38E-04	mg/kg/day	5.5E-02	(mg/kg-day)-1	1.9E-05	3.94E-03	mg/kg/day	4.0E-03	(mg/kg-day)-1	9.8E-01
				Chlorobenzene	1E-01	mg/m3	1.65E-04	mg/kg/day	---	(mg/kg-day)-1		1.92E-03	mg/kg/day	2.0E-02	(mg/kg-day)-1	9.6E-02
				Chloroform	7E-03	mg/m3	9.06E-06	mg/kg/day	---	(mg/kg-day)-1		1.06E-04	mg/kg/day	1.0E-02	(mg/kg-day)-1	1.1E-02
				cis-1,2-Dichloroethene	3E+00	mg/m3	3.64E-03	mg/kg/day	---	(mg/kg-day)-1		4.25E-02	mg/kg/day	1.0E-02	(mg/kg-day)-1	4.2E+00
				Ethylbenzene	4E+00	mg/m3	5.70E-03	mg/kg/day	---	(mg/kg-day)-1		6.65E-02	mg/kg/day	1.0E-01	(mg/kg-day)-1	6.6E-01
				Tetrachloroethene	7E+00	mg/m3	9.55E-03	mg/kg/day	5.4E-01	(mg/kg-day)-1	5.2E-03	1.11E-01	mg/kg/day	1.0E-02	(mg/kg-day)-1	1.1E+01
				Toluene	8E-01	mg/m3	1.09E-03	mg/kg/day	---	(mg/kg-day)-1		1.27E-02	mg/kg/day	8.0E-02	(mg/kg-day)-1	1.6E-01
				Trichloroethene	4E+00	mg/m3	5.78E-03	mg/kg/day	4.0E-01	(mg/kg-day)-1	2.3E-03	6.74E-02	mg/kg/day	3.0E-04	(mg/kg-day)-1	2.2E+02
				Vinyl Chloride	2E-03	mg/m3	3.34E-06	mg/kg/day	7.0E-01	(mg/kg-day)-1	2.3E-06	3.89E-05	mg/kg/day	3.0E-03	(mg/kg-day)-1	1.3E-02
				Xylenes (total)	7E+01	mg/m3	8.93E-02	mg/kg/day	---	(mg/kg-day)-1		1.04E+00	mg/kg/day	2.0E-01	(mg/kg-day)-1	5.2E+00
			Exp. Route Total								7.5E-03					2.5E+02
		Exposure Point Total									1.2E-02					2.5E+02
	Exposure Medium Total										1.2E-02					2.5E+02
Medium and Receptor Total											1.6E-02					3.8E+02
Receptor Total											1.6E-02					3.8E+02

TABLE 7.6.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Industrial/Commercial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	Hypothetical Future On-Site Supply Wells	Ingestion	1,2,3-Trichlorobenzene	1E-01	mg/L	8.09E-05	mg/kg/day	---	(mg/kg-day)-1		6.29E-04	mg/kg/day	---	mg/kg/day	
				1,2,4-Trichlorobenzene	2E-01	mg/L	1.21E-04	mg/kg/day	---	(mg/kg-day)-1		9.44E-04	mg/kg/day	1.0E-02	mg/kg/day	9.4E-02
				1,2-Dichlorobenzene	3E-02	mg/L	1.88E-05	mg/kg/day	---	(mg/kg-day)-1		1.46E-04	mg/kg/day	9.0E-02	mg/kg/day	1.6E-03
				1,4-Dichlorobenzene	5E-02	mg/L	2.84E-05	mg/kg/day	---	(mg/kg-day)-1		2.21E-04	mg/kg/day	---	mg/kg/day	
				Benzene	4E-03	mg/L	2.20E-06	mg/kg/day	5.5E-02	(mg/kg-day)-1	1.2E-07	1.71E-05	mg/kg/day	4.0E-03	mg/kg/day	4.3E-03
				Chlorobenzene	3E-02	mg/L	1.76E-05	mg/kg/day	---	(mg/kg-day)-1		1.37E-04	mg/kg/day	2.0E-02	mg/kg/day	6.8E-03
				Chloroform	2E-03	mg/L	8.65E-07	mg/kg/day	---	(mg/kg-day)-1		6.73E-06	mg/kg/day	1.0E-02	mg/kg/day	6.7E-04
				cis-1,2-Dichloroethene	6E-01	mg/L	3.54E-04	mg/kg/day	---	(mg/kg-day)-1		2.75E-03	mg/kg/day	1.0E-02	mg/kg/day	2.8E-01
				Ethylbenzene	1E+00	mg/L	7.26E-04	mg/kg/day	---	(mg/kg-day)-1		5.64E-03	mg/kg/day	1.0E-01	mg/kg/day	5.6E-02
				Tetrachloroethene	2E+00	mg/L	1.04E-03	mg/kg/day	5.4E-01	(mg/kg-day)-1	5.6E-04	8.11E-03	mg/kg/day	1.0E-02	mg/kg/day	8.1E-01
				Toluene	2E-01	mg/L	1.31E-04	mg/kg/day	---	(mg/kg-day)-1		1.02E-03	mg/kg/day	8.0E-02	mg/kg/day	1.3E-02
				Trichloroethene	1E+00	mg/L	6.48E-04	mg/kg/day	4.0E-01	(mg/kg-day)-1	2.6E-04	5.04E-03	mg/kg/day	3.0E-04	mg/kg/day	1.7E+01
				Vinyl Chloride	3E-03	mg/L	1.40E-06	mg/kg/day	7.0E-01	(mg/kg-day)-1	9.8E-07	1.09E-05	mg/kg/day	3.0E-03	mg/kg/day	3.6E-03
				Xylenes (total)	2E+01	mg/L	1.01E-02	mg/kg/day	---	(mg/kg-day)-1		7.89E-02	mg/kg/day	2.0E-01	mg/kg/day	3.9E-01
				2,4-Dimethylphenol	1E-01	mg/L	6.12E-05	mg/kg/day	---	(mg/kg-day)-1		4.76E-04	mg/kg/day	2.0E-02	mg/kg/day	2.4E-02
				2-Methylnaphthalene	3E-03	mg/L	1.79E-06	mg/kg/day	---	(mg/kg-day)-1		1.39E-05	mg/kg/day	---	mg/kg/day	
				4-Methylphenol	4E-01	mg/L	2.24E-04	mg/kg/day	---	(mg/kg-day)-1		1.74E-03	mg/kg/day	5.0E-03	mg/kg/day	3.5E-01
				Naphthalene	4E-03	mg/L	2.47E-06	mg/kg/day	---	(mg/kg-day)-1		1.92E-05	mg/kg/day	2.0E-02	mg/kg/day	9.6E-04
				Antimony	1E-03	mg/L	7.93E-07	mg/kg/day	---	(mg/kg-day)-1		6.17E-06	mg/kg/day	---	mg/kg/day	
				Arsenic	1E-03	mg/L	6.78E-07	mg/kg/day	---	(mg/kg-day)-1		5.27E-06	mg/kg/day	---	mg/kg/day	
				Cadmium	5E-02	mg/L	2.98E-05	mg/kg/day	---	(mg/kg-day)-1		2.32E-04	mg/kg/day	1.0E-03	mg/kg/day	2.3E-01
				Chromium	5E-03	mg/L	2.91E-06	mg/kg/day	---	(mg/kg-day)-1		2.26E-05	mg/kg/day	3.0E-03	mg/kg/day	7.5E-03
				Iron	1E+01	mg/L	6.27E-03	mg/kg/day	---	(mg/kg-day)-1		4.88E-02	mg/kg/day	7.0E-01	mg/kg/day	7.0E-02
				Manganese	9E-02	mg/L	5.14E-05	mg/kg/day	---	(mg/kg-day)-1		4.00E-04	mg/kg/day	---	mg/kg/day	
				Nickel	1E-02	mg/L	6.45E-06	mg/kg/day	---	(mg/kg-day)-1		5.01E-05	mg/kg/day	3.0E-03	mg/kg/day	1.7E-02
				Vanadium	1E-03	mg/L	6.56E-07	mg/kg/day	---	(mg/kg-day)-1		5.10E-06	mg/kg/day	7.0E-03	mg/kg/day	7.3E-04
			Exp. Route Total								8.2E-04					1.9E+01

TABLE 7.6.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Industrial/Commercial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	Hypothetical Future On-Site Supply Wells	Dermal	1,2,3-Trichlorobenzene	1E-01	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				1,2,4-Trichlorobenzene	2E-01	mg/L	1.32E-05	mg/kg/day	---	(mg/kg-day)-1		1.03E-04	mg/kg/day	1.0E-02	mg/kg/day	1.0E-02
				1,2-Dichlorobenzene	3E-02	mg/L	1.27E-06	mg/kg/day	---	(mg/kg-day)-1		9.90E-06	mg/kg/day	9.0E-02	mg/kg/day	1.1E-04
				1,4-Dichlorobenzene	5E-02	mg/L	1.97E-06	mg/kg/day	---	(mg/kg-day)-1		1.53E-05	mg/kg/day	---	mg/kg/day	
				Benzene	4E-03	mg/L	5.44E-08	mg/kg/day	5.5E-02	(mg/kg-day)-1	3.0E-09	4.23E-07	mg/kg/day	4.0E-03	mg/kg/day	1.1E-04
				Chlorobenzene	3E-02	mg/L	8.14E-07	mg/kg/day	---	(mg/kg-day)-1		6.33E-06	mg/kg/day	2.0E-02	mg/kg/day	3.2E-04
				Chloroform	2E-03	mg/L	9.71E-09	mg/kg/day	---	(mg/kg-day)-1		7.55E-08	mg/kg/day	1.0E-02	mg/kg/day	7.5E-06
				cis-1,2-Dichloroethene	6E-01	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	1.0E-02	mg/kg/day	
				Ethylbenzene	1E+00	mg/L	5.87E-05	mg/kg/day	---	(mg/kg-day)-1		4.56E-04	mg/kg/day	1.0E-01	mg/kg/day	4.6E-03
				Tetrachloroethene	2E+00	mg/L	5.68E-05	mg/kg/day	5.4E-01	(mg/kg-day)-1	3.1E-05	4.42E-04	mg/kg/day	1.0E-02	mg/kg/day	4.4E-02
				Toluene	2E-01	mg/L	6.69E-06	mg/kg/day	---	(mg/kg-day)-1		5.21E-05	mg/kg/day	8.0E-02	mg/kg/day	6.5E-04
				Trichloroethene	1E+00	mg/L	1.28E-05	mg/kg/day	4.0E-01	(mg/kg-day)-1	5.1E-06	9.99E-05	mg/kg/day	3.0E-04	mg/kg/day	3.3E-01
				Vinyl Chloride	3E-03	mg/L	1.29E-08	mg/kg/day	7.0E-01	(mg/kg-day)-1	9.1E-09	1.01E-07	mg/kg/day	3.0E-03	mg/kg/day	3.4E-05
				Xylenes (total)	2E+01	mg/L	8.87E-04	mg/kg/day	---	(mg/kg-day)-1		6.90E-03	mg/kg/day	2.0E-01	mg/kg/day	3.4E-02
				2,4-Dimethylphenol	1E-01	mg/L	1.11E-06	mg/kg/day	---	(mg/kg-day)-1		8.63E-06	mg/kg/day	2.0E-02	mg/kg/day	4.3E-04
				2-Methylnaphthalene	3E-03	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				4-Methylphenol	4E-01	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	5.0E-03	mg/kg/day	
				Naphthalene	4E-03	mg/L	1.91E-07	mg/kg/day	---	(mg/kg-day)-1		1.49E-06	mg/kg/day	2.0E-02	mg/kg/day	7.4E-05
				Antimony	1E-03	mg/L	1.31E-09	mg/kg/day	---	(mg/kg-day)-1		1.02E-08	mg/kg/day	---	mg/kg/day	
				Arsenic	1E-03	mg/L	1.12E-09	mg/kg/day	---	(mg/kg-day)-1		8.70E-09	mg/kg/day	---	mg/kg/day	
				Cadmium	5E-02	mg/L	4.92E-08	mg/kg/day	---	(mg/kg-day)-1		3.83E-07	mg/kg/day	1.0E-03	mg/kg/day	3.8E-04
				Chromium	5E-03	mg/L	9.60E-09	mg/kg/day	---	(mg/kg-day)-1		7.47E-08	mg/kg/day	3.0E-03	mg/kg/day	2.5E-05
				Iron	1E+01	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	7.0E-01	mg/kg/day	
				Manganese	9E-02	mg/L	8.48E-08	mg/kg/day	---	(mg/kg-day)-1		6.60E-07	mg/kg/day	---	mg/kg/day	
				Nickel	1E-02	mg/L	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	3.0E-03	mg/kg/day	
				Vanadium	1E-03	mg/L	1.08E-09	mg/kg/day	---	(mg/kg-day)-1		8.42E-09	mg/kg/day	7.0E-03	mg/kg/day	1.2E-06
			Exp. Route Total								3.6E-05					4.3E-01
		Exposure Point Total									8.6E-04					2.0E+01
	Exposure Medium Total										8.6E-04					2.0E+01

TABLE 7.6.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Future
Receptor Population: Industrial/Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Air	Vapor Intrusion from On-Site Groundwater	Inhalation	Benzene	4E+00	ug/L	4.51E-06	mg/kg/day	5.5E-02	(mg/kg-day)-1	2.5E-07	3.51E-05	mg/kg/day	4.0E-03	mg/kg/day	8.8E-03
				cis-1,2-Dichloroethene	6E+02	ug/L	7.26E-04	mg/kg/day	---	(mg/kg-day)-1		5.65E-03	mg/kg/day	1.0E-02	mg/kg/day	5.6E-01
				Ethylbenzene	1E+03	ug/L	1.49E-03	mg/kg/day	---	(mg/kg-day)-1		1.16E-02	mg/kg/day	1.0E-01	mg/kg/day	1.2E-01
				Isopropylbenzene	2E+01	ug/L	2.33E-05	mg/kg/day	---	(mg/kg-day)-1		1.81E-04	mg/kg/day	1.0E-01	mg/kg/day	1.8E-03
				Tetrachloroethene	2E+03	ug/L	2.14E-03	mg/kg/day	5.4E-01	(mg/kg-day)-1	1.2E-03	1.66E-02	mg/kg/day	1.0E-02	mg/kg/day	1.7E+00
				Trichloroethene	1E+03	ug/L	1.33E-03	mg/kg/day	4.0E-01	(mg/kg-day)-1	5.3E-04	1.03E-02	mg/kg/day	3.0E-04	mg/kg/day	3.4E+01
				Vinyl Chloride	3E+00	ug/L	2.87E-06	mg/kg/day	7.0E-01	(mg/kg-day)-1	2.0E-06	2.23E-05	mg/kg/day	3.0E-03	mg/kg/day	7.4E-03
				Xylenes (total)	2E+04	ug/L	2.08E-02	mg/kg/day	---	(mg/kg-day)-1		1.62E-01	mg/kg/day	2.0E-01	mg/kg/day	8.1E-01
			Exp. Route Total								1.7E-03					3.8E+01
		Exposure Point Total									1.7E-03					3.8E+01
	Exposure Medium Total										1.7E-03					3.8E+01
Medium Total											2.5E-03					5.7E+01
Surface Soil	Surface Soil	On-Site Surface Soil	Ingestion	Phenanthrene	6E-03	mg/Kg	7E-10	mg/kg/day	---	(mg/kg-day)-1		5.26E-09	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E-03	mg/Kg	1E-10	mg/kg/day	---	(mg/kg-day)-1		1.11E-09	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	5E-04	mg/kg/day	---	(mg/kg-day)-1		4.14E-03	mg/kg/day	1.0E+00	mg/kg/day	4.1E-03
				Arsenic	2E+00	mg/Kg	2E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	2.7E-07	1.40E-06	mg/kg/day	3.0E-04	mg/kg/day	4.7E-03
				Chromium	2E+02	mg/Kg	2E-05	mg/kg/day	---	(mg/kg-day)-1		1.83E-04	mg/kg/day	3.0E-03	mg/kg/day	6.1E-02
				Iron	6E+03	mg/Kg	6E-04	mg/kg/day	---	(mg/kg-day)-1		4.94E-03	mg/kg/day	7.0E-01	mg/kg/day	7.1E-03
				Lead	1E+01	mg/Kg	2E-06	mg/kg/day	---	(mg/kg-day)-1		1.28E-05	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	1E-06	mg/kg/day	---	(mg/kg-day)-1		8.85E-06	mg/kg/day	7.0E-03	mg/kg/day	1.3E-03
			Exp. Route Total								2.7E-07					7.8E-02
			Dermal	Phenanthrene	6E-03	mg/Kg	4E-11	mg/kg/day	---	(mg/kg-day)-1		3.47E-10	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E-03	mg/Kg	1E-11	mg/kg/day	---	(mg/kg-day)-1		1.03E-10	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Arsenic	2E+00	mg/Kg	4E-09	mg/kg/day	3.7E+00	(mg/kg-day)-1	1.3E-08	2.77E-08	mg/kg/day	3.0E-04	mg/kg/day	9.2E-05
				Chromium	2E+02	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Iron	6E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Lead	1E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	7.0E-03	mg/kg/day	
			Exp. Route Total								1.3E-08					9.2E-05
			Inhalation	Phenanthrene	6E-03	mg/Kg	6E-14	mg/kg/day	---	(mg/kg-day)-1		4.64E-13	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E-03	mg/Kg	1E-14	mg/kg/day	---	(mg/kg-day)-1		9.83E-14	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	5E-08	mg/kg/day	---	(mg/kg-day)-1		3.65E-07	mg/kg/day	1.4E-03	mg/kg/day	2.6E-04
				Arsenic	2E+00	mg/Kg	2E-11	mg/kg/day	1.5E+01	(mg/kg-day)-1	2.4E-10	1.23E-10	mg/kg/day	---	mg/kg/day	
				Chromium	2E+02	mg/Kg	2E-09	mg/kg/day	4.2E+01	(mg/kg-day)-1	8.7E-08	1.62E-08	mg/kg/day	2.3E-06	mg/kg/day	7.1E-03
				Iron	6E+03	mg/Kg	6E-08	mg/kg/day	---	(mg/kg-day)-1		4.36E-07	mg/kg/day	---	mg/kg/day	
				Lead	1E+01	mg/Kg	1E-10	mg/kg/day	---	(mg/kg-day)-1		1.13E-09	mg/kg/day	---	mg/kg/day	
				Nickel	4E+00	mg/Kg	4E-11	mg/kg/day	8.4E-04	(mg/kg-day)-1	3.7E-14	3.39E-10	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	1E-10	mg/kg/day	---	(mg/kg-day)-1		7.81E-10	mg/kg/day	---	mg/kg/day	
			Exp. Route Total								8.7E-08					7.3E-03
		Exposure Point Total									2.8E-07					7.8E-02
	Exposure Medium Total										2.8E-07					7.8E-02
Medium Total											2.8E-07					7.8E-02
Receptor Total											2.5E-03					5.7E+01

TABLE 7.7.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Surface Soil	Surface Soil	On-Site Surface Soil	Ingestion	Phenanthrene	6E-03	mg/Kg	2.48E-10	mg/kg/day	---	(mg/kg-day)-1		1.74E-08	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E-03	mg/Kg	5.25E-11	mg/kg/day	---	(mg/kg-day)-1		3.68E-09	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	1.95E-04	mg/kg/day	---	(mg/kg-day)-1		1.37E-02	mg/kg/day	1.0E+00	mg/kg/day	1.4E-02
				Arsenic	2E+00	mg/Kg	6.59E-08	mg/kg/day	1.5E+00	(mg/kg-day)-1	9.9E-08	4.61E-06	mg/kg/day	3.0E-04	mg/kg/day	1.5E-02
				Chromium	2E+02	mg/Kg	8.63E-06	mg/kg/day	---	(mg/kg-day)-1		6.04E-04	mg/kg/day	3.0E-03	mg/kg/day	2.0E-01
				Iron	6E+03	mg/Kg	2.33E-04	mg/kg/day	---	(mg/kg-day)-1		1.63E-02	mg/kg/day	7.0E-01	mg/kg/day	2.3E-02
				Lead	1E+01	mg/Kg	6.05E-07	mg/kg/day	---	(mg/kg-day)-1		4.23E-05	mg/kg/day	---	mg/kg/day	
				Nickel	4E+00	mg/Kg	1.81E-07	mg/kg/day	---	(mg/kg-day)-1		1.27E-05	mg/kg/day	2.0E-02	mg/kg/day	6.3E-04
				Vanadium	1E+01	mg/Kg	4.17E-07	mg/kg/day	---	(mg/kg-day)-1		2.92E-05	mg/kg/day	7.0E-03	mg/kg/day	4.2E-03
			Exp. Route Total								9.9E-08					2.6E-01
			Dermal	Phenanthrene	6E-03	mg/Kg	4.96E-11	mg/kg/day	---	(mg/kg-day)-1		3.47E-09	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E-03	mg/Kg	1.47E-11	mg/kg/day	---	(mg/kg-day)-1		1.03E-09	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Arsenic	2E+00	mg/Kg	3.95E-09	mg/kg/day	3.7E+00	(mg/kg-day)-1	1.4E-08	2.77E-07	mg/kg/day	3.0E-04	mg/kg/day	9.2E-04
				Chromium	2E+02	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Iron	6E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Lead	1E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Nickel	4E+00	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	7.0E-03	mg/kg/day	
			Exp. Route Total								1.4E-08					9.2E-04
			Inhalation	Phenanthrene	6E-03	mg/Kg	8.40E-15	mg/kg/day	---	(mg/kg-day)-1		5.88E-13	mg/kg/day	---	mg/kg/day	
				Endrin aldehyde	1E-03	mg/Kg	1.78E-15	mg/kg/day	---	(mg/kg-day)-1		1.25E-13	mg/kg/day	---	mg/kg/day	
				Aluminum	5E+03	mg/Kg	6.61E-09	mg/kg/day	---	(mg/kg-day)-1		4.62E-07	mg/kg/day	1.4E-03	mg/kg/day	3.2E-04
				Arsenic	2E+00	mg/Kg	2.23E-12	mg/kg/day	1.5E+01	(mg/kg-day)-1	3.4E-11	1.56E-10	mg/kg/day	---	mg/kg/day	
				Chromium	2E+02	mg/Kg	2.92E-10	mg/kg/day	4.2E+01	(mg/kg-day)-1	1.2E-08	2.05E-08	mg/kg/day	2.3E-06	mg/kg/day	8.9E-03
				Iron	6E+03	mg/Kg	7.89E-09	mg/kg/day	---	(mg/kg-day)-1		5.53E-07	mg/kg/day	---	mg/kg/day	
				Lead	1E+01	mg/Kg	2.05E-11	mg/kg/day	---	(mg/kg-day)-1		1.43E-09	mg/kg/day	---	mg/kg/day	
				Nickel	4E+00	mg/Kg	6.13E-12	mg/kg/day	8.4E-04	(mg/kg-day)-1	5.2E-15	4.29E-10	mg/kg/day	---	mg/kg/day	
				Vanadium	1E+01	mg/Kg	1.41E-11	mg/kg/day	---	(mg/kg-day)-1		9.89E-10	mg/kg/day	---	mg/kg/day	
			Exp. Route Total								1.2E-08					9.3E-03
		Exposure Point Total									1.3E-07					2.7E-01
	Exposure Medium Total										1.3E-07					2.7E-01
Medium Total											1.3E-07					2.7E-01

TABLE 7.7.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Subsurface Soil	Subsurface Soil	On-Site Subsurface Soil	Ingestion	Arsenic	7E-01	mg/Kg	2.95E-08	mg/kg/day	1.5E+00	(mg/kg-day)-1	4.4E-08	2.06E-06	mg/kg/day	3.0E-04	mg/kg/day	6.9E-03
				Chromium	9E+00	mg/Kg	3.60E-07	mg/kg/day	---	(mg/kg-day)-1		2.52E-05	mg/kg/day	3.0E-03	mg/kg/day	8.4E-03
				Iron	5E+03	mg/Kg	2.19E-04	mg/kg/day	---	(mg/kg-day)-1		1.53E-02	mg/kg/day	7.0E-01	mg/kg/day	2.2E-02
				Nickel	6E-01	mg/Kg	2.55E-08	mg/kg/day	---	(mg/kg-day)-1		1.78E-06	mg/kg/day	2.0E-02	mg/kg/day	8.9E-05
				Vanadium	6E+00	mg/Kg	2.46E-07	mg/kg/day	---	(mg/kg-day)-1		1.72E-05	mg/kg/day	7.0E-03	mg/kg/day	2.5E-03
			Exp. Route Total								4.4E-08					4.0E-02
			Dermal	Arsenic	7E-01	mg/Kg	1.77E-09	mg/kg/day	3.7E+00	(mg/kg-day)-1	6.5E-09	1.24E-07	mg/kg/day	3.0E-04	mg/kg/day	4.1E-04
				Chromium	9E+00	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Iron	5E+03	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Nickel	6E-01	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	---	mg/kg/day	
				Vanadium	6E+00	mg/Kg	---	mg/kg/day	---	(mg/kg-day)-1		---	mg/kg/day	7.0E-03	mg/kg/day	
			Exp. Route Total								6.5E-09					4.1E-04
			Inhalation	Arsenic	7E-01	mg/Kg	9.99E-13	mg/kg/day	1.5E+01	(mg/kg-day)-1	1.5E-11	6.99E-11	mg/kg/day	---	mg/kg/day	
				Chromium	9E+00	mg/Kg	1.22E-11	mg/kg/day	4.2E+01	(mg/kg-day)-1	5.1E-10	8.54E-10	mg/kg/day	2.3E-06	mg/kg/day	3.7E-04
				Iron	5E+03	mg/Kg	7.42E-09	mg/kg/day	---	(mg/kg-day)-1		5.20E-07	mg/kg/day	---	mg/kg/day	
				Nickel	6E-01	mg/Kg	8.62E-13	mg/kg/day	8.4E-04	(mg/kg-day)-1	7.2E-16	6.04E-11	mg/kg/day	---	mg/kg/day	
				Vanadium	6E+00	mg/Kg	8.33E-12	mg/kg/day	---	(mg/kg-day)-1		5.83E-10	mg/kg/day	---	mg/kg/day	
			Exp. Route Total								5.3E-10					3.7E-04
		Exposure Point Total									5.1E-08					4.1E-02
	Exposure Medium Total										5.1E-08					4.1E-02
Medium Total											5.1E-08					4.1E-02
Receptor Total											1.8E-07					3.1E-01

TABLE 9.1.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Current and future
Receptor Population:	Industrial/Commercial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	On-Site Surface Soil	Phenanthrene				NA		---				
			Endrin aldehyde				NA		---				
			Aluminum				NA		---	4.7E-03	2.9E-04		5.0E-03
			Arsenic	8.5E-07	7.6E-10	4.1E-07	NA	1.3E-06	Skin	5.3E-03		1.1E-03	6.4E-03
			Chromium		2.8E-07		NA	2.8E-07	---	7.0E-02	8.1E-03		7.8E-02
			Iron				NA		---	8.1E-03			8.1E-03
			Lead				NA		---				
			Nickel		1.2E-13		NA	1.2E-13	Body weight				
			Vanadium				NA		---	1.4E-03			1.4E-03
			Chemical Total	8.5E-07	2.8E-07	4.1E-07		1.5E-06		8.9E-02	8.3E-03	1.1E-03	9.9E-02
		Exposure Point Total						1.5E-06					9.9E-02
	Exposure Medium Total							1.5E-06					9.9E-02
Medium and Receptor Total								1.5E-06					9.9E-02

Total skin HI Across All Media = 6.4E-03

TABLE 8
CALCULATION OF RADIATION CANCER RISKS
REASONABLE MAXIMUM EXPOSURE/CENTRAL TENDENCY
Lightman Drum Superfund Site

Scenario Timeframe:
Receptor Population:
Receptor Age:

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
				Not Applicable. This page intentionally left blank												
Medium Total											0.0E+00					0.0E+00

TABLE 9.2.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Current and Future
Receptor Population:	Trespasser
Receptor Age:	Pre-adolescent (7-12 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	On-Site Surface Soil	Phenanthrene				NA		---				
			Endrin aldehyde				NA		---				
			Aluminum				NA		---	3.9E-03	1.2E-04		4.1E-03
			Arsenic	1.7E-07	7.6E-11	1.2E-07	NA	2.9E-07	Skin	4.4E-03		1.3E-03	5.7E-03
			Chromium		2.8E-08		NA	2.8E-08	---	5.8E-02	3.4E-03		6.1E-02
			Iron				NA		---	6.7E-03			6.7E-03
			Lead				NA		---				
			Nickel		1.2E-14		NA	1.2E-14	Body weight				
			Vanadium				NA		---	1.2E-03			1.2E-03
			Chemical Total	1.7E-07	2.8E-08	1.2E-07		3.2E-07		7.4E-02	3.5E-03	1.3E-03	7.9E-02
		Exposure Point Total						3.2E-07					7.9E-02
	Exposure Medium Total							3.2E-07					7.9E-02
Medium Total								3.2E-07					7.9E-02
Sediment	Sediment	Pump Branch Creek	Acenaphthylene		NA		NA		---		NA		
			Benzo(a)Pyrene	7.9E-08	NA		NA	7.9E-08	---		NA		
			Benzo(g,h,i)Perylene		NA		NA		---		NA		
			Phenanthrene		NA		NA		---		NA		
			Endrin aldehyde		NA		NA		---		NA		
			Aluminum		NA		NA		---	7.7E-03	NA		7.7E-03
			Arsenic	1.1E-06	NA	7.4E-07	NA	1.8E-06	Skin	2.7E-02	NA	7.9E-03	3.5E-02
			Iron		NA		NA		---	1.2E-02	NA		1.2E-02
			Lead		NA		NA		---		NA		
			Vanadium		NA		NA		---	1.0E-02	NA		1.0E-02
			Chemical Total	1.1E-06		7.4E-07		1.9E-06		5.8E-02		7.9E-03	6.5E-02
		Exposure Point Total						1.9E-06					6.5E-02
	Exposure Medium Total							1.9E-06					6.5E-02
Medium Total								1.9E-06					6.5E-02
Surface Water	Surface Water	Pump Branch Creek	Arsenic	5.8E-07	NA	5.4E-07	NA	1.1E-06	Skin	1.5E-02	NA	5.7E-03	2.1E-02
			Iron		NA		NA		---	1.3E-02	NA		1.3E-02
			Lead		NA		NA		---		NA		
			Vanadium		NA		NA		---	8.0E-04	NA	3.1E-04	1.1E-03
			Chemical Total	5.8E-07		5.4E-07		1.1E-06		2.9E-02		6.0E-03	3.5E-02
		Exposure Point Total						1.1E-06					3.5E-02
	Exposure Medium Total							1.1E-06					3.5E-02
Medium Total								1.1E-06					3.5E-02
Receptor Total								3.3E-06					1.8E-01

Total skin HI Across All Media = 6.2E-02

TABLE 9.3.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Current and Future
Receptor Population:	Trespasser
Receptor Age:	Adolescent (13-18 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	On-Site Surface Soil	Phenanthrene				NA		---				
			Endrin aldehyde				NA		---				
			Aluminum				NA		---	3.5E-03	1.1E-04		3.6E-03
			Arsenic	1.5E-07	6.7E-11	5.2E-08	NA	2.0E-07	Skin	3.9E-03		5.5E-04	4.5E-03
			Chromium		2.5E-08		NA	2.5E-08	---	5.2E-02	3.0E-03		5.5E-02
			Iron				NA		---	6.0E-03			6.0E-03
			Lead				NA		---				
			Nickel		1.0E-14		NA	1.0E-14	Body weight				
			Vanadium				NA		---	1.1E-03			1.1E-03
			Chemical Total	1.5E-07	2.5E-08	5.2E-08		2.3E-07		6.6E-02	3.1E-03	5.5E-04	7.0E-02
		Exposure Point Total						2.3E-07					7.0E-02
	Exposure Medium Total							2.3E-07					7.0E-02
Medium Total								2.3E-07					7.0E-02
Sediment	Sediment	Pump Branch Creek	Acenaphthylene		NA		NA		---		NA		
			Benzo(a)Pyrene	7.0E-08	NA		NA	7.0E-08	---		NA		
			Benzo(g,h,i)Perylene		NA		NA		---		NA		
			Phenanthrene		NA		NA		---		NA		
			Endrin aldehyde		NA		NA		---		NA		
			Aluminum		NA		NA		---	6.8E-03	NA		6.8E-03
			Arsenic	9.4E-07	NA	9.2E-07	NA	1.9E-06	Skin	2.4E-02	NA	9.8E-03	3.4E-02
			Iron		NA		NA		---	1.1E-02	NA		1.1E-02
			Lead		NA		NA		---		NA		
			Vanadium		NA		NA		---	3.8E-03	NA		3.8E-03
			Chemical Total	1.0E-06		9.2E-07		1.9E-06		4.6E-02		9.8E-03	5.6E-02
		Exposure Point Total						1.9E-06					5.6E-02
	Exposure Medium Total							1.9E-06					5.6E-02
Medium Total								1.9E-06					5.6E-02
Surface Water	Surface Water	Pump Branch Creek	Arsenic	5.1E-07	NA	6.7E-07	NA	1.2E-06	Skin	1.3E-02	NA	7.1E-03	2.0E-02
			Iron		NA		NA		---	1.2E-02	NA		1.2E-02
			Lead		NA		NA		---		NA		
			Vanadium		NA		NA		---	7.1E-04	NA	3.8E-04	1.1E-03
			Chemical Total	5.1E-07		6.7E-07		1.2E-06		2.6E-02		7.5E-03	3.3E-02
		Exposure Point Total						1.2E-06					3.3E-02
	Exposure Medium Total							1.2E-06					3.3E-02
Medium Total								1.2E-06					3.3E-02
Receptor Total								3.3E-06					1.6E-01

Total skin HI Across All Media = 5.9E-02

TABLE 9.4.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater/Air	Groundwater/ Water Vapors from Showering with Groundwater	1,1,2-Trichloroethane		1.0E-06		NA	1.0E-06	---		1.1E-02		1.1E-02
			1,2,3-Trichlorobenzene				NA		---				
			1,2,4-Trichlorobenzene				NA		Adrenal glands	3.8E-01	4.4E-01	1.3E-01	9.5E-01
			1,2-Dichlorobenzene				NA		---	6.6E-03	7.6E-03	1.4E-03	1.6E-02
			1,4-Dichlorobenzene				NA		---				
			Benzene	2.2E-05	3.7E-05	1.7E-06	NA	6.0E-05	Blood	2.9E-01	3.9E-01	2.3E-02	7.0E-01
			Chlorobenzene				NA		Liver	3.1E-02	3.8E-02	4.5E-03	7.3E-02
			Chloroform				NA		Liver	3.1E-03	4.2E-03	1.1E-04	7.4E-03
			cis-1,2-Dichloroethene				NA		Blood	1.3E+00	1.7E+00		3.0E+00
			Ethylbenzene				NA		Liver / Kidney	2.3E-01	2.6E-01	5.8E-02	5.5E-01
			Tetrachloroethene	6.8E-03	1.0E-02	1.2E-03	NA	1.8E-02	Liver	3.7E+00	4.4E+00	6.3E-01	8.7E+00
			Toluene				NA		Kidney	5.1E-02	6.3E-02	8.2E-03	1.2E-01
			Trichloroethene	2.8E-03	4.6E-03	1.8E-04	NA	7.6E-03	---	6.9E+01	8.9E+01	4.3E+00	1.6E+02
			Vinyl Chloride	1.1E-05	4.6E-06	3.2E-07	NA	1.6E-05	Liver	1.5E-02		4.5E-04	1.6E-02
			Xylenes (total)				NA		Whole body	1.6E+00		4.4E-01	2.0E+00
			2,4-Dimethylphenol				NA		Blood	9.6E-02		5.5E-03	1.0E-01
			4-Methylphenol				NA		---	1.4E+00			1.4E+00
			bis(2-Ethylhexyl)Phthalate	3.3E-07			NA	3.3E-07	Liver	3.4E-03			3.4E-03
			Naphthalene				NA		Whole body	4.4E-03		1.1E-03	5.4E-03
			Iron				NA		---	4.3E-01			4.3E-01
			Antimony	2.5E-05		1.3E-07	NA	2.5E-05	Blood	4.1E-01		2.1E-03	4.1E-01
			Arsenic	4.6E-05		2.4E-07	NA	4.7E-05	Skin	3.0E-01		1.6E-03	3.0E-01
			Cadmium				NA		---	9.7E-01		5.1E-03	9.8E-01
			Chromium				NA		---	5.8E-02		6.1E-04	5.9E-02
			Lead				NA		---			8.8E-08	8.8E-08
			Manganese			2.3E-06	NA	2.3E-06	Neurological	2.7E-02		3.9E-02	6.5E-02
			Nickel				NA		Body weight	1.7E-02			1.7E-02
			Thallium				NA		Liver, blood, hair loss	2.9E+00		1.2E-03	2.9E+00
			Vanadium				NA		---	7.5E-02		3.9E-04	7.5E-02
			Chemical Total	9.8E-03	1.5E-02	1.4E-03		2.6E-02		8.3E+01	9.7E+01	5.7E+00	1.9E+02
		Exposure Point Total						2.6E-02					1.9E+02
	Exposure Medium Total							2.6E-02					1.9E+02
Medium and Receptor Total								2.6E-02					1.9E+02

Total skin HI Across All Media =	3.0E-01
Total blood HI Across All Media =	7.1E+00
Total liver HI Across All Media =	1.2E+01
Total whole body HI Across All Media =	2.0E+00
Total Neurological HI Across All Media =	6.5E-02
Total hair loss HI Across All Media =	8.8E-08
Total bodyweight HI Across All Media =	1.7E-02

TABLE 9.5.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater/Air	Groundwater/ Water Vapors from Showering with Groundwater	1,1,2-Trichloroethane	4.9E-07	2.1E-06	1.7E-08	NA	2.6E-06	Blood	2.5E-02	1.1E-01	8.6E-04	1.3E-01
			1,2,3-Trichlorobenzene				NA		---				
			1,2,4-Trichlorobenzene				NA		Adrenal glands	1.1E+00	4.5E+00	3.8E-01	5.9E+00
			1,2-Dichlorobenzene				NA		---	1.9E-02	7.7E-02	4.1E-03	1.0E-01
			1,4-Dichlorobenzene				NA		---				
			Benzene	1.6E-05	7.4E-05	1.3E-06	NA	9.1E-05	Blood	8.3E-01	3.9E+00	6.7E-02	4.8E+00
			Chlorobenzene				NA		Liver	8.8E-02	3.8E-01	1.3E-02	4.9E-01
			Chloroform				NA		Liver	8.8E-03	4.2E-02	3.2E-04	5.1E-02
			cis-1,2-Dichloroethene				NA		Blood	3.7E+00	1.7E+01		2.1E+01
			Ethylbenzene				NA		Liver / Kidney	6.5E-01	2.7E+00	1.7E-01	3.5E+00
			Tetrachloroethene	4.9E-03	2.1E-02	8.7E-04	NA	2.6E-02	Liver	1.1E+01	4.5E+01	1.9E+00	5.7E+01
			Toluene				NA		Kidney	1.5E-01	6.4E-01	2.4E-02	8.1E-01
			Trichloroethene	2.0E-03	9.2E-03	1.3E-04	NA	1.1E-02	---	2.0E+02	9.0E+02	1.3E+01	1.1E+03
			Vinyl Chloride	7.9E-06	9.3E-06	2.4E-07	NA	1.7E-05	Liver	4.4E-02	5.2E-02	1.3E-03	9.7E-02
			Xylenes (total)				NA		Whole body	4.5E+00	2.1E+01	1.3E+00	2.7E+01
			2,4-Dimethylphenol				NA		Blood	2.8E-01		1.6E-02	2.9E-01
			4-Methylphenol				NA		---	4.0E+00			4.0E+00
			bis(2-Ethylhexyl)Phthalate	2.4E-07			NA	2.4E-07	Liver	9.9E-03			9.9E-03
			Naphthalene				NA		Whole body	1.3E-02		3.2E-03	1.6E-02
			Iron				NA		---	1.2E+00			1.2E+00
			Antimony				NA		Blood	1.5E+00		7.9E-03	1.5E+00
			Arsenic	3.3E-05		1.8E-07	NA	3.4E-05	Skin	8.7E-01		4.6E-03	8.7E-01
			Cadmium				NA		---	2.8E+00		1.5E-02	2.8E+00
			Chromium				NA		---	1.7E-01		1.8E-03	1.7E-01
			Lead				NA		---				
			Manganese				NA		Neurological	7.6E-02		4.1E-04	7.7E-02
			Nickel				NA		Body weight	4.9E-02			4.9E-02
			Thallium				NA		---	8.4E+00		4.5E-02	8.5E+00
			Vanadium				NA		---	2.2E-01		1.2E-03	2.2E-01
			Chemical Total	7.0E-03	3.0E-02	1.0E-03		3.8E-02		2.4E+02	9.9E+02	1.7E+01	1.3E+03
		Exposure Point Total						3.8E-02					1.3E+03
	Exposure Medium Total							3.8E-02					1.3E+03
Medium and Receptor Total								3.8E-02					1.3E+03

Total skin HI Across All Media =	8.7E-01
Total blood HI Across All Media =	2.7E+01
Total liver HI Across All Media =	6.1E+01
Total whole body HI Across All Media =	2.7E+01
Total Neurological HI Across All Media =	7.7E-02
Total hair loss HI Across All Media =	8.5E+00
Total adrenal glands HI Across All Media =	5.9E+00
Total kidney HI Across All Media =	4.3E+00
Total body weight HI Across All Media =	4.9E-02

TABLE 9.6.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Industrial/Commercial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater, Air	Hypothetical Future On-Site Supply Wells/ Vapor Intrusion from On-Site Groundwater	1,2,3-Trichlorobenzene		NA		NA		---		NA		
			1,2,4-Trichlorobenzene		NA		NA		Adrenal glands	2.2E-01	NA	1.2E-02	2.3E-01
			1,2-Dichlorobenzene		NA		NA		---	3.7E-03	NA	1.3E-04	3.8E-03
			1,4-Dichlorobenzene		NA		NA		---		NA		
			Benzene	7.7E-07	9.4E-06	9.5E-09	NA	1.0E-05	Blood	9.8E-03	1.2E-01	1.2E-04	1.3E-01
			Chlorobenzene		NA		NA		Liver	1.6E-02	NA	3.6E-04	1.6E-02
			Chloroform		NA		NA		Liver	1.5E-03	NA	8.6E-06	1.5E-03
			cis-1,2-Dichloroethene				NA		Blood	6.3E-01	7.7E+00		8.3E+00
			Ethylbenzene				NA		Liver / Kidney	1.3E-01	1.6E+00	5.2E-03	1.7E+00
			Tetrachloroethene	3.6E-03	4.4E-02	9.7E-05	NA	4.7E-02	Liver	1.9E+00	2.3E+01	5.0E-02	2.5E+01
			Toluene		NA		NA		Kidney	2.9E-02	NA	7.4E-04	3.0E-02
			Trichloroethene	1.6E-03	2.0E-02	1.6E-05	NA	2.2E-02	---	3.8E+01	4.7E+02	3.8E-01	5.1E+02
			Vinyl Chloride	6.2E-06	7.6E-05	2.9E-08	NA	8.2E-05	Liver	8.3E-03	1.0E-01	3.8E-05	1.1E-01
			Xylenes (total)				NA		Whole body	9.0E-01	1.1E+01	3.9E-02	1.2E+01
			2,4-Dimethylphenol		NA		NA		Blood	5.4E-02	NA	4.9E-04	5.5E-02
			2-Methylnaphthalene		NA		NA		lungs		NA		
			4-Methylphenol		NA		NA		---	8.0E-01	NA		8.0E-01
			Naphthalene		NA		NA		Whole body	2.2E-03	NA	8.5E-05	2.3E-03
			Antimony		NA		NA		Blood		NA		
			Arsenic		NA		NA		Skin		NA		
			Cadmium		NA		NA		---	5.3E-01	NA	4.4E-04	5.3E-01
			Chromium		NA		NA		---	1.7E-02	NA	2.8E-05	1.7E-02
			Iron		NA		NA		---	1.6E-01	NA		1.6E-01
			Manganese		NA		NA		---		NA		
			Nickel		NA		NA		Body weight	3.8E-02	NA		3.8E-02
			Vanadium		NA		NA		---	1.7E-03	NA	1.4E-06	1.7E-03
			Chemical Total	5.2E-03	6.4E-02	1.1E-04		6.9E-02		4.4E+01	5.1E+02	4.9E-01	5.6E+02
		Exposure Point Total						6.9E-02					5.6E+02
	Exposure Medium Total							6.9E-02					5.6E+02
Medium Total								6.9E-02					5.6E+02

TABLE 9.6.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Industrial/Commercial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface soil	Surface soil	On-Site Surface Soil	Phenanthrene				NA		---				
			Endrin aldehyde				NA		---				
			Aluminum				NA		---	4.7E-03	2.9E-04		5.0E-03
			Arsenic	8.5E-07	7.6E-10	4.1E-07	NA	1.3E-06	Skin	5.3E-03		1.1E-03	6.4E-03
			Chromium		2.8E-07		NA	2.8E-07	---	7.0E-02	8.1E-03		7.8E-02
			Iron				NA		---	8.1E-03			8.1E-03
			Lead				NA		---				
			Nickel		1.2E-13		NA	1.2E-13	Body weight				
			Vanadium				NA		---	1.4E-03			1.4E-03
			Chemical Total	8.5E-07	2.8E-07	4.1E-07		1.5E-06		8.9E-02	8.3E-03	1.1E-03	9.9E-02
		Exposure Point Total						1.5E-06					9.9E-02
	Exposure Medium Total							1.5E-06					9.9E-02
Medium Total								1.5E-06					9.9E-02
Receptor Total								6.9E-02					5.6E+02

Total skin HI Across All Media =	2.4E-02
Total blood HI Across All Media =	9.0E+00
Total liver HI Across All Media =	2.6E+01
Total kidney HI Across All Media =	1.7E+00
Total whole body HI Across All Media =	1.2E+01

TABLE 9.7.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	On-Site Surface Soil	Phenanthrene				NA		---				
			Endrin aldehyde				NA		---				
			Aluminum				NA		---	1.6E-02	1.7E+00		1.7E+00
			Arsenic	1.1E-07	1.7E-07	1.7E-08	NA	3.0E-07	Skin	1.8E-02		1.1E-03	1.9E-02
			Chromium		6.3E-05		NA	6.3E-05	---	2.3E-01	4.6E+01		4.6E+01
			Iron				NA		---	2.7E-02			2.7E-02
			Lead				NA		---				
			Nickel		2.7E-11		NA	2.7E-11	Body weight	7.2E-04			7.2E-04
			Vanadium				NA		---	4.8E-03			4.8E-03
			Chemical Total	1.1E-07	6.4E-05	1.7E-08		6.4E-05		3.0E-01	4.8E+01	1.1E-03	4.8E+01
		Exposure Point Total						6.4E-05					4.8E+01
	Exposure Medium Total							6.4E-05					4.8E+01
Medium Total								6.4E-05					4.8E+01
Subsurface Soil	Subsurface Soil	On-Site Subsurface Soil	Arsenic	5.1E-08	7.8E-08	7.4E-09	NA	1.4E-07	Skin	7.9E-03		4.7E-04	8.33E-03
			Chromium		2.6E-06		NA	2.6E-06	---	9.6E-03	1.9E+00		1.94E+00
			Iron				NA		---	2.5E-02			2.50E-02
			Nickel		3.7E-12		NA	3.7E-12	Body weight	1.0E-04			1.02E-04
			Vanadium				NA		---	2.8E-03			2.81E-03
			Chemical Total	5.1E-08	2.7E-06	7.4E-09		2.8E-06		4.5E-02	1.9E+00	4.7E-04	2.0E+00
		Exposure Point Total						2.8E-06					2.0E+00
	Exposure Medium Total							2.8E-06					2.0E+00
Medium Total								2.8E-06					2.0E+00
Receptor Total								6.7E-05					5.0E+01

Total skin HI Across All Media =	2.7E-02
Total Body weight HI Across All Media =	8.3E-04

TABLE 9.1.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Current and future
Receptor Population:	Industrial/Commercial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	On-Site Surface Soil	Phenanthrene				NA		---				
			Endrin aldehyde				NA		---				
			Aluminum				NA		---	4.1E-03	2.6E-04		4.4E-03
			Arsenic	2.7E-07	2.4E-10	1.3E-08	NA	2.8E-07	Skin	4.7E-03		9.2E-05	4.7E-03
			Chromium		8.7E-08		NA	8.7E-08	---	6.1E-02	7.1E-03		6.8E-02
			Iron				NA		---	7.1E-03			7.1E-03
			Lead				NA		---				
			Nickel		3.7E-14		NA	3.7E-14	Body weight				
			Vanadium				NA		---	1.3E-03			1.3E-03
			Chemical Total	2.7E-07	8.7E-08	1.3E-08		3.7E-07		7.8E-02	7.3E-03	9.2E-05	8.6E-02
		Exposure Point Total						3.7E-07					8.6E-02
	Exposure Medium Total							3.7E-07					8.6E-02
Medium and Receptor Total								3.7E-07					8.6E-02

Total skin HI Across All Media = 4.7E-03

TABLE 9.2.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Current and Future
Receptor Population:	Trespasser
Receptor Age:	Pre-adolescent (7-12 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	On-Site Surface Soil	Phenanthrene				NA		---				
			Endrin aldehyde				NA		---				
			Aluminum				NA		---	2.0E-03	4.9E-05		2.0E-03
			Arsenic	8.5E-08	3.0E-11	6.0E-08	NA	1.5E-07	Skin	2.2E-03		6.4E-04	2.8E-03
			Chromium		1.1E-08		NA	1.1E-08	---	2.9E-02	1.3E-03		3.0E-02
			Iron				NA		---	3.4E-03			3.4E-03
			Lead				NA		---				
			Nickel		4.6E-15		NA	4.6E-15	Body weight				
			Vanadium				NA		---	6.0E-04			6.0E-04
			Chemical Total	8.5E-08	1.1E-08	6.0E-08		1.6E-07		3.7E-02	1.4E-03	6.4E-04	3.9E-02
		Exposure Point Total						1.6E-07					3.9E-02
	Exposure Medium Total							1.6E-07					3.9E-02
Medium Total								1.6E-07					3.9E-02
Sediment	Sediment	Pump Branch Creek	Acenaphthylene		NA		NA		---		NA		
			Benzo(a)Pyrene	3.9E-08	NA		NA	3.9E-08	---		NA		
			Benzo(g,h,i)Perylene		NA		NA		---		NA		
			Phenanthrene		NA		NA		---		NA		
			Endrin aldehyde		NA		NA		---		NA		
			Aluminum		NA		NA		---	3.8E-03	NA		3.8E-03
			Arsenic	5.3E-07	NA	3.7E-07	NA	9.0E-07	Skin	1.4E-02	NA	3.9E-03	1.8E-02
			Iron		NA		NA		---	6.2E-03	NA		6.2E-03
			Lead		NA		NA		---		NA		
			Vanadium		NA		NA		---	5.0E-03	NA		5.0E-03
			Chemical Total	5.7E-07		3.7E-07		9.4E-07		2.9E-02		3.9E-03	3.3E-02
		Exposure Point Total						9.4E-07					3.3E-02
	Exposure Medium Total							9.4E-07					3.3E-02
Medium Total								9.4E-07					3.3E-02
Surface Water	Surface Water	Pump Branch Creek	Arsenic	2.9E-07	NA	2.7E-07	NA	5.6E-07	Skin	7.5E-03	NA	2.9E-03	1.0E-02
			Iron		NA		NA		---	6.5E-03	NA		6.5E-03
			Lead		NA		NA		---		NA		
			Vanadium		NA		NA		---	4.0E-04	NA	1.5E-04	5.6E-04
			Chemical Total	2.9E-07		2.7E-07		5.6E-07		1.4E-02		3.0E-03	1.7E-02
		Exposure Point Total						5.6E-07					1.7E-02
	Exposure Medium Total							5.6E-07					1.7E-02
Medium Total								5.6E-07					1.7E-02
Receptor Total								1.7E-06					8.9E-02

Total skin HI Across All Media = 3.1E-02

TABLE 9.3.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Current and Future
Receptor Population:	Tresspaser
Receptor Age:	Adolescent (13-18 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	On-Site Surface Soil	Phenanthrene				NA		---				
			Endrin aldehyde				NA		---				
			Aluminum				NA		---	1.7E-03	5.4E-05		1.8E-03
			Arsenic	7.6E-08	3.4E-11	2.6E-08	NA	1.0E-07	Skin	2.0E-03		2.8E-04	2.2E-03
			Chromium		1.2E-08		NA	1.2E-08	---	2.6E-02	1.5E-03		2.7E-02
			Iron				NA		---	3.0E-03			3.0E-03
			Lead				NA		---				
			Nickel		5.2E-15		NA	5.2E-15	Body weight				
			Vanadium				NA		---	5.3E-04			5.3E-04
			Chemical Total	7.6E-08	1.2E-08	2.6E-08		1.1E-07		3.3E-02	1.5E-03	2.8E-04	3.5E-02
		Exposure Point Total						1.1E-07					3.5E-02
	Exposure Medium Total							1.1E-07					3.5E-02
Medium Total								1.1E-07					3.5E-02
Sediment	Sediment	Pump Branch Creek	Acenaphthylene		NA		NA		---		NA		
			Benzo(a)Pyrene	3.5E-08	NA		NA	3.5E-08	---		NA		
			Benzo(g,h,i)Perylene		NA		NA		---		NA		
			Phenanthrene		NA		NA		---		NA		
			Endrin aldehyde		NA		NA		---		NA		
			Aluminum		NA		NA		---	3.4E-03	NA		3.4E-03
			Arsenic	4.7E-07	NA	4.6E-07	NA	9.3E-07	Skin	1.2E-02	NA	4.9E-03	1.7E-02
			Iron		NA		NA		---	5.5E-03	NA		5.5E-03
			Lead		NA		NA		---		NA		
			Vanadium		NA		NA		---	1.9E-03	NA		1.9E-03
			Chemical Total	5.1E-07		4.6E-07		9.7E-07		2.3E-02		4.9E-03	2.8E-02
		Exposure Point Total						9.7E-07					2.8E-02
	Exposure Medium Total							9.7E-07					2.8E-02
Medium Total								9.7E-07					2.8E-02
Surface Water	Surface Water	Pump Branch Creek	Arsenic	2.6E-07	NA	3.3E-07	NA	5.9E-07	Skin	6.6E-03	NA	3.6E-03	1.0E-02
			Iron		NA		NA		---	5.8E-03	NA		5.8E-03
			Lead		NA		NA		---		NA		
			Vanadium		NA		NA		---	3.6E-04	NA	1.9E-04	5.5E-04
			Chemical Total	2.6E-07		3.3E-07		5.9E-07		1.3E-02		3.8E-03	1.7E-02
		Exposure Point Total						5.9E-07					1.7E-02
	Exposure Medium Total							5.9E-07					1.7E-02
Medium Total								5.9E-07					1.7E-02
Receptor Total								1.7E-06					7.9E-02

Total skin HI Across All Media = 3.0E-02

TABLE 9.4.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater/Air	Groundwater/ Water Vapors from Showering with Groundwater	1,1,2-Trichloroethane		5.6E-08		NA	5.6E-08	---		5.8E-03		5.8E-03
			1,2,3-Trichlorobenzene				NA		---				
			1,2,4-Trichlorobenzene				NA		Adrenal glands	2.7E-01	2.4E-01	5.6E-02	5.6E-01
			1,2-Dichlorobenzene				NA		---	4.6E-03	4.1E-03	6.1E-04	9.3E-03
			1,4-Dichlorobenzene				NA		---				
			Benzene	1.9E-06	2.0E-06	9.2E-08	NA	4.0E-06	Blood	2.0E-01	2.1E-01	9.8E-03	4.2E-01
			Chlorobenzene				NA		Liver	2.2E-02	2.1E-02	1.9E-03	4.4E-02
			Chloroform				NA		Liver	2.2E-03	2.3E-03	4.7E-05	4.5E-03
			cis-1,2-Dichloroethene				NA		Blood	9.0E-01	9.1E-01		1.8E+00
			Ethylbenzene				NA		Liver / Kidney	1.6E-01	1.4E-01	2.5E-02	3.3E-01
			Tetrachloroethene	6.0E-04	5.5E-04	6.3E-05	NA	1.2E-03	Liver	2.6E+00	2.4E+00	2.7E-01	5.3E+00
			Toluene				NA		Kidney	3.6E-02	3.4E-02	3.6E-03	7.4E-02
			Trichloroethene	2.5E-04	2.5E-04	9.6E-06	NA	5.1E-04	---	4.9E+01	4.8E+01	1.9E+00	9.9E+01
			Vinyl Chloride	9.7E-07	2.5E-07	1.7E-08	NA	1.2E-06	Liver	1.1E-02		1.9E-04	1.1E-02
			Xylenes (total)				NA		Whole body	1.1E+00		1.9E-01	1.3E+00
			2,4-Dimethylphenol				NA		Blood	6.8E-02		2.4E-03	7.0E-02
			4-Methylphenol				NA		---	9.8E-01			9.8E-01
			bis(2-Ethylhexyl)Phthalate	2.9E-08			NA	2.9E-08	Liver	2.4E-03			2.4E-03
			Naphthalene				NA		Whole body	3.1E-03		4.6E-04	3.5E-03
			Iron				NA		---	3.0E-01			3.0E-01
			Antimony	2.2E-06		6.9E-09	NA	2.2E-06	Blood	2.9E-01		9.2E-04	2.9E-01
			Arsenic	4.1E-06		1.3E-08	NA	4.1E-06	Skin	2.1E-01		6.8E-04	2.1E-01
			Cadmium				NA		---	6.9E-01		2.2E-03	6.9E-01
			Chromium				NA		---	4.1E-02		2.6E-04	4.1E-02
			Lead				NA		---			3.8E-08	3.8E-08
			Manganese			1.3E-07	NA	1.3E-07	Neurological	1.9E-02		1.7E-02	3.5E-02
			Nickel				NA		Body weight	1.2E-02			1.2E-02
			Thallium				NA		Liver, blood, hair loss	2.1E+00		5.3E-04	2.1E+00
			Vanadium				NA		---	5.3E-02		1.7E-04	5.3E-02
			Chemical Total	8.6E-04	8.0E-04	7.3E-05		1.7E-03		5.9E+01	5.2E+01	2.5E+00	1.1E+02
		Exposure Point Total						1.7E-03					1.1E+02
	Exposure Medium Total							1.7E-03					1.1E+02
Medium and Receptor Total								1.7E-03					1.1E+02

Total skin HI Across All Media =	2.1E-01
Total blood HI Across All Media =	4.7E+00
Total liver HI Across All Media =	7.7E+00
Total whole body HI Across All Media =	1.3E+00
Total Neurological HI Across All Media =	3.5E-02
Total hair loss HI Across All Media =	3.8E-08
Total bodyweight HI Across All Media =	1.2E-02

TABLE 9.5.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater/Air	Groundwater/ Water Vapors from Showering with Groundwater	1,1,2-Trichloroethane	2.7E-07	5.3E-07	5.5E-09	NA	8.0E-07	Blood	1.4E-02	2.7E-02	2.8E-04	4.1E-02
			1,2,3-Trichlorobenzene				NA		---				
			1,2,4-Trichlorobenzene				NA		Adrenal glands	5.9E-01	1.1E+00	1.3E-01	1.8E+00
			1,2-Dichlorobenzene				NA		---	1.0E-02	1.9E-02	1.4E-03	3.1E-02
			1,4-Dichlorobenzene				NA		---				
			Benzene	8.5E-06	1.9E-05	4.2E-07	NA	2.8E-05	Blood	4.5E-01	9.8E-01	2.2E-02	1.5E+00
			Chlorobenzene				NA		Liver	4.8E-02	9.6E-02	4.4E-03	1.5E-01
			Chloroform				NA		Liver	4.8E-03	1.1E-02	1.1E-04	1.5E-02
			cis-1,2-Dichloroethene				NA		Blood	2.0E+00	4.2E+00		6.2E+00
			Ethylbenzene				NA		Liver / Kidney	3.6E-01	6.6E-01	5.7E-02	1.1E+00
			Tetrachloroethene	2.7E-03	5.2E-03	2.9E-04	NA	8.1E-03	Liver	5.8E+00	1.1E+01	6.2E-01	1.8E+01
			Toluene				NA		Kidney	8.0E-02	1.6E-01	8.0E-03	2.5E-01
			Trichloroethene	1.1E-03	2.3E-03	4.3E-05	NA	3.5E-03	---	1.1E+02	2.2E+02	4.2E+00	3.4E+02
			Vinyl Chloride	4.3E-06	2.3E-06	7.8E-08	NA	6.7E-06	Liver	2.4E-02	1.3E-02	4.3E-04	3.7E-02
			Xylenes (total)				NA		Whole body	2.5E+00	5.2E+00	4.2E-01	8.1E+00
			2,4-Dimethylphenol				NA		Blood	1.5E-01		5.4E-03	1.6E-01
			4-Methylphenol				NA		---	2.2E+00			2.2E+00
			bis(2-Ethylhexyl)Phthalate	1.3E-07			NA	1.3E-07	Liver	5.4E-03			5.4E-03
			Naphthalene				NA		Whole body	6.8E-03		1.0E-03	7.9E-03
			Iron				NA		---	6.7E-01			6.7E-01
			Antimony				NA		Blood	8.0E-01		2.6E-03	8.1E-01
			Arsenic	1.8E-05		5.9E-08	NA	1.8E-05	Skin	4.7E-01		1.5E-03	4.7E-01
			Cadmium				NA		---	1.5E+00		4.9E-03	1.5E+00
			Chromium				NA		---	9.1E-02		5.9E-04	9.2E-02
			Lead				NA		---				
			Manganese				NA		Neurological	4.2E-02		1.4E-04	4.2E-02
			Nickel				NA		Body weight	2.7E-02			2.7E-02
			Thallium				NA		---	4.6E+00		1.5E-02	4.6E+00
			Vanadium				NA		---	1.2E-01		3.8E-04	1.2E-01
			Chemical Total	3.8E-03	7.5E-03	3.3E-04		1.2E-02		1.3E+02	2.5E+02	5.5E+00	3.8E+02
		Exposure Point Total						1.2E-02					3.8E+02
	Exposure Medium Total							1.2E-02					3.8E+02
Medium and Receptor Total								1.2E-02					3.8E+02

Total skin HI Across All Media =	4.7E-01
Total blood HI Across All Media =	8.7E+00
Total liver HI Across All Media =	1.9E+01
Total whole body HI Across All Media =	8.1E+00
Total Neurological HI Across All Media =	4.2E-02
Total hair loss HI Across All Media =	4.6E+00
Total adrenal glands HI Across All Media =	1.8E+00
Total kidney HI Across All Media =	1.3E+00
Total body weight HI Across All Media =	2.7E-02

TABLE 9.6.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Industrial/Commercial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater, Air	Hypothetical Future On-Site Supply Wells/ Vapor Intrusion from On-Site Groundwater	1,2,3-Trichlorobenzene		NA		NA		---		NA		
			1,2,4-Trichlorobenzene		NA		NA		Adrenal glands	9.4E-02	NA	1.0E-02	1.0E-01
			1,2-Dichlorobenzene		NA		NA		---	1.6E-03	NA	1.1E-04	1.7E-03
			1,4-Dichlorobenzene		NA		NA		---		NA		
			Benzene	1.2E-07	2.5E-07	3.0E-09	NA	3.7E-07	Blood	4.3E-03	8.8E-03	1.1E-04	1.3E-02
			Chlorobenzene		NA		NA		Liver	6.8E-03	NA	3.2E-04	7.2E-03
			Chloroform		NA		NA		Liver	6.7E-04	NA	7.5E-06	6.8E-04
			cis-1,2-Dichloroethene				NA		Blood	2.8E-01	5.6E-01		8.4E-01
			Ethylbenzene				NA		Liver / Kidney	5.6E-02	1.2E-01	4.6E-03	1.8E-01
			Tetrachloroethene	5.6E-04	1.2E-03	3.1E-05	NA	1.7E-03	Liver	8.1E-01	1.7E+00	4.4E-02	2.5E+00
			Toluene		NA		NA		Kidney	1.3E-02	NA	6.5E-04	1.3E-02
			Trichloroethene	2.6E-04	5.3E-04	5.1E-06	NA	8.0E-04	---	1.7E+01	3.4E+01	3.3E-01	5.2E+01
			Vinyl Chloride	9.8E-07	2.0E-06	9.1E-09	NA	3.0E-06	Liver	3.6E-03	7.4E-03	3.4E-05	1.1E-02
			Xylenes (total)				NA		Whole body	3.9E-01	8.1E-01	3.4E-02	1.2E+00
			2,4-Dimethylphenol		NA		NA		Blood	2.4E-02	NA	4.3E-04	2.4E-02
			2-Methylnaphthalene		NA		NA		lungs		NA		
			4-Methylphenol		NA		NA		---	3.5E-01	NA		3.5E-01
			Naphthalene		NA		NA		Whole body	9.6E-04	NA	7.4E-05	1.0E-03
			Antimony		NA		NA		Blood		NA		
			Arsenic		NA		NA		Skin		NA		
			Cadmium		NA		NA		---	2.3E-01	NA	3.8E-04	2.3E-01
			Chromium		NA		NA		---	7.5E-03	NA	2.5E-05	7.6E-03
			Iron		NA		NA		---	7.0E-02	NA		7.0E-02
			Manganese		NA		NA		---		NA		
			Nickel		NA		NA		Body weight	1.7E-02	NA		1.7E-02
			Vanadium		NA		NA		---	7.3E-04	NA	1.2E-06	7.3E-04
			Chemical Total	8.2E-04	1.7E-03	3.6E-05		2.5E-03		1.9E+01	3.8E+01	4.3E-01	5.7E+01
		Exposure Point Total						2.5E-03					5.7E+01
	Exposure Medium Total							2.5E-03					5.7E+01
Medium Total								2.5E-03					5.7E+01

TABLE 9.6.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Industrial/Commercial Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface soil	Surface soil	On-Site Surface Soil	Phenanthrene				NA		---				
			Endrin aldehyde				NA		---				
			Aluminum				NA		---	4.1E-03	2.6E-04		4.4E-03
			Arsenic	2.7E-07	2.4E-10	1.3E-08	NA	2.8E-07	Skin	4.7E-03		9.2E-05	4.7E-03
			Chromium		8.7E-08		NA	8.7E-08	---	6.1E-02	7.1E-03		6.8E-02
			Iron				NA		---	7.1E-03			7.1E-03
			Lead				NA		---				
			Nickel		3.7E-14		NA	3.7E-14	Body weight				
			Vanadium				NA		---	1.3E-03			1.3E-03
			Chemical Total	2.7E-07	8.7E-08	1.3E-08		3.7E-07		7.8E-02	7.3E-03	9.2E-05	8.6E-02
		Exposure Point Total						3.7E-07					8.6E-02
	Exposure Medium Total							3.7E-07					8.6E-02
Medium Total								3.7E-07					8.6E-02
Receptor Total								2.5E-03					5.7E+01

Total skin HI Across All Media =	1.2E-02
Total blood HI Across All Media =	1.1E+00
Total liver HI Across All Media =	2.7E+00
Total kidney HI Across All Media =	1.9E-01
Total whole body HI Across All Media =	1.2E+00

TABLE 9.7.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Lightman Drum Superfund Site

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	On-Site Surface Soil	Phenanthrene				NA		---				
			Endrin aldehyde				NA		---				
			Aluminum				NA		---	1.4E-02	3.2E-04		1.4E-02
			Arsenic	9.9E-08	3.4E-11	1.4E-08	NA	1.1E-07	Skin	1.5E-02		9.2E-04	1.6E-02
			Chromium		1.2E-08		NA	1.2E-08	---	2.0E-01	8.9E-03		2.1E-01
			Iron				NA		---	2.3E-02			2.3E-02
			Lead				NA		---				
			Nickel		5.2E-15		NA	5.2E-15	Body weight	6.3E-04			6.3E-04
			Vanadium				NA		---	4.2E-03			4.2E-03
			Chemical Total	9.9E-08	1.2E-08	1.4E-08		1.3E-07		2.6E-01	9.3E-03	9.2E-04	2.7E-01
		Exposure Point Total						1.3E-07					2.7E-01
	Exposure Medium Total							1.3E-07					2.7E-01
Medium Total								1.3E-07					2.7E-01
Subsurface Soil	Subsurface Soil	On-Site Subsurface Soil	Arsenic	4.4E-08	1.5E-11	6.5E-09	NA	5.1E-08	Skin	6.9E-03		4.1E-04	7.30E-03
			Chromium		5.1E-10		NA	5.1E-10	---	8.4E-03	3.7E-04		8.77E-03
			Iron				NA		---	2.2E-02			2.19E-02
			Nickel		7.2E-16		NA	7.2E-16	Body weight	8.9E-05			8.91E-05
			Vanadium				NA		---	2.5E-03			2.46E-03
			Chemical Total	4.4E-08	5.3E-10	6.5E-09		5.1E-08		4.0E-02	3.7E-04	4.1E-04	4.1E-02
		Exposure Point Total						5.1E-08					4.1E-02
	Exposure Medium Total							5.1E-08					4.1E-02
Medium Total								5.1E-08					4.1E-02
Receptor Total								1.8E-07					3.1E-01

Total skin HI Across All Media =	2.4E-02
Total Body weight HI Across All Media =	7.2E-04

TABLE 9.8
SUMMARY OF CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE AND CENTRAL TENDENCY SCENARIOS
Lightman Drum Superfund Site

Scenario Timeframe	Receptor Population	Receptor Age	Medium											
			Groundwater		Surface Soil		Subsurface Soil		Surface Water		Sediment		Sum over all media	
			Cancer Risk	HI	Cancer Risk	HI	Cancer Risk	HI	Cancer Risk	HI	Cancer Risk	HI	Cancer Risk	HI
RME Scenario														
Current	Industrial/Commercial Worker	Adult	---	---	1.54E-06	9.88E-02	---	---	---	---	---	---	1.5E-06	0.0988
Current and Future	Trespasser	Pre-adolescent (7-12 yrs)	---	---	3.18E-07	7.90E-02	---	---	1.1E-06	0.03	1.9E-06	0.065	3.3E-06	0.179
Current and Future	Trespasser	Adolescent (13-18 yrs)	---	---	2.29E-07	6.97E-02	---	---	1.2E-06	0.03	1.9E-06	0.056	3.3E-06	0.159
Future	Resident	Adult	2.60E-02	1.86E+02	---	---	---	---	---	---	---	---	2.6E-02	186
Future	Resident	Child	3.80E-02	1.25E+03	---	---	---	---	---	---	---	---	3.8E-02	1250
Future	Industrial/Commercial Worker	Adult	6.92E-02	5.57E+02	1.54E-06	9.03E-02	---	---	---	---	---	---	6.9E-02	557
Future	Construction Worker	Adult	---	---	6.38E-05	4.81E+01	2.8E-06	2.0	---	---	---	---	6.7E-05	50.1
CT Scenario														
Current	Industrial/Commercial Worker	Adult	---	---	3.70E-07	8.58E-02	---	---	---	---	---	---	3.7E-07	0.086
Current and Future	Trespasser	Pre-adolescent (7-12 yrs)	---	---	1.56E-07	3.91E-02	---	---	5.6E-07	0.017	9.4E-07	0.033	1.7E-06	0.089
Current and Future	Trespasser	Adolescent (13-18 yrs)	---	---	1.14E-07	3.49E-02	---	---	5.9E-07	0.017	9.7E-07	0.028	1.7E-06	0.079
Future	Resident	Adult	1.74E-03	1.13E+02	---	---	---	---	---	---	---	---	1.7E-03	113
Future	Resident	Child	1.16E-02	3.85E+02	---	---	---	---	---	---	---	---	1.2E-02	385
Future	Industrial/Commercial Worker	Adult	2.55E-03	5.73E+01	3.70E-07	7.83E-02	---	---	---	---	---	---	2.5E-03	57
Future	Construction Worker	Adult	---	---	1.26E-07	2.69E-01	5.12E-08	4.05E-02	---	---	---	---	1.8E-07	0.31

HI = Cumulative Hazard Index.
Cumulative Hazard indices result from the addition of hazards to different organs and are therefore likely to be conservative.

WILDLIFE OBSERVATION TABLE
LIGHTMAN DRUM SUPERFUND SITE

Fauna and Flora Observations Made at the Lightman Drum Facility Site		
Mammals		
Common Name	**Scientific Name**	**Nature of Observation**
Eastern cottontail rabbit	*Sylvilagus floridanus*	Observed twice running through wooded portion of subject property.
Whitetail deer	*Odocoileus virginianus*	Observed feces and tracks.
Birds		
Sparrow species	*Spizella* spp.	Observed on southern property bounds on edge forested vegetation.
Wild turkey	*Meleagris gallopavo*	Single feather found.
Red-tailed hawk	*Buteo jamaicensis*	Audible observation, overhead when walking western portion of subject property.
Northern mocking bird	*Mimus polyglottos*	Observed on overhead power lines along south property boundary.
American robin	*Turdus migratorius*	Observed on edge of forested vegetation, southeastern portion of property.
Black-capped chickadee	*Poecile atricapillus*	Observed on southern property bounds on edge of forested vegetation.
Mourning dove	*Zenaida macroura*	Observed on overhead power lines along south property boundary.
Blue jay	*Cyanocitta cristata*	Observed on southern property bounds on edge of forested vegetation.
American crow	*Corvus brachyrhynchos*	Audible observation, overhead when walking central portion of subject property.
Plants		
Post oak	*Quercus stellata*	Observed
Blackjack Oak	*Quercus marilandica*	Observed
Bear Oak	*Quercus ilcifolia*	Observed
Pitch Pine	*Pinus rigida*	Observed
Arrow-leaved Tearthumb	*Polygonum sagittatum*	Observed
Soft Rush	*Juncus effusus*	Observed
Wool Grass	*Scirpus cyperinus*	Observed
Purple Loosetrife	*Lythrum salicaria*	Observed
Swamp Loosestrife	*Decodon verticillatus*	Observed
Sweetbay Magnolia	*Magnolia virginiana*	Observed
Sweet Pepperbush	*Clethra alnifolia*	Observed

Table 10-2
Assessment and Measurement Endpoints
Lightman Drum Superfund Site

Assessment Endpoint	Risk Questions	Measurement Endpoint	Receptor Species/Area(s) of Concern
Protection of freshwater invertebrates from the toxic effects (on survival and growth) of site-related chemicals present in sediment and surface water	Are levels of site-related chemicals present in sediment and surface water sufficient to cause adverse effects on the survival and growth of aquatic invertebrates at the site?	Comparison of maximum surface water and sediment concentrations to aquatic invertebrate-based surface water and sediment screening values.	Freshwater invertebrates
Protection of amphibians from the toxic effects (on survival and growth) of site-related chemicals present in sediment and surface water	Are levels of site-related chemicals present in sediment and surface water sufficient to cause adverse effects on the survival and growth of insectivorous amphibians at the site?	Comparison of exposure HQs to a reference HQ of 1.0. Exposure HQs are calculated for individual chemicals by dividing the surface water concentrations by amphibian-based surface water screening values. A reference HQ of 1.0 represents a condition where the surface water concentration is equal to the screening values.	Green frog
Protection of terrestrial (soil) invertebrates from the toxic effects (on survival and growth) of site-related chemicals present in soil	Are levels of site-related chemicals present in soil sufficient to cause adverse effects on the survival and growth of terrestrial invertebrates at the site?	Comparison of maximum soil concentrations with terrestrial invertebrate-based screening (benchmark) values.	Terrestrial invertebrates
Protection of terrestrial vegetation from the toxic effects (on survival and growth) of site-related chemicals present in soil	Are levels of site-related chemicals present in soil sufficient to cause adverse effects on the survival and growth of terrestrial plants at the site?	Comparison of maximum soil concentrations with terrestrial plant-based screening (benchmark) values.	Terrestrial Plants
Protection of terrestrial mammals to ensure that ingestion of contaminants in soil and through diet does not have negative impacts on growth, survival, and reproduction	Are levels of site contaminants in soil sufficient to cause adverse effects on the growth, survival, and reproductive success of small mammals using the site?	Comparison of dietary HQs to a reference of 1.0. Dietary HQs are calculated for individual chemicals by dividing an estimated level of exposure by an ecotoxicity value that is associated with a no observed adverse effect level (NOAEL) and a lowest observed adverse effect level (LOAEL). A reference HQ of 1.0 represents a dietary dose that is equal to the ecotoxicity effect level (NOAEL or LOAEL).	Meadow Vole

Table 10-2
Assessment and Measurement Endpoints
Lightman Drum Superfund Site

Assessment Endpoint	Risk Questions	Measurement Endpoint	Receptor Species/Area(s) of Concern
Protection of terrestrial birds to ensure that ingestion of contaminants in soil and through diet does not have negative impacts on growth, survival, and reproduction	Are levels of site contaminants in soil sufficient to cause adverse effects on the growth, survival, and reproductive success of omnivorous birds using the site?	Comparison of dietary HQs to a reference of 1.0. Dietary HQs are calculated for individual chemicals by dividing an estimated level of exposure by an ecotoxicity value that is associated with a no observed adverse effect level (NOAEL) and a lowest observed adverse effect level (LOAEL). A reference HQ of 1.0 represents a dietary dose that is equal to the ecotoxicity effect level (NOAEL or LOAEL)..	American Robin
Protection of terrestrial mammals to ensure that ingestion of contaminants in soil and through diet does not have negative impacts on growth, survival, and reproduction	Are levels of site contaminants in soil sufficient to cause adverse effects on the growth, survival, and reproductive success of upper-trophic level mammals using the site?	Comparison of dietary HQs to a reference of 1.0. Dietary HQs are calculated for individual chemicals by dividing an estimated level of exposure by an ecotoxicity value that is associated with a no observed adverse effect level (NOAEL) and a lowest observed adverse effect level (LOAEL). A reference HQ of 1.0 represents a dietary dose that is equal to the ecotoxicity effect level (NOAEL or LOAEL)..	Red Fox
Protection of terrestrial birds to ensure that ingestion of contaminants in soil and through diet does not have negative impacts on growth, survival, and reproduction	Are levels of site contaminants in soil sufficient to cause adverse effects on the growth, survival, and reproductive success of upper-trophic level birds using the site?	Comparison of dietary HQs to a reference of 1.0. Dietary HQs are calculated for individual chemicals by dividing an estimated level of exposure by an ecotoxicity value that is associated with a no observed adverse effect level (NOAEL) and a lowest observed adverse effect level (LOAEL). A reference HQ of 1.0 represents a dietary dose that is equal to the ecotoxicity effect level (NOAEL or LOAEL)..	Red-Tail Hawk

Table 10-3
Comparison of Chemicals in Surface Water with Screening Values
Lightman Drum Superfund Site

Chemical	Minimum Concentration (Qualifer) (1),(2)	Maximum Concentration (Qualifer) (3)	Units	Location of Maximum Concentration	Detection Frequency (No. of detects/No. of samples)	Range of Detection Limits	Detected Background Value (4)	Mean Value	Standard Deviation	Region III Freshwater Benchmarks	NJ DEP Surface Water Quality Criteria	National Recommended Surface Water Quality Criteria (6)	Exceeds minimum criteria	NOEC (7)	COPEC	PBT or BCC	Rationale for Selection or Deletion (8)
Inorganic Compounds (5)																	
Aluminum	1770	2300	ug/L	SW01	4 / 4	69.6	2300	1957.50	236.41	87.00	-	-	exceeds		Y	N	ASL
Arsenic	2.025	11	ug/L	SW02	4 / 4	2.1	2.9 B	4.93	4.11	5.00	0.017	150	exceeds		Y	N	ASL
Barium	53.2 (B)	102.45	ug/L	SW03	4 / 4	0.3	89.9 B	85.56	22.05	4.00	2000	-	exceeds		Y	N	ASL
Beryllium	0.29	0.3 (B)	ug/L	SW01	2 / 4	0.2	0.3 B	0.20	0.11	0.66	-	-	-		N	N	BSL
Calcium	3285	5950	ug/L	SW02	4 / 4	18.3	4290 B	4473.75	1101.06	116000.00	-	-	-		N	N	BSL
Chromium	2.35	3.8 (B)	ug/L	SW02 & SW04	4 / 4	1	2.8 B	3.19	0.73	11.00	160	11	-		N	N	BSL
Cobalt	0.98 (B)	3.2 (B)	ug/L	SW02	4 / 4	0.8	2.1 B	2.26	0.96	23.00	-	-	-	247.5	N	N	BSL
Copper	3.9	24.7 (B)	ug/L	SW04	4 / 4	1.3	11.5 B	11.45	9.41	9.00	-	9	exceeds	31	Y	N	ASL
Cyanide	1.45	2.1 (B)	ug/L	SW02	4 / 4	0.6	2 B	1.76	0.34	5.00	768	5.2	-		N	N	BSL
Iron	11300	22500	ug/L	SW02	4 / 4	20.5	11300	14750.00	5218.88	300.00	-	-	exceeds	20000	Y	N	ASL
Lead	10.6	22.8	ug/L	SW04	4 / 4	1.1	17.9	15.51	5.93	2.50	5	2.5	exceeds		Y	N	ASL
Magnesium	1180 (B)	1570 (B)	ug/L	SW02	4 / 4	12.4	1510 B	1437.50	175.00	82000.00	-	-	-		N	N	BSL
Manganese	24.9	77.6	ug/L	SW02	4 / 4	0.4	47.3	48.80	21.71	120.00	-	-	-	9217	N	N	BSL
Nickel	3.1 (B)	8 (B)	ug/L	SW02	4 / 4	1	7.5 B	6.54	2.30	52.00	516	52	-		N	N	BSL
Potassium	1320	1570 (B)	ug/L	SW02	4 / 4	56.1	1520 B	1482.50	110.87	53000.00	-	-	-		N	N	BSL
Selenium	2.075	3.2 (B)	ug/L	SW04	3 / 4	2.5	2.8 B	2.33	0.86	1.00	10	5	exceeds		Y	N	ASL
Sodium	2170 (B)	6680	ug/L	SW01	4 / 4	276	6680	3802.50	2094.84	680000.00	-	-	-		N	N	BSL
Vanadium	7.25	13.8 (B)	ug/L	SW04	4 / 4	1	9.7 B	10.86	2.97	20.00	-	-	-		N	N	BSL
Semivolatile Organic Compounds																	
4-Methylphenol		5 (J)	ug/L	SW01	1 / 4	2	5 J	2.33	2.31	543.00	-	-	-		N	N	BSL

NOTES:
shaded cells indicate compounds identified as a COPEC
COPEC = Chemical of potential ecological concern
PBT = Persistent, Bioaccumulative and Toxic
BCC = Bioaccumulative Chemicals of Concern
- = Information not available

(1) The Qualifier codes are defined as the following:
B - The analyte was detected at a concentration below the Contract Required Detection Limit.
J - The analyte was detected and is considered an estimated value.
Where there was only one detected value, it is treated as the maximum value
(2) The average result for SW03 and Field Duplicate DSW03 was used. Where one measurement was non-detect, 1/2 the detection limit was used in average calculation.
(3) Maximum detected value was used for screening.
(4) Background is upgradient surface water sample SW-01
(5) Region 3 freshwater benchmark for chromium is based on Chromium VI
(6) National Recommended Water Quality Criteria, 2006. (EPA, Office of Water, Office of Science and Technology, April 1999). Freshwater values used. Criterion continuous concentration (CCC) values are used, criterion maximum concentration values used when CCC values are not available. Lowest measured surface water hardness value (210 milligrams of calcium carbonate/liter) was used to calculate hardness-dependent criteria (copper, nickel, lead,and zinc). Where these criteria were unavailable, Region III Surface Water Quality Criteria were used. The equation used was: CMC(dissolved) = exp{ma[ln(hardness)+bA}(CF), where the variables can be found in Appendix B of the National Recommended Water Quality Criteria, 2006. Cr VI was used as a conservative value
(7) NOEC : No Observed Effects Concentration
Cobalt: NOEC adapted from LOEC by a factor of 0.1; clawed frog embryo study. Nagpal, N. K., Technical Report - Water Quality Guidelines for Cobalt. Water Protection Section; Ministry of Water, Land and Air Protection, British Columbia, CA
Copper: NOEC for Rana pipiens, embryo-larval study. Birge and Black, 1979
Iron: NOEC for hyla ornata, tadpole study
Manganese: ornate tree frog, tadpole study. Rao and Madhyastha, 1987
(8) Rationale Codes:
ASL - maximum concentration is greater than screening value.
BSL - maximum concentration is less than screening value.

Table 10-4
Comparison of Chemicals in Sediment with Screening Values
Lightman Drum Superfund Site

Chemical	Minimum Concentration (Qualifer) (1)	Maximum Concentration (Qualifer) (1)	Units	Location of Maximum Concentration	Detection Frequency (No. of detects / No. of samples)	Range of Detection Limits	Detected Background Value	Mean Value	Standard Deviation	Ontario's MOE Sediment Quality Guidelines (2)	Great Lakes ARCS Program Freshwater Sediment Quality Assessment Values (3)	USEPA Region III BTAGs (4)	Ingersoll et al. Sediment Screening Values (5)	USEPA Region V RCRA Ecological Screening Levels (6)	Region IV Waste Management Division Sediment Screening Values (7)	Exceeds Criteria	COPEC	PBT or BCC	Rationale for Selection or Deletion (8)
Volatile Organic Compounds																			
Xylenes (total)	-	3 (J)	ug/kg	SD03-24	1 / 8	0	ND	0.44	1.13	-	-	25.20 a	-	433	-		N	N	BSL
Methyl acetate	5 (J)	1600 (J)	ug/kg	SD04-06	4 / 8	0.92 - 2.8	ND	255.95	595.49	-	-	-	-	-	-	no criteria	Y	N	NSL
Semivolatile Organic Compounds																			
Caprolactam	-	31.5	ug/kg	SD01-06	1 / 8	14 - 67	56	23.31	13.52	-	-	-	-	-	-	no criteria	Y	N	NSL
4-Methylphenol	-	390 (J)	ug/kg	SD03-06	1 / 8	12 - 70	ND	73.29	140.41	-	-	670	-	-	-		N	N	BSL
Di-n-Octyl Phthalate	-	602.25	ug/kg	SD01-06	1 / 8	9 - 67	1200	93.72	205.98	-	-	-	-	4.06E+04	-		N	N	BSL
Anthracene	39 (J)	69.5	ug/kg	SD01-06	2 / 8	8 - 67	75	31.31	20.80	220	-	57.2	845	57.2	330		N	N	BSL
Pyrene	22 (J)	360 (J)	ug/kg	SD04-06	4 / 8	13 - 67	360	128.63	148.39	490	-	195	1520	195	330		N	N	BSL
Dibenzofuran	18	21 (J)	ug/kg	SD02-06	2 / 8	7 - 67	20	22.50	13.25	-	-	415	-	449	-		N	N	BSL
Indeno(1,2,3-cd)Pyrene	-	56 (J)	ug/kg	SD02-06	1 / 8	8 - 67	ND	28.29	18.51	200	-	17	-	200	-		N	N	BSL
Benzo(b)Fluoranthene	21 (J)	275	ug/kg	SD01-06	3 / 8	13 - 67	280	79.56	99.97	-	-	-	-	1.04E+04	-		N	N	BSL
Fluoranthene	9 (J)	400 (J)	ug/kg	SD04-06	5 / 8	7 - 67	390	140.94	164.18	750	-	423	2230	423	330		N	N	BSL
Benzo(k)Fluoranthene	110 (J)	240	ug/kg	SD01-06	2 / 8	14 - 67	280	62.25	78.64	240	-	240	-	240	-		N	N	BSL
Acenaphthylene	27 (J)	36.5	ug/kg	SD01-06	2 / 8	8 - 67	41	25.69	13.65	-	-	5.9	-	6.71	330	exceeds	Y	N	ASL
Chrysene	18 (J)	240	ug/kg	SD01-06	3 / 8	8 - 67	260	65.75	79.95	340	57.1	166	1290	166	330		N	N	BSL
Benzo(a)Pyrene	10 (J)	155	ug/kg	SD01-06	3 / 8	8 - 67	170	47.63	48.65	370	-	150	1450	150	330		Y	Y	BA
Benzo(g,h,i)Perylene	-	70	ug/kg	SD01-06	1 / 8	40 - 67	120	33.00	16.38	170	-	170	-	170	-		N	N	BA
Dibenz(a,h)Anthracene	-	24 (J)	ug/kg	SD02-06	1 / 8	11 - 67	ND	24.14	13.20	60	-	33	-	33	330		N	N	BSL
Benzo(a)Anthracene	97 (J)	110	ug/kg	SD01-06	2 / 8	9 - 67	120	43.75	39.14	320	-	108	1050	108	330		N	N	BSL
Phenanthrene	16 (J)	160	ug/kg	SD01-06	3 / 8	10 - 67	180	54.38	54.92	560	-	204	1170	204	330		N	N	BSL
Carbazole	23 (J)	29	ug/kg	SD01-06	2 / 8	9 - 67	32	24.38	12.80	-	-	-	-	-	-	no criteria	Y	N	NSL
Naphthalene	32 (J)	33.5	ug/kg	SD01-06	2 / 8	8 - 67	36	25.94	13.55	-	-	176	561	176	330		N	N	BSL
2-Methylnaphthalene	12 (J)	63 (J)	ug/kg	SD02-06	3 / 8	10 - 67	50	32.44	18.05	-	-	20.2	-	20.2	330	exceeds	Y	N	ASL
Pesticides/PCB's																			
4,4'-DDT	4.4 (J)	8.3 (J)	ug/kg	SD02-06	3 / 8	0.34 - 1.6	ND	2.73	3.10	8	-	-	62.9	4.16	3.3	exceeds	Y	Y	ASL, BA
alpha-Chlordane	-	5.4 (J)	ug/kg	SD04-06	1 / 8	0.11 - 0.78	ND	0.96	1.96	7	-	-	17.6	3.24 a	1.7		Y	Y	BA
4,4'-DDD	2.85	5.8	ug/kg	SD02-06	3 / 8	0.34 - 0.97	3	1.94	2.43	8	-	4.88	28	4.88	3.3		Y	Y	BA
4,4'-DDE	2.7 (J)	16	ug/kg	SD02-06	3 / 8	0.24 - 0.9	10	3.75	5.99	5	-	3.16	31.3	3.16	3.3	exceeds	Y	Y	ASL, BA
Endrin aldehyde	-	8.4 (J)	ug/kg	SD04-06	1 / 8	0.83 - 0.87	ND	1.57	3.01	3	-	-	-	480	3.3	exceeds	Y	N	ASL
Inorganic Compounds																			
Cyanide	0.036 (B)	1.05	mg/kg	SD01-06	7 / 8	0.028 - 0.11	1.10	0.26	0.33	-	-	100	-	0.1	-	exceeds	Y	N	ASL
Aluminum	655 (J)	9455	mg/kg	SD01-06	8 / 8	11.5 - 75.3	10200.00	4800.00	3150.18	-	-	-	-	-	-	no criteria	Y	N	NSL
Iron	344 (J)	10695	mg/kg	SD01-06	8 / 8	2.5 - 22.2	12100.00	3984.63	3767.96	20000	-	20000000	-	-	-		N	N	BSL
Lead	4.5 (J)	165 (J)	mg/kg	SD04-06	8 / 8	0.24 - 1.2	150.00	61.05	61.86	31	35	35800	128	3.58E+04	30.2	exceeds	Y	N	ASL
Magnesium	27 (B)	539 (J)	mg/kg	SD03-06	8 / 8	2.5 - 13.2	406.00	262.94	186.45	-	-	-	-	-	-	no criteria	Y	N	NSL
Manganese	2.8 (B)	23.15	mg/kg	SD01-06	8 / 8	0.04 - 0.43	26.40	12.71	8.31	460	-	460000	-	-	-		N	N	BSL
Mercury	0.093 (B)	0.48 (J)	mg/kg	SD04-06	4 / 8	0.039 - 0.22	0.36	0.16	0.16	0.2	0.174	180	106	174	0.13	exceeds	Y	Y	ASL, BA
Nickel	0.8 (B)	9.55	mg/kg	SD01-06	8 / 8	0.2 - 1.1	9.90	4.94	3.44	16	18	22700	48.6	2.27E+04	15.9		N	N	BSL
Potassium	19.3 (B)	512 (J)	mg/kg	SD04-06	8 / 8	8.1 - 60.7	213.00	232.01	193.00	-	-	-	-	-	-	no criteria	Y	N	NSL
Sodium	97	2270 (J)	mg/kg	SD04-06	8 / 8	61.5 - 298	142.00	733.38	936.19	-	-	-	-	-	-	no criteria	Y	N	NSL
Antimony	0.76	1.8 (J)	mg/kg	SD04-06	2 / 8	0.24 - 2.1	0.84	0.64	0.59	-	-	2000	-	-	12		N	N	BSL
Arsenic	1 (B)	10.1	mg/kg	SD01-06	4 / 8	0.61 - 2.3	10.80	3.22	3.92	6	5.9	9800	33	9790	7.24	exceeds	Y	N	ASL
Barium	8.3 (B)	116 (J)	mg/kg	SD04-06	8 / 8	0.061 - 0.33	106.00	65.10	43.87	-	-	-	-	-	-	no criteria	Y	N	NSL
Beryllium	0.084 (B)	1.1 (J)	mg/kg	SD03-06	8 / 8	0.04 - 0.22	0.93	0.54	0.37	-	-	-	-	-	-	no criteria	Y	N	NSL
Cadmium	0.12 (B)	0.465	mg/kg	SD01-06	4 / 8	0.061 - 0.33	0.50	0.20	0.15	0.6	0.596	990	4.98	990	1		N	N	BSL
Chromium	1.4 (J)	13.9	mg/kg	SD01-06	8 / 8	0.16 - 1.1	15.10	7.70	5.21	26	37.3	43400	111	4.34E+04	52.3		N	N	BSL
Cobalt	0.14 (B)	2.1 (J)	mg/kg	SD03-06	7 / 8	0.14 - 0.87	1.80	0.89	0.72	-	-	50000	-	5.00E+04	-		N	N	BSL
Copper	1.4 (J)	150 (J)	mg/kg	SD04-06	8 / 8	0.3 - 1.4	32.70	32.33	49.22	16	35.7	31600	-	3.16E+04	18.7	exceeds	Y	N	ASL
Vanadium	1.4 (B)	36.7 (J)	mg/kg	SD04-06	8 / 8	0.14 - 1.1	33.30	16.62	13.54	-	-	-	-	-	-	no criteria	Y	N	NSL
Zinc	3.1 (B)	107 (J)	mg/kg	SD04-24	8 / 8	0.22 - 1.2	46.00	38.80	34.83	120	123.1	121000	459	1.21E+05	124		N	N	BSL
Calcium	107 (B)	3050 (J)	mg/kg	SD04-24	8 / 8	3 - 19.8	1160.00	1227.56	1172.98	-	-	-	-	-	-	no criteria	Y	N	NSL
Selenium	0.94 (J)	5.9 (J)	mg/kg	SD04-24	4 / 8	0.61 - 2.7	3.40	1.91	1.99	-	-	2000	-	-	-		N	N	NSL

Notes:
Mean and standard deviation include values for one-half the detection limit as a default concentration for those chemicals that were not detected.
Maximum detected value was used for screening.
- = Information not available
shaded cells indicate compounds identified as a COPEC
COPEC = Chemical of potential ecological concern
PBT = Persistent, Bioaccumulative and Toxic
BCC = Bioaccumulative Chemicals of Concern
ND = Not detected

(1) The Qualifier codes are defined as the following:

Table 10-4
Comparison of Chemicals in Sediment with Screening Values
Lightman Drum Superfund Site

Chemical	Minimum Concentration (Qualifer) (1)	Maximum Concentration (Qualifer) (1)	Units	Location of Maximum Concentration	Detection Frequency (No. of detects / No. of samples)	Range of Detection Limits	Detected Background Value	Mean Value	Standard Deviation	Ontario's MOE Sediment Quality Guidelines (2)	Great Lakes ARCS Program Freshwater Sediment Quality Assessment Values (3)	USEPA Region III BTAGs (4)	Ingersoll et al. Sediment Screening Values (5)	USEPA Region V RCRA Ecological Screening Levels (6)	Region IV Waste Management Division Sediment Screening Values (7)	Exceeds Criteria	COPEC	PBT or BCC	Rationale for Selection or Deletion (8)

B - The analyte was detected at a concentration below the Contract Required Detection Limit.
J - 'The analyte was detected and is considered an estimated value.
The average result for SD01-06 and Field Duplicate SD01-06 was used. Where one measurement was non-detect, 1/2 the detection limit was used in average calculation.
(2) Ministry of Environment and Energy (MOE) sediment quality guidelines are from MOE's *Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario* (August 1993; Persaud et.al). Endrin was used for endrin aldehyde
Values presented are the lowest effect level.
(3) Great Lakes sediment values are from: Smith, S.L. and D.D. MacDonald, K.A. Keenleyside, C.G. Ingersoll, and L.J. Field. 1996. *A preliminary evaluation of sediment quality assessment values for* freshwater ecosystems. *Journal of Great Lakes Research* 22: 624-638.
(4) a) m-xylene only value available
(5) Ingersoll et al., Prediction of sediment toxicity using consensus-based freshwater sediment quality guidelines, EPA 905/R-00/007. June 2000. Chlordane value was used for alpha-chlordane
(6) Chlordane was used in the absence of alpha-chlordane

(7) USEPA Region 4 Waste Management Division Sediment Screening Values for Hazardous Waste Sites. Chlordane was used for alpha-chlordane and endrin was used for endrin aldehyde
(8) Rationale codes:
The Ontario MOE Sediment Quality Guidelines was used as the primary screening criteria. Where no values were available, the minimum of the other screening criteria was used for selecting COPECs. All bioaccumulating compounds were selected
NSL - no screening value, thus chemical carried through as COPEC.
ASL - maximum concentration is greater than screening value.
BSL - maximum concentration is less than screening value.
BA - selected as COPEC because compound has been identified as a PBT (Persistent Bioaccumulative and Toxic) by EPA or a BCC (Bioaccumulative Chemical of Concern) by the Great Lakes Initiative

Table 10-5
Comparison of Chemicals in Soil and Sediment with Screening Values
Lightman Drum Superfund Site

Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (2)	Units	Location of Maximum concentration	Detection Frequency (No. of detects/No. of samples)	Range of Detection limits	Detected background Value (3)	Mean Value	Standard Deviation	Benchmarks of Chemicals to Earthworms Screening Values (4)	Benchmarks for Terrestrial Plants Screening Values (5)	Region V Ecological Screening Levels (6)	USEPA Ecological Screening Levels	Exceeds minimum criteria	PBT or BCC	COPEC (7)	Rationale for Selection or Deletion (8)
Volatile Organic Compounds (ug/kg)																	
2-Butanone	3.75 J	15	ug/kg	SS02-12	6 / 57	0.61 - 3	5 J	1.21	2.39	-	-	89600	-		N	N	BSL
4-Methyl-2-pentanone	1 J	5.275 J	ug/kg	SS06-12	6 / 57	0.25 - 3	ND	0.68	0.76	-	-	4.43E+05	-		N	N	BSL
Acetone	15	200	ug/kg	SS02-12	14 / 57	0.61 - 3	74	15.07	36.17	-	-	2500	-		N	N	BSL
Carbon Disulfide	2 J	3 J	ug/kg	SB02-24	2 / 57	0.34 - 3	ND	0.57	0.43	-	-	94.1	-		N	N	BSL
Methyl acetate	5 J	1600 J	ug/kg	SD04-06	4 / 57	0.61 - 3	ND	31.88	212.48	-	-	-	-		N	Y	NSL
Styrene	1 J	23	ug/kg	SB35-24	2 / 57	0.33 - 3	ND	0.90	2.99	-	300	4690	-		N	N	BSL
Tetrachloroethene	1 J	89	ug/kg	SB24-24	12 / 57	0.42 - 3	ND	3.05	12.01	-	-	9920	-		N	N	BSL
Trichloroethene	2 J	37	ug/kg	SB24-24	4 / 57	0.41 - 3	ND	1.25	4.85	-	-	1.24E+04	-		N	N	BSL
Trichlorofluoromethane	1 J	2 J	ug/kg	SB28-24	2 / 57	0.3 - 3	ND	0.53	0.30	-	-	1.64E+04	-		N	N	BSL
Xylenes (total)	ND	3 J	ug/kg	SD03-24	1 / 57	0.01 - 0.01	ND	0.06	0.40	-	-	1.00E+04	-		N	N	BSL
Semivolatile Organic Compounds																	
2-Chloronaphthalene	ND	28 J	ug/kg	SB23-06	1 / 57	9 - 67	ND	6.95	7.99	-	-	12.2	-	exceeds	N	Y	ASL
2-Methylnaphthalene	12 J	63 J	ug/kg	SD02-06	3 / 57	10 - 67	50 J	8.85	11.54	-	-	3240	-		N	N	BSL
4-Methylphenol	ND	390 J	ug/kg	SD03-06	1 / 57	12 - 70	ND	14.26	51.08	-	-	-	-		N	Y	NSL
Acenaphthylene	27 J	36.5 J	ug/kg	SD01-06	2 / 57	8 - 67	41 J	7.04	9.00	-	-	6.82E+05	-		N	N	BSL
Acetophenone	ND	11.5 J	ug/kg	SB07-06	1 / 57	10 - 67	ND	7.11	7.36	-	-	3.00E+05	-		N	N	BSL
Anthracene	39 J	69.5 J	ug/kg	SD01-06	2 / 57	8 - 67	75 J	7.83	12.07	-	-	1.48E+06	-		N	N	BSL
Benzaldehyde	11 J	63.5 J	ug/kg	SB07-06	3 / 57	4 - 67	ND	6.29	12.74	-	-	-	-		N	Y	NSL
Benzo(a)Anthracene	10 J	110 J	ug/kg	SD01-06	4 / 57	9 - 67	120 J	10.24	19.48	-	-	5210	-		N	N	BSL
Benzo(a)Pyrene	10 J	155 J	ug/kg	SD01-06	6 / 57	8 - 67	170 J	10.58	22.97	-	-	1520	-		Y	Y	BA
Benzo(b)Fluoranthene	11.25 J	275 J	ug/kg	SD01-06	4 / 57	13 - 67	280 J	16.84	43.63	-	-	59.8	-	exceeds	N	Y	ASL
Benzo(g,h,i)Perylene	ND	70 J	ug/kg	SD01-06	1 / 57	40 - 67	120 J	21.82	7.37	-	-	1.19E+05	-		N	N	BSL
Benzo(k)Fluoranthene	110 J	240 J	ug/kg	SD01-06	2 / 57	14 - 67	280 J	14.75	33.88	-	-	1.48E+05	-		N	N	BSL
bis(2-Ethylhexyl)Phthalate	200 J	8800	ug/kg	SB06-06	13 / 57	10 - 67	ND	381.47	1,323.76	-	-	925	-	exceeds	N	Y	ASL
Butylbenzylphthalate	10 J	130 J	ug/kg	SB38-06	12 / 57	9 - 67	ND	12.20	19.27	-	-	239	-		N	N	BSL
Caprolactam	27 J	63 J	ug/kg	SB23-06	3 / 57	14 - 67	56 J	10.62	10.52	-	-	-	-		N	Y	NSL
Carbazole	23 J	29 J	ug/kg	SD01-06	2 / 57	9 - 67	32 J	7.29	8.31	-	-	-	-		N	Y	NSL
Chrysene	11 J	240 J	ug/kg	SD01-06	7 / 57	8 - 67	260 J	13.44	35.53	-	-	4730	-		N	N	BSL
Dibenz(a,h)Anthracene	ND	24 J	ug/kg	SD02-06	1 / 57	11 - 67	ND	7.79	7.54	-	-	1.84E+04	-		N	N	BSL
Dibenzofuran	18 J	21 J	ug/kg	SD02-06	2 / 57	7 - 67	20 J	6.17	8.14	-	-	449	-		N	N	BSL
Diethylphthalate	10 J	85 J	ug/kg	SB32-06	3 / 57	9 - 67	ND	8.18	12.79	-	-	24800	-		N	N	BSL
Di-n-butylphthalate	14 J	300 J	ug/kg	SB08-06	13 / 57	11 - 67	ND	28.12	55.09	-	200	150	-	exceeds	N	Y	ASL
Di-n-Octyl Phthalate	10 J	770	ug/kg	SB06-06	20 / 57	9 - 67	1200 J	59.72	151.54	-	-	7.09E+05	-		N	N	BSL
Fluoranthene	9 J	400 J	ug/kg	SD04-06	16 / 57	7 - 67	390 J	25.03	75.04	-	-	1.22E+05	-		N	N	BSL
Hexachlorobenzene	ND	12 J	ug/kg	SB28-06	1 / 57	11 - 67	ND	7.58	7.24	-	-	199	-		Y	Y	BA
Indeno(1,2,3-cd)Pyrene	12 J	56 J	ug/kg	SD02-06	3 / 57	8 - 67	12 J	7.28	10.10	-	-	1.09E+05	-		N	N	BSL
Isophorone	10 J	20 J	ug/kg	SB32-06	3 / 57	9 - 67	ND	7.05	7.72	-	-	1.39E+05	-		N	N	BSL
Naphthalene	20 J	40 J	ug/kg	SB07-06	4 / 57	8 - 67	36 J	7.99	10.16	-	-	99.4	-		N	N	BSL
Phenanthrene	12 J	160 J	ug/kg	SD01-06	6 / 57	10 - 67	180 J	12.42	25.97	-	-	4.57E+04	-		N	N	BSL
Pyrene	13.25 J	360 J	ug/kg	SD04-06	13 / 57	13 - 67	360 J	25.50	67.38	-	-	7.85E+04	-		N	N	BSL
Pesticides/PCB's																	
4,4'-DDD	2.60 J	5.80	ug/kg	SD02-06	4 / 56	0.34 - 0.97	3 J	0.73	1.04	-	-	758	-		Y	Y	BA
4,4'-DDE	1.80 J	25.00	ug/kg	SB23-06	13 / 55	0.24 - 0.9	10 J	2.50	5.13	-	-	596	-		Y	Y	BA
4,4'-DDT	2.50 J	19.00	ug/kg	SB33-06	12 / 56	0.34 - 1.6	ND	2.34	3.85	-	-	3.5	-	exceeds	Y	Y	ASL/BA
alpha-Chlordane	2.50 JN	160.00 J	ug/kg	SB08-06	22 / 56	0.11 - 0.78	ND	11.76	28.99	-	-	224*	-		N	N	BSL
beta-BHC	2.40 J	18.00 J	ug/kg	SB35-06	2 / 56	0.25 - 1	ND	0.82	2.35	-	-	3.98	-	exceeds	Y	Y	ASL/BA
Dieldrin	2.90 J	12.00	ug/kg	SB35-06	6 / 56	0.33 - 1.3	ND	1.24	2.09	-	-	2.38	-	exceeds	Y	Y	ASL/BA
Endosulfan I	2.00 J	8.00	ug/kg	SB06-06	2 / 57	0.11 - 0.3	ND	0.31	1.07	-	-	119	-		N	N	BSL
Endosulfan II	4.30 JN	13.00 J	ug/kg	SB35-06	2 / 56	0.33 - 1.1	ND	0.81	1.74	-	-	119	-		N	N	BSL
Endosulfan sulfate	2.30 J	2.60 J	ug/kg	SB33-06	2 / 56	0.95 - 1	ND	0.57	0.37	-	-	35.8	-		N	N	BSL
Endrin	2.50 JN	11.00	ug/kg	SB35-06	2 / 57	0.35 - 1.8	ND	1.05	1.37	-	-	10.1	-	exceeds	N	Y	ASL
Endrin aldehyde	2.80 J	8.40 J	ug/kg	SD04-06	5 / 57	0.83 - 0.87	ND	0.81	1.35	-	-	10.5	-		N	N	BSL
gamma-BHC (Lindane)	ND	1.10 J	ug/kg	SS02-06	1 / 57	0.21 - 0.37	ND	0.20	0.12	-	-	5	-		Y	Y	BA
gamma-Chlordane	2.10	120.00	ug/kg	SB08-06 & SB32-06	21 / 56	0.22 - 0.72	ND	10.11	25.24	-	-	224*	-		Y	Y	BA
Heptachlor	1.10 J	4.50 JN	ug/kg	SB07-06	3 / 56	0.3 - 0.68	ND	0.45	0.62	-	-	5.98	-		N	N	BSL
Heptachlor epoxide	1.00 J	3.80 J	ug/kg	SB32-06	3 / 53	0.28 - 0.48	ND	0.33	0.52	-	-	152	-		N	N	BSL
Inorganic Compounds																	
Aluminum	72.00	9455.00 J	mg/Kg	SD01-06	57 / 57	1.4 - 75.3	10200 J	4,619.77	2,281.55	-	50	-	pH < 5.5	exceeds	N	Y	ASL
Antimony	0.25 B	1.80 J	mg/Kg	SD04-06	7 / 57	0.24 - 2.1	0.84 J	0.25	0.27	-	5	0.142	.027/78 (mammals/ soil invertabrates)	exceeds	N	Y	ASL
Arsenic	0.54 B	10.10 J	mg/Kg	SD01-06	50 / 57	0.25 - 2.3	10.8 J	1.77	1.65	60	10	5.7	18/43/46 (plants/birds/mammals)		N	N	BSL
Barium	1.30 B	116.00 J	mg/Kg	SD04-06	57 / 57	0.038 - 0.33	106 J	23.11	24.17	-	500	1.04	2000/330 (mammals/ soil invertabrates)	exceeds	N	Y	ASL
Beryllium	0.04 B	1.10 J	mg/Kg	SD03-06	54 / 57	0.038 - 0.22	0.93 J	0.17	0.20	-	10	1.06	21/40 (mammals/ soil invertabrates)	exceeds	N	Y	ASL
Cadmium	0.07 B	2.20	mg/Kg	SB36-06	19 / 57	0.038 - 0.33	0.5 J	0.21	0.41	20	4	0.00222	32/140/0.77/0.36 (plants/soil invertabrates/birds/mammals)	exceeds	N	Y	ASL
Calcium	9.70 B	3370.00	mg/Kg	SB06-06	57 / 57	1.9 - 19.8	1160 J	329.87	708.25	-	-	-			N	N	UBIQ
Chromium	0.76 B	912.00	mg/Kg	SB25-06	57 / 57	0.076 - 1.1	15.1 J	27.52	119.70	0.4	1	0.4**	26/34 (Cr III birds/mammals)	exceeds	N	Y	ASL
Cobalt	0.14 B	2.10 J	mg/Kg	SD03-06	53 / 57	0.076 - 0.87	1.8 J	0.66	0.39	-	20	0.14	13/120/230 (plants/birds/mammals)	exceeds	N	Y	ASL
Copper	0.44 B	150.00 J	mg/Kg	SD04-06	57 / 57	0.12 - 1.4	32.7 J	8.31	20.27	50	100	5.4	70/80/28/49 (plants/soil invertabrates/birds/mammals)	exceeds	N	Y	ASL

Table 10-5
Comparison of Chemicals in Soil and Sediment with Screening Values
Lightman Drum Superfund Site

Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (2)	Units	Location of Maximum concentration	Detection Frequency (No. of detects/No. of samples)	Range of Detection limits	Detected background Value (3)	Mean Value	Standard Deviation	Benchmarks of Chemicals to Earthworms Screening Values (4)	Benchmarks for Terrestrial Plants Screening Values (5)	Region V Ecological Screening Levels (6)	USEPA Ecological Screening Levels	Exceeds minimum criteria	PBT or BCC	COPEC (7)	Rationale for Selection or Deletion (8)
Cyanide	0.04 B	1.05 J	mg/Kg	SD01-06	19 / 57	0.028 - 0.11	1.1 J	0.10	0.15	-	-	1.33			N	N	BSL
Iron	127.00	10695.00 J	mg/Kg	SD01-06	57 / 57	1.6 - 22.2	12100 J	5,333.91	2,698.20	-	-	-			N	Y	NSL
Lead	1.90	165.00 J	mg/Kg	SD04-06	57 / 57	0.13 - 1.2	150 J	19.09	29.56	500	50	0.0537	120/1,700/11/56 (plants/soil invertabrates/birds/mammals)	exceeds	N	Y	ASL
Magnesium	7.40 B	562.00 B	mg/Kg	SB16-06	57 / 57	1.1 - 13.4	406 J	250.86	135.57	-	-	-			N	N	UBIQ
Manganese	1.20 B	94.90 J	mg/Kg	SB06-06	57 / 57	0.038 - 0.43	26.4 J	20.79	13.97	-	500	-	220/450/4,300/4,000 (plants/soil invertabrates/birds/mammals)		N	N	BSL
Mercury	0.04 B	0.48 J	mg/Kg	SD04-06	24 / 57	0.036 - 0.22	0.36 J	0.06	0.08	0.1	0.3	0.1		exceeds	Y	Y	ASL/BA
Nickel	0.22 B	12.20	mg/Kg	SB36-06	56 / 57	0.11 - 1.1	9.9 J	3.29	2.58	200	30	1.36E+01	38/280/210/130 (plants/soil invertabrates/birds/mammals)		N	N	BSL
Potassium	6.40 B	512.00 J	mg/Kg	SD04-06	57 / 57	4.6 - 60.7	213 J	126.28	98.00	-	-	-			N	N	UBIQ
Selenium	0.33 B	5.90 J	mg/Kg	SD04-24	27 / 57	0.32 - 2.7	3400	0.68	0.90	70	1	0.0276	0.52/4.1/1.2/0.63 (plants/soil invertabrates/birds/mammals)	exceeds	N	Y	ASL
Silver	0.13 B	0.42 B	mg/Kg	SB34-06	5 / 57	0.094 - 0.97	ND	0.10	0.10	-	2	4.04	560/4.2/14 (plants/soil invertabrates/mammals)		N	N	BSL
Sodium	37.93 B	2270.00 J	mg/Kg	SD04-06	56 / 57	13.3 - 298	142 B	177.66	401.95	-	-	-			N	N	UBIQ
Vanadium	0.84 B	36.70 J	mg/Kg	SD04-06	57 / 57	0.057 - 1.1	33.3 J	10.90	6.48	-	2	1.59	7.8/280 (birds/mammals)	exceeds	N	Y	ASL
Zinc	0.20 B	196.00	mg/Kg	SB32-06	57 / 57	0.13 - 1.2	46 J	21.10	30.90	200	50	6.62	160/120/46/79 (plants/soil invertabrates/birds/mammals)	exceeds	N	Y	ASL

Note:
Shaded and bold cells indicate compounds identified as a COPEC
- = Information not available
COPEC = Chemical of potential ecological concern
PBT = Persistent, Bioaccumulative and Toxic
BCC = Bioaccumulative Chemicals of Concern
ND = Not detected
* value for chlordane
** value for Cr+3
(1) The Qualifier codes are defined as the following:
B - The analyte was detected at a concentration below the Contract Required Detection Limit.
J - The analyte was detected and is considered an estimated value.
JN - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
(2) Where there was only one detected value, it is treated as the maximum value. Surface soils are defined as those samples taken from 0-24 inches depth. Shallow soils were collected for laboratory analysis from the top 2 feet of soil (non-VOCs from 0 inch to 6 inch interval and VOCs from 6-inch to 24-inch interval)
The average result for samples with Field Duplicate samples was used. Where one measurement was nondetect, 1/2 the detection limit was used in average calculation. Duplicate samples were taken for SB07-06, SS03-06, SS03-12, SS04-06, SS04-12, SS06-06, SS06-12, and SD01-06.
Mean and standard deviation include values for one-half the detection limit as a default concentration for those chamicals that were not detected.
(3) Background sample results are the highest from samples SS-07, SS-08, SS-09, and SD-01.
(4) Efroymson, Will and Suter, *Toxicological Benchmarks for Contaminants of Potential Concern for Effects on Soil and Litter Invertebrates and Heterotrophic Process: 1997 Revision* prepared for the U.S. Department of Energy.
(5) Efroymson, Will, Suter and Wooten, *Toxicological Benchmarks for Contaminants of Potential Concern for Effects on Terrestrial Plants: 1997 Revision* prepared for the U.S. Department of Energy.
Values presented are the lowest effect level.
(6) USEPA Region V RCRA Ecological Screening Levels. Soil values were taken for all compounds with the exception of dibenzonfuran where the sediment value was used because a soil value was not provided.
(7) Maximum detected value was used for screening.
(8) Rationale codes:
The minimum of the screening criteria was used for selecting COPECs. All bioaccumulating compounds were selected
NSL - no screening value, thus chemical carried through as COPEC.
ASL - maximum concentration is greater than screening value.
BSL - maximum concentration is less than screening value.
BA - selected as COC because compound has been identified as a PBT (Persistent Bioaccumulative and Toxic) by EPA or a BCC (Bioaccumulative Chemical of Concern) by the Great Lakes Initiative
UBIQ - not selected as a COPEC because chemical is an essential nutrient that is ubiquitous and occurs naturally in high concentrations

Table 13-1
Hazard Quotient Estimation for Green Frog
Lightman Drum Superfund Site

COPEC	Surface Water Maximum Concentration (µg/L)	Sample with Maximum Concentration	Benchmark Value for Frog Species (1) (µg/L)	Benchmark Value Reference (2)	Hazard Quotient
Inorganics (ug/l)					
Aluminum	2300	SW01 (3)	405.2	Jung and Jagoe, 1995	5.68
Arsenic	11	SW02	5.40 (a)		2.04
Barium	102.45	SW03	NB		-
Copper	24.7	SW04	31	Birge and Black, 1979	-
Iron	22500	SW02	NB		-
Lead	22.8	SW04	100.00 (b)	Burger et al., 1998	0.23
Selenium	3.2	SW04	NB		-

NB = No benchmark value available
COPEC = Chemical of potential ecological concern
-- = Not calculated

All concentrations in ug/L (micrograms per liter)
(1) Benchmark toxicity values were preferentially selected for Rana species;the Green Frog was used for Aluminum; NOEC for Rana pipiens for Copper; hatchling slider turtles for lead in the absence of frog benchmarks
a) adjusted from LC50 value by a factor of 0.02
b) NOEL value for turtle hatchlings
(2) Values found using ECOTOX, Release 4.0, references cited therein are listed. Hazard quotients not calculated for NOEC benchmark values
(3) Note that SW01 was collected upstream of the Site

References:

Jung, R.E., and C.H. Jagoe (1995), Effects of Low pH and Aluminum on Body Size, Swimming Performance, and Susceptibility to Predation of Green Tree Frog (Hyla cinerea) Tadpoles. an.J.Zool. 73(12):2171-2183.

Nagpal, N. K., Technical Report - Water Quality Guidelines for Cobalt. Water Protection Section; Ministry of Water, Land and Air Protection, British Columbia, CA

Burger, J.; Carruth-Hinchey, C.; Ondroff, J.; McMahon, M.; Gibbons, J. W.; Gochfeld, M. (1998) Effects of lead on behavior, growth, and survival of hatchling slider turtles. J. Toxicol. Environ. Health Part A. 55: 495-502.

Birge and Black, 1979;

Table 13-2
Hazard Indices from Food Chain Exposure Modeling
Lightman Drum Superfund Site

Environmental Medium	Receptor	COPEC	Hazard Quotient (NOAEL based)	Hazard Quotient (LOAEL based)
Soil	Meadow Vole	Aluminum	10.802	1.189
		Selenium	1.005	0.363
	American Robin	4,4'-DDD	2.205	0.220
		4,4'-DDT	6.557	0.656
		Aluminum	8.067	0.807
		Chromium	45.596	2.280
		Lead	7.118	0.712
		Selenium	1.253	0.626
	Red Fox	Aluminum	275.385	27.513
		Chromium	1.687	0.169
		Dieldrin	3.750	0.389
		Mercury	5.563	0.556
		Selenium	2.209	0.221
	Red-tailed Hawk	4,4'-DDT	6.249	0.670
		Aluminum	1.382	0.138
		Chromium	2.101	0.210
		Mercury	1.203	0.120

TABLE 13.3
SUMMARY OF ECOLOGICAL RISKS
Lightman Drum Superfund Site

Environmental Medium	COPECs	Receptor	Hazard Quotient (NOAEL/LOAEL)
Surface Water	Aluminum	Green Frog	(NOAEL only) Aluminum HQ = 5.676 Arsenic HQ = 2.037 Lead HQ = 0.228
	Arsenic		
	Barium		
	Copper		
	Iron		
	Lead		
	Selenium		
Soil	Methyl acetate	Meadow Vole	Aluminum HQ = 10.802/1.189 Selenium HQ = 1.005/0.363
	2-Chloronaphthalene		
	4,4'-DDD		
	4,4'-DDE		
	4,4'-DDT		
	4-Methylphenol		
	Aluminum		
	Antimony		
	Barium	American Robin	4,4'-DDD HQ = 2.205/0.220 4,4'-DDT HQ = 6.557/0.656 Aluminum HQ = 8.067/0.807 Chromium HQ = 45.596/2.280 Lead HQ = 7.118/0.712 Selenium HQ = 1.253/0.626
	Benzaldehyde		
	Benzo(a)Pyrene		
	Benzo(b)Fluoranthene		
	beta-BHC		
	Beryllium		
	bis(2-Ethylhexyl)Phthalate		
	Cadmium	Red Fox	Aluminum HQ = 275.385/27.513 Chromium HQ = 1.687/0.169 Dieldrin HQ = 3.750/0.389 Mercury HQ = 5.563/0.556 Selenium HQ = 2.209/0.221
	Caprolactam		
	Carbazole		
	Chromium		
	Cobalt		
	Copper		
	Dieldrin		
	Di-n-butylphthalate		
	Endrin	Red-tailed Hawk	4,4'-DDT HQ = 6.249/0.670 Aluminum HQ = 1.382/0.138 Chromium HQ = 2.101/0.210 Mercury HQ = 1.203/0.120
	gamma-BHC (Lindane)		
	gamma-Chlordane		
	Hexachlorobenzene		
	Iron		
	Lead		
	Mercury		
	Selenium		
	Vanadium		
	Zinc		

COPEC = Chemical of potential ecological concern
NOAEL = No observable adverse effects level
LOAEL = Lowest observable adverse effects level
Bold COPECs indicate those that are bioaccumulative



REFERENCES

1.) MAP TAKEN FROM U.S.G.S. 7.5 MINUTE QUADRANGLE OF WILLIAMSTOWN, NEW JERSEY, DATED 1981.

2.) NEAREST PUBLIC WELL LOCATIONS ARE BASED ON NJDEP IMAP COORDINATES.

2000 0 2000
SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
1	10/03/08	HAL	EDITED IN RESPONSE TO USEPA COMMENTS DECEMBER 3, 2007	RG	HAL	RJI

Golder Associates
Philadelphia USA

FILE No.	0136054D001
PROJECT No.	013-6054
REV.	1

SCALE	AS SHOWN
DATE	07/29/05
DESIGN	RJI
CADD	AM
CHECK	HAL
REVIEW	PSF

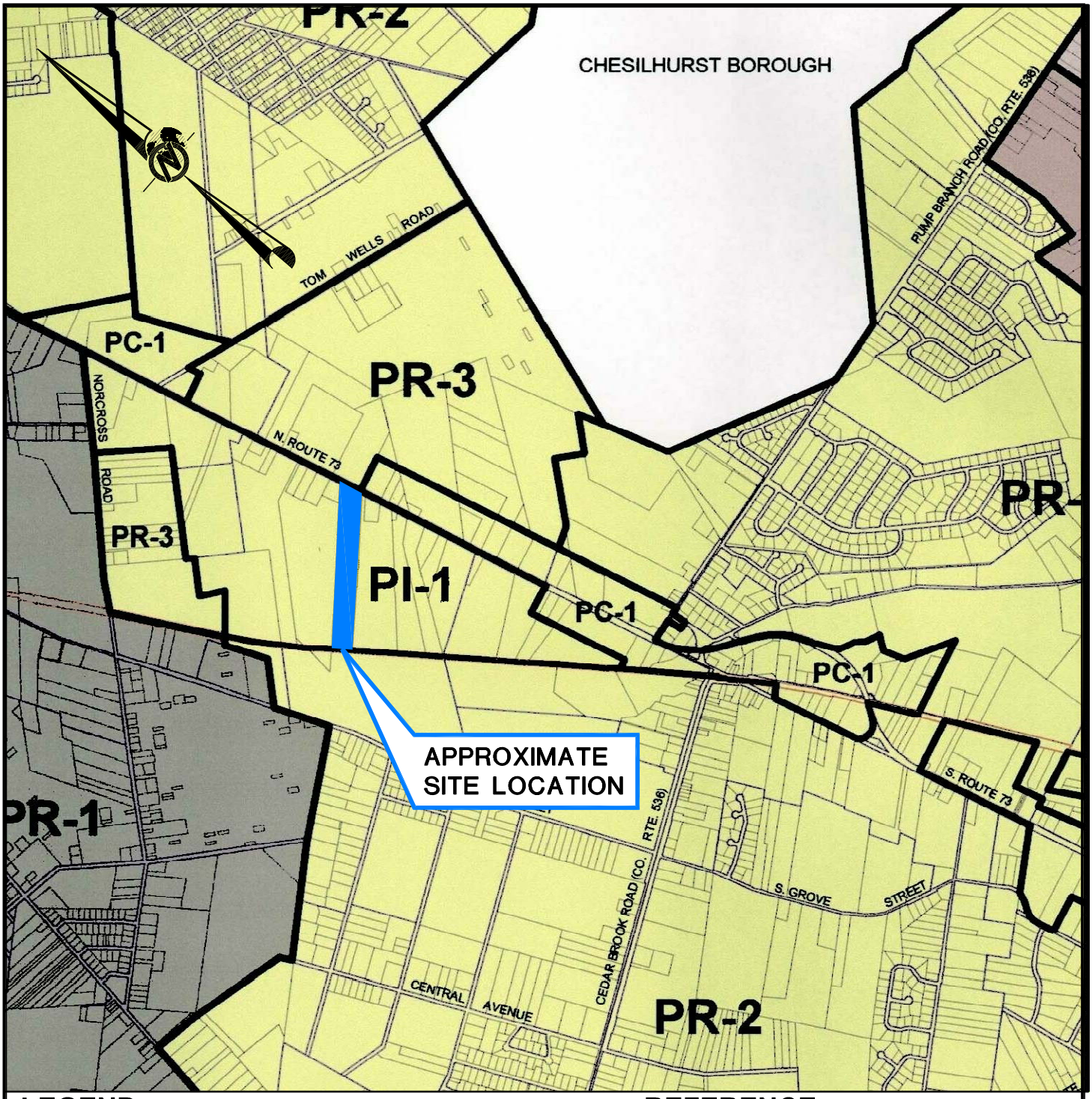
TITLE

SITE LOCATION MAP

LIGHTMAN DRUM SITE

FIGURE 1

Drawing file: 0136054D001 Rev 1.dwg Feb 17, 2009 - 11:19am



LEGEND

PC–1	MINOR COMMERCIAL
PI–1	INDUSTRIAL
PR–1	RURAL RESIDENTIAL
PR–2	LOW DENSITY RESIDENTIAL
PR–3	MEDIUM DENSITY RESIDENTIAL

NOTES

1.) PER WINSLOW TOWNSHIP LAND USE CODE, LAND DESIGNATED AS PI–1 IS DEFINED AS AN INDUSTRIAL ZONING DISTRICT. USES PERMITTED IN THIS DISTRICT ARE OF A LIGHT INDUSTRIAL NATURE.

REFERENCE

1.) MAP SCANNED FROM DRAWING ENTITLED "ZONING MAP, TOWNSHIP OF WINSLOW", PREPARED BY CHURCHILL CONSULTING ENGINEERS, DATED 09/14/04.

2000 0 2000
APPROXIMATE SCALE FEET

Golder Associates
Philadelphia USA

FILE No.	0136054D005
PROJECT No.	013–6054 REV. 0
SCALE	AS SHOWN
DATE	07/29/05
DESIGN	RJI
CADD	AM
CHECK	HAL
REVIEW	PSF

TITLE

LOCAL ZONING MAP

LIGHTMAN DRUM SITE

FIGURE 2

Drawing file: 0136054D005.dwg Feb 17, 2009 – 11:42am

LEGEND

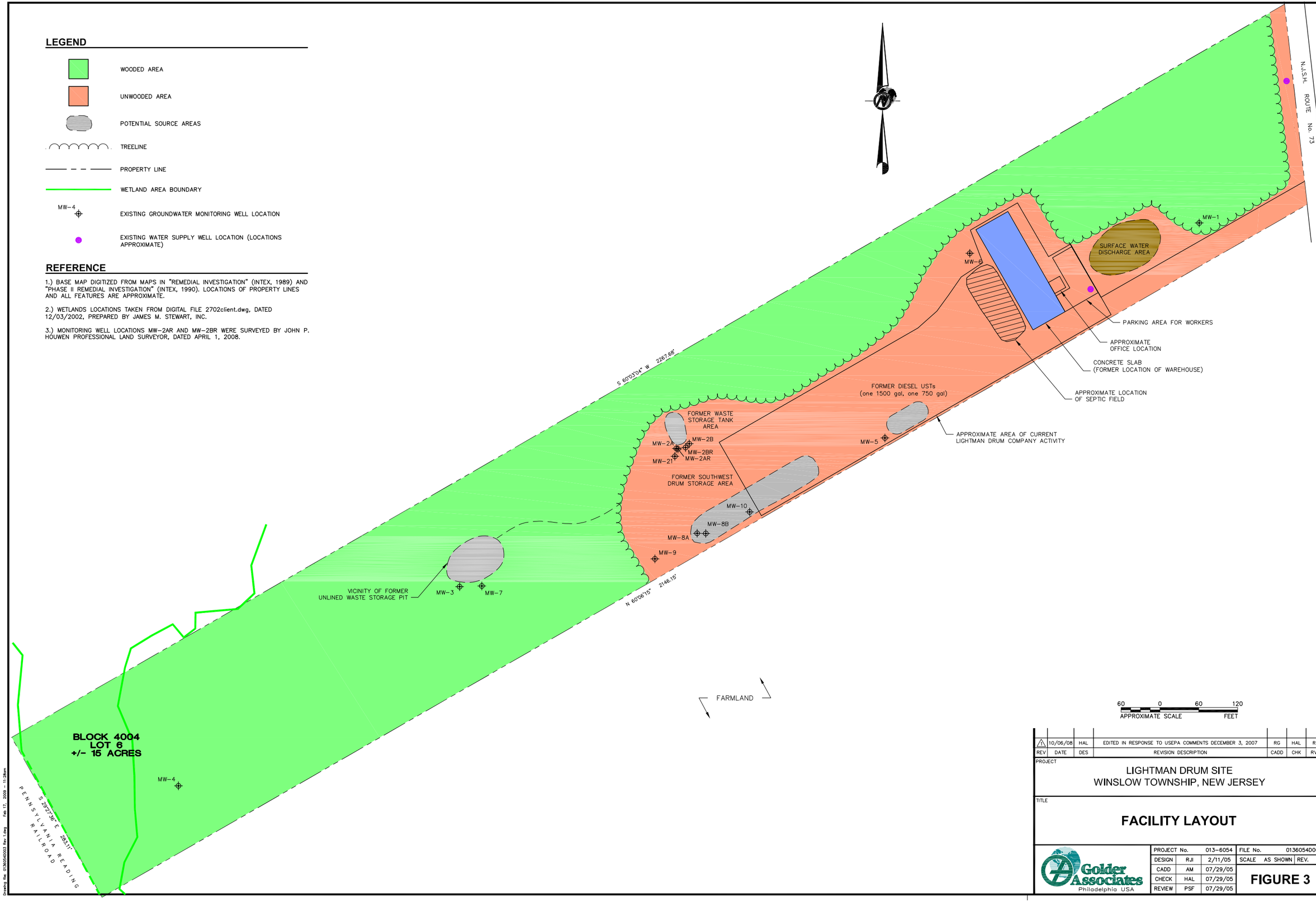
- WOODED AREA
- UNWOODED AREA
- POTENTIAL SOURCE AREAS
- TREELINE
- PROPERTY LINE
- WETLAND AREA BOUNDARY
- MW-4 — EXISTING GROUNDWATER MONITORING WELL LOCATION
- EXISTING WATER SUPPLY WELL LOCATION (LOCATIONS APPROXIMATE)

REFERENCE

1.) BASE MAP DIGITIZED FROM MAPS IN "REMEDIAL INVESTIGATION" (INTEX, 1989) AND "PHASE II REMEDIAL INVESTIGATION" (INTEX, 1990). LOCATIONS OF PROPERTY LINES AND ALL FEATURES ARE APPROXIMATE.

2.) WETLANDS LOCATIONS TAKEN FROM DIGITAL FILE 2702client.dwg, DATED 12/03/2002, PREPARED BY JAMES M. STEWART, INC.

3.) MONITORING WELL LOCATIONS MW-2AR AND MW-2BR WERE SURVEYED BY JOHN P. HOUWEN PROFESSIONAL LAND SURVEYOR, DATED APRIL 1, 2008.



60 0 60 120
APPROXIMATE SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
1	10/06/08	HAL	EDITED IN RESPONSE TO USEPA COMMENTS DECEMBER 3, 2007	RG	HAL	RJI

PROJECT

LIGHTMAN DRUM SITE
WINSLOW TOWNSHIP, NEW JERSEY

TITLE

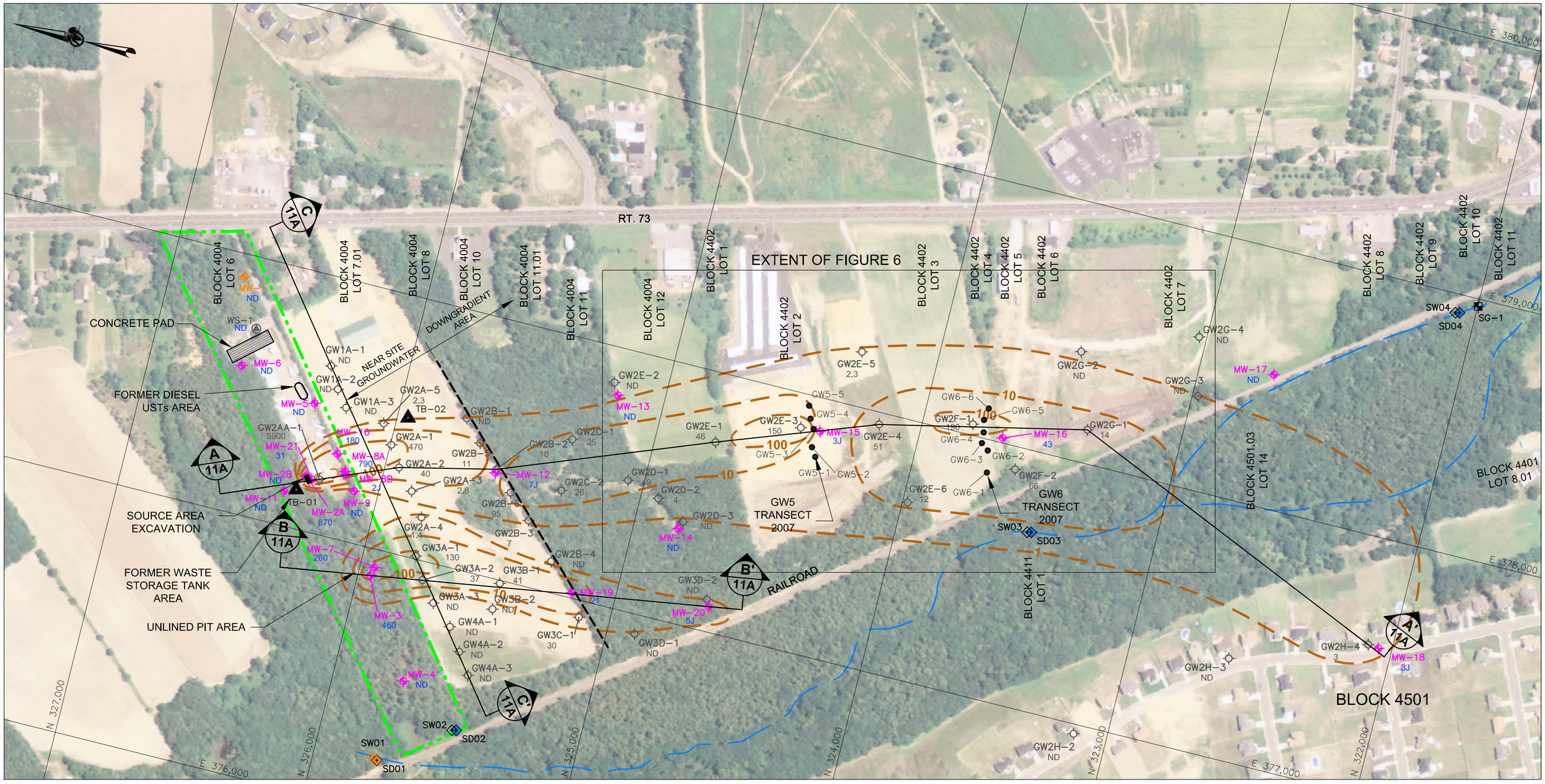
FACILITY LAYOUT

Golder Associates
Philadelphia USA

PROJECT No.	013-6054		FILE No.	0136054D003	
DESIGN	RJI	2/11/05	SCALE	AS SHOWN	REV. 1
CADD	AM	07/29/05			
CHECK	HAL	07/29/05			
REVIEW	PSF	07/29/05			

FIGURE 3

Drawing file: 0136054D003 Rev 1.dwg Feb 17, 2009 - 11:28am



LEGEND

- APPROXIMATE PROPERTY LINE – LIGHTMAN DRUM SITE
- PCE ISOCONCENTRATION CONTOUR (SEE NOTE 2)
- WS-1 — ONSITE WATER SUPPLY WELL (LOCATION APPROXIMATE)
- MW-11 — MONITORING WELL
- MW-1 — BACKGROUND MONITORING WELL
- GW3B-1 — GEOPROBE AQUIFER PROFILE BORINGS (LOCATION APPROXIMATE)
- SG-1 — STAFF GAUGE
- A / 11A — DETAIL OR CROSS SECTION DESIGNATION
- FIGURE No. WHERE DETAIL OR CROSS SECTION IS PRESENTED
- PUMP BRANCH CREEK (SEE NOTE 3)
- SW01 — SURFACE WATER SAMPLE (LOCATION APPROXIMATE)
- SD01 — SEDIMENT SAMPLE (LOCATION APPROXIMATE)
- SW01 — BACKGROUND SURFACE WATER SAMPLE (LOCATION APPROXIMATE)
- SD01 — BACKGROUND SEDIMENT SAMPLE (LOCATION APPROXIMATE)
- TEST BORING (LOCATION APPROXIMATE)
- ND — GEOPROBE PCE CONCENTRATIONS (ug/L) 2002–2004
- 30 — PCE CONCENTRATIONS (ug/L) FOR FEBRUARY 2005

NOTE

1.) ND = NOT DETECTED

2.) ISOCONCENTRATION CONTOURS BASED ON GEOPROBE AND MONITORING WELL DATA COLLECTED 2002–2005. DATA FROM MW–2B AND MW–8B WERE NOT CONTOURED AS THEY ARE SCREENED BELOW THE PLUME.

3.) APPROXIMATE CREEK LOCATION ESTIMATED FROM 1995 AERIAL PHOTO, EPHEMERAL IN VICINITY OF LIGHTMAN PROPERTY.

REFERENCES

1.) AERIAL PHOTOGRAPH TAKEN FROM USDA GEOSPATIAL DATA GATEWAY, DATED 2006.

2.) MONITORING WELLS, STAFF GAUGE AND PIEZOMETERS SHOWN WERE BASED ON SURVEY INFORMATION SUPPLIED BY JAMES M. STEWART, INC.

3.) GEOPROBE PROFILE BORINGS AND SURFACE WATER/SEDIMENT SAMPLING LOCATIONS WERE LOCATED IN THE FIELD BY GOLDER ASSOCIATES, INC. PERSONNEL USING A HANDHELD GPS UNIT AND ARE APPROXIMATE ONLY.

4.) PARCEL BOUNDARIES FROM GIS DATABASE OF NEW JERSEY.

300 0 300
SCALE FEET

2	02/16/09	HAL	ADDED LOCATIONS OF BACKGROUND SURFACE WATER SEDIMENT GROUNDWATER SAMPLE	RG	HAL	PSF
1	10/06/08	HAL	EDITED IN RESPONSE TO USEPA COMMENTS DECEMBER 3, 2007	AM	HAL	RJI
REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT
LIGHTMAN DRUM SITE
WINSLOW TOWNSHIP, NEW JERSEY

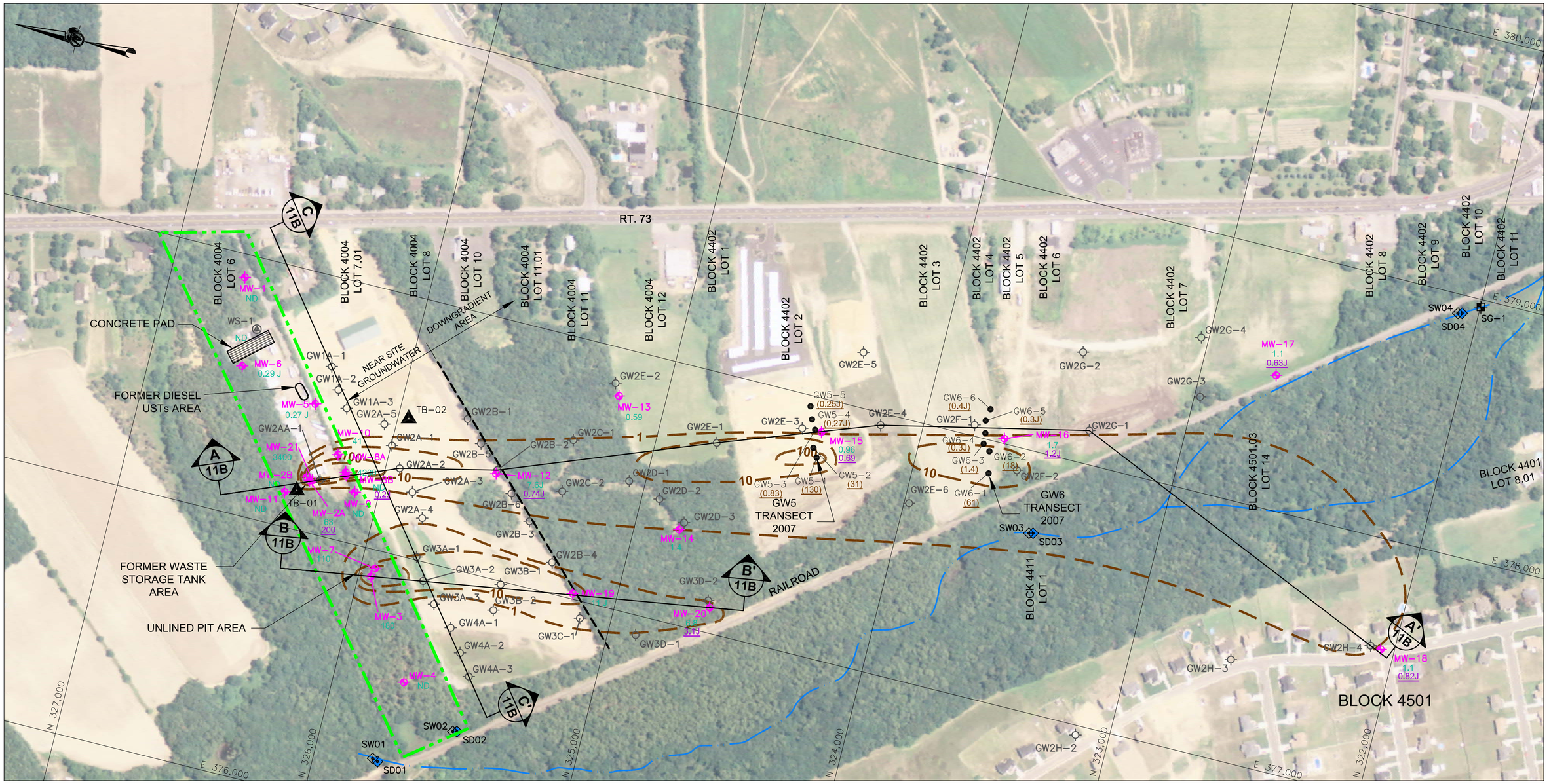
TITLE **GROUNDWATER, SURFACE WATER, SEDIMENT SAMPLING LOCATIONS AND PCE ISOCONCENTRATION CONTOURS 2002-2005**

Golder Associates Philadelphia USA

PROJECT No.	013-6054		FILE No.	0136054D004	
DESIGN	HAL	07/20/05	SCALE	AS SHOWN	REV. 0
CADD	RG	07/29/05			
CHECK	HAL	07/29/05			
REVIEW	PSF	07/29/05			

FIGURE 4A

Drawing file: 0136054D004 Rev 2.dwg Feb 17, 2009 – 11:32am



LEGEND

- APPROXIMATE PROPERTY LINE – LIGHTMAN DRUM SITE
- PCE ISOCONCENTRATION CONTOUR (SEE NOTE 3)
- WS-1 — ONSITE WATER SUPPLY WELL (LOCATION APPROXIMATE)
- MW-11 — MONITORING WELL
- GW3B-1 — GEOPROBE AQUIFER PROFILE BORINGS (LOCATION APPROXIMATE)
- SG-1 — STAFF GAUGE
- A / 11B — DETAIL OR CROSS SECTION DESIGNATION
- FIGURE No. WHERE DETAIL OR CROSS SECTION IS PRESENTED
- PUMP BRANCH CREEK (SEE NOTE 3)
- SW01 — SURFACE WATER SAMPLE (LOCATION APPROXIMATE)
- SD01 — SEDIMENT SAMPLE (LOCATION APPROXIMATE)
- TEST BORING (LOCATION APPROXIMATE)
- 30 — PCE CONCENTRATIONS (ug/L) FOR MARCH 2006
- 1.4 — PCE CONCENTRATIONS (ug/L) FOR FEBRUARY 2007
- (31) — GEOPROBE PCE CONCENTRATIONS (ug/L) FOR JULY 2007

NOTE

1.) ND = NOT DETECTED

2.) ISOCONCENTRATION CONTOURS BASED ON GEOPROBE AND MONITORING WELL DATA COLLECTED 2006–2007. DATA FROM MW–2B AND MW–8B WERE NOT CONTOURED AS THEY ARE SCREENED BELOW THE PLUME. WHERE MONITORING WELL DATA FROM 2006 AND 2007 WERE AVAILABLE, 2007 DATA WAS USED.

3.) APPROXIMATE CREEK LOCATION ESTIMATED FROM 1995 AERIAL PHOTO, EPHEMERAL IN VICINITY OF LIGHTMAN PROPERTY.

REFERENCES

1.) AERIAL PHOTOGRAPH TAKEN FROM USDA GEOSPATIAL DATA GATEWAY, DATED 2006.

2.) MONITORING WELLS, STAFF GAUGE AND PIEZOMETERS SHOWN WERE BASED ON SURVEY INFORMATION SUPPLIED BY JAMES M. STEWART, INC.

3.) GEOPROBE PROFILE BORINGS AND SURFACE WATER/SEDIMENT SAMPLING LOCATIONS WERE LOCATED IN THE FIELD BY GOLDER ASSOCIATES, INC. PERSONNEL USING A HANDHELD GPS UNIT AND ARE APPROXIMATE ONLY.

4.) PARCEL BOUNDARIES FROM GIS DATABASE OF NEW JERSEY.

300 0 300
SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT
LIGHTMAN DRUM SITE
WINSLOW TOWNSHIP, NEW JERSEY

TITLE
PCE ISOCONCENTRATION CONTOURS 2006-2007

Golder Associates Philadelphia USA

PROJECT No.	013-6054		FILE No.	0136054D016	
DESIGN	HAL	02/13/09	SCALE	AS SHOWN	REV. 0
CADD	RG	02/16/09			
CHECK	HAL	02/16/09			
REVIEW	PSF	02/16/09			

FIGURE 4B

Drawing file: 0136054D016.dwg Feb 17, 2009 – 12:00pm

SZ-14	14'-16'	TOTAL VOCs	0.009
		PCE	0.005
		TCE	0.004
	24'-26'	TOTAL VOCs	ND
	34'-36'	TOTAL VOCs	0.004

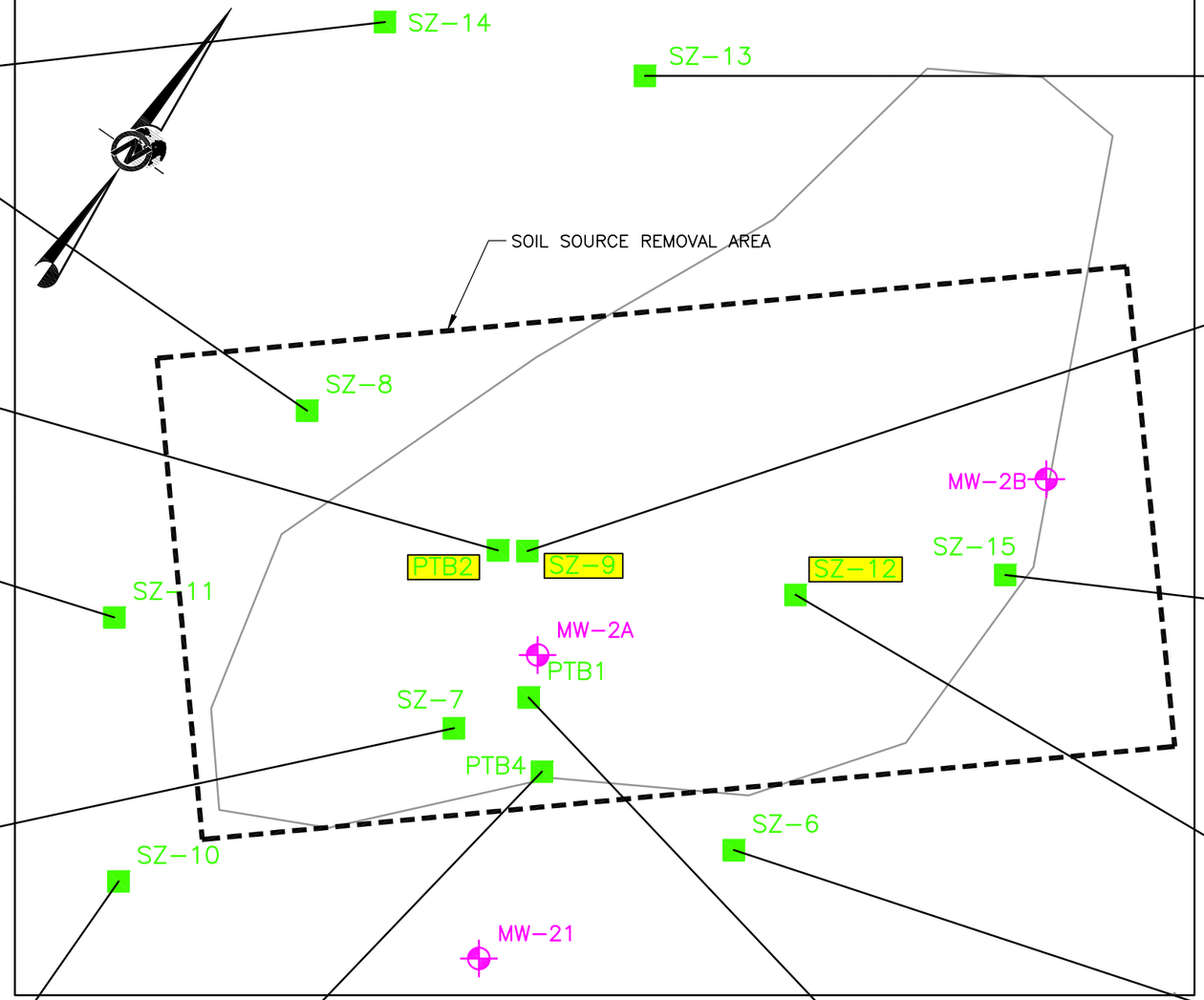
SZ-8	14'-16'	TCE	0.190
		TOTAL VOCs	2.71
		BTEX	2.29
	16'-18'	TOTAL VOCs	1.25
		BTEX	1.07
	34'-36'	TOTAL VOCs	ND

PTB2	12'-14'	TOTAL VOCs	705.30
		BTEX	669.00
		PCE	20.00
	14'-16'	TOTAL VOCs	408.10
		BTEX	398.00

SZ-11	14'-16'	PCE	0.007
		TCE	0.003
		TOTAL VOCs	0.010
	20'-22'	PCE	0.004
		TCE	0.002
		TOTAL VOCs	0.006
	34'-36'	TOTAL VOCs	ND

SZ-7	14'-16'	TOTAL VOCs	803.20
		BTEX	783.09
		PCE	17.00
		TCE	0.08
	18'-20'	TOTAL VOCs	1,895.60
		BTEX	1,856.60
		PCE	39.00
	34'-36'	TOTAL VOCs	ND

SZ-10	14'-16'	BTEX	2.40
		TOTAL VOCs	2.40
	18'-20'	BTEX	0.72
		PCE	0.01
		TCE	0.006
		TOTAL VOCs	0.75
	34'-36'	TOTAL VOCs	ND



PTB4	14'-16'	TOTAL VOCs	2.94
		BTEX	2.67

PTB1	14'-16'	TOTAL VOCs	2.08
		BTEX	1.90

SZ-13	14'-16'	BTEX	10.90
		PCE	0.28
		TOTAL VOCs	11.18
	16'-18'	BTEX	4.22
		TOTAL VOCs	4.22
	30'-32'	TOTAL VOCs	ND

SZ-9	14'-16'	BTEX	35.00
		PCE	0.93
		TCE	0.22
		TOTAL VOCs	36.15
	16'-18'	BTEX	0.395
		PCE	0.05
		TCE	0.01
		TOTAL VOCs	0.51
	34'-36'	TOTAL VOCs	ND

SZ-15	14'-16'	BTEX	3.34
		PCE	0.24
		TCE	0.87
		TOTAL VOCs	4.52
	18'-20'	BTEX	1.39
		PCE	0.31
		TCE	0.410
		TOTAL VOCs	2.13
	30'-32'	TOTAL VOCs	ND

SZ-12	12'-14'	BTEX	27.10
		PCE	0.85
		TOTAL VOCs	27.95
	14'-16'	BTEX	7.99
		TCE	0.32
		TOTAL VOCs	8.31
	30'-32'	TOTAL VOCs	ND

SZ-6	14'-16'	TOTAL VOCs	1.45
		BTEX	1.26
		PCE	0.04
		TCE	0.01
	16'-18'	TOTAL VOCs	0.85
		BTEX	0.51
		PCE	0.03
		TCE	0.003
	30'-32'	TOTAL VOCs	ND

LEGEND

- SOIL BORING LOCATION
- SURFACE SOIL SAMPLING LOCATION
- SATURATED SOIL BORING LOCATIONS
- EXISTING MONITORING WELL
- BORINGS WITH A POSITIVE "OIL RED O" RESULT
- EXCEEDS NJDEP IGW SCC

NOTE

1.) SATURATED SOIL BORING LOCATIONS BASED ON MEASUREMENTS TO SURVEYED MONITORING WELLS.

2.) CONCENTRATIONS ARE EXPRESSED IN mg/kg.

3.) SOIL EXCAVATED IN 2007.

REFERENCES

1.) BASE MAP TAKEN FROM FILE 2702-01.DWG, TITLED "PLAN OF SURVEY", PROVIDED BY JAMES M. STEWART, INC.

2.) UNSATURATED SOIL BORING AND SOIL SAMPLE LOCATIONS SURVEYED BY JAMES M. STEWART, INC., NOVEMBER 2002.

3.) MONITORING WELLS SHOWN WERE BASED ON SURVEY INFORMATION SUPPLIED BY JAMES M. STEWART, INC.

5 0 5
SCALE FEET

Golder Associates
Philadelphia USA

FILE No.	0136054D014
PROJECT No.	013-6054
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DATE	10/06/08
DESIGN	HAL
CADD	RG
CHECK	HAL
REVIEW	RJI

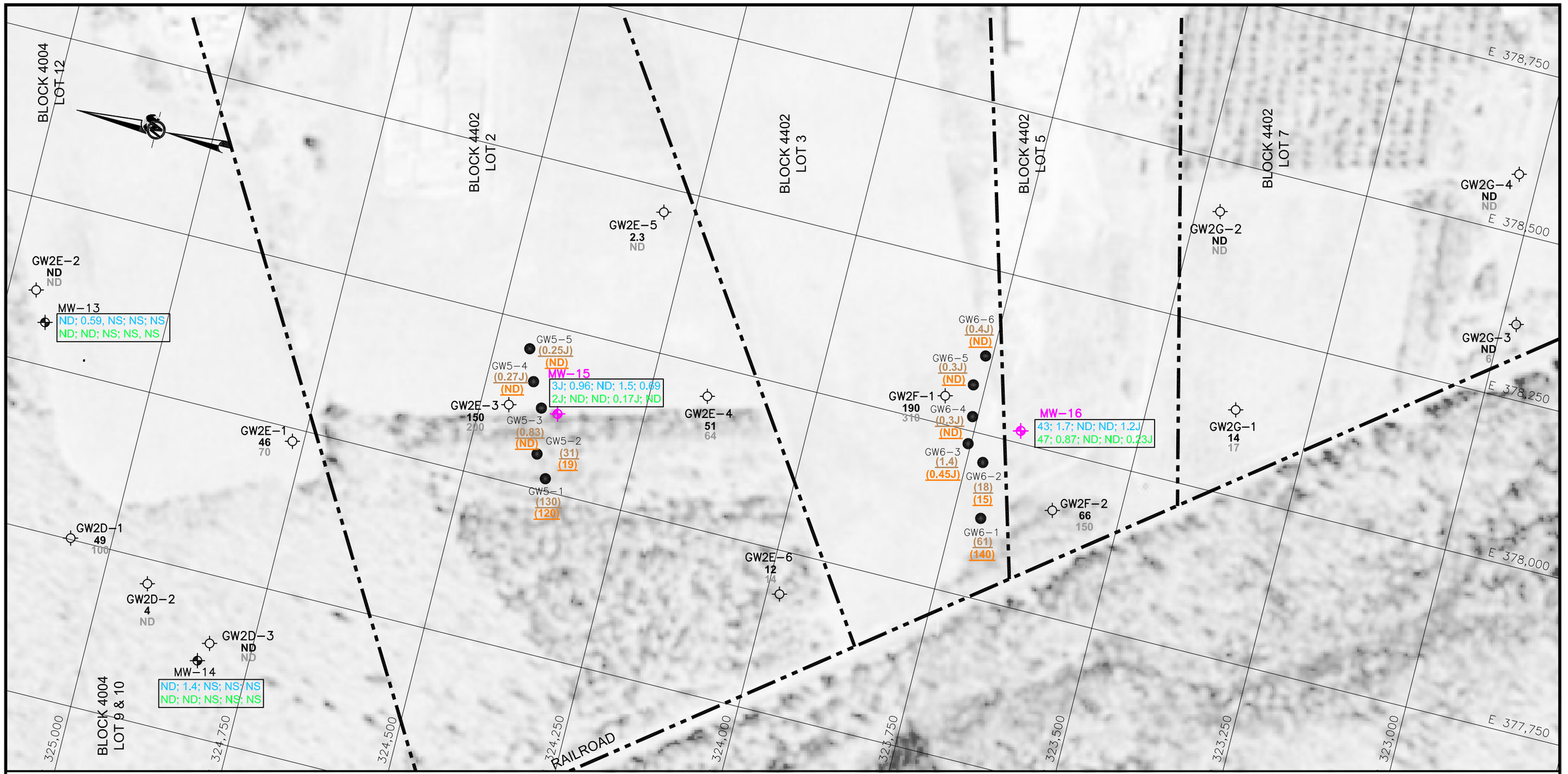
TITLE

SATURATED SOURCE AREA SOIL RESULTS

LIGHTMAN DRUM SITE

FIGURE 5

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LEGEND

- APPROXIMATE PROPERTY LINE
- MW-11 — MONITORING WELL
- MW-12 — FEBRUARY 2007 SAMPLING LOCATIONS
- GW3B-1 — GEOPROBE AQUIFER PROFILE BORINGS (LOCATION APPROXIMATE)
- ND — MAXIMUM PCE CONCENTRATIONS (ug/L) 2002–2004
- 18 — MAXIMUM TCE CONCENTRATIONS (ug/L) 2002–2004
- (1.4) — MAXIMUM PCE CONCENTRATIONS (ug/L) JULY 2007
- (0.4J) — MAXIMUM TCE CONCENTRATIONS (ug/L) JULY 2007
- 3J — PCE CONCENTRATIONS (ug/L) FOR: FEB. 2005; MAR. 2006; AUG. 2006; NOV. 2006; FEB. 2007
- 2J — TCE CONCENTRATIONS (ug/L) FOR: FEB. 2005; MAR. 2006; AUG. 2006; NOV. 2006; FEB. 2007
- AQUIFER PROFILE BORING (JULY 2007)

NOTES

1.) ND = NOT DETECTED

2.) NS = NOT SAMPLED

REFERENCES

1.) AERIAL PHOTOGRAPH TAKEN FROM TERRAIN NAVIGATOR PRO BY MAPTECH, OF WILLIAMSTOWN NJ, DATED MARCH 25, 1995.

2.) MONITORING WELLS, STAFF GAUGE AND PIEZOMETERS SHOWN WERE BASED ON SURVEY INFORMATION SUPPLIED BY JAMES M. STEWART, INC.

3.) GEOPROBE PROFILE BORINGS AND SURFACE WATER/SEDIMENT SAMPLING LOCATIONS WERE LOCATED IN THE FIELD BY GOLDER ASSOCIATES, INC. PERSONNEL USING A HANDHELD GPS UNIT AND ARE APPROXIMATE ONLY.

150 0 150
SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT

LIGHTMAN DRUM SITE
WINSLOW TOWNSHIP, NEW JERSEY

TITLE

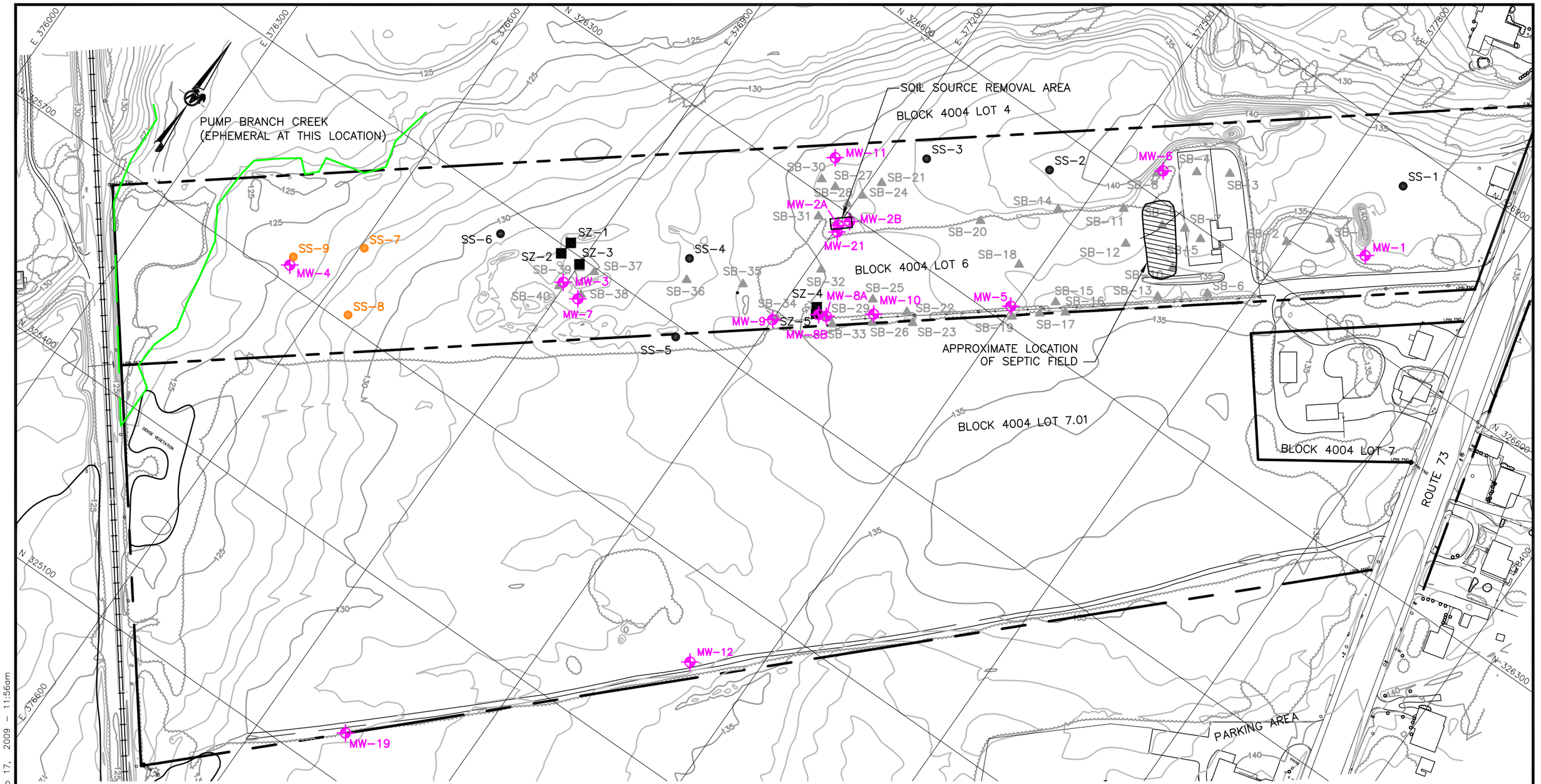
2007 AQUIFER PROFILE MAXIMUM DETECTIONS

NJ Authorization #24GA28029100
Golder Associates
Philadelphia USA

PROJECT No.	013-6054		FILE No.	0136054D012	
DESIGN	HAL	10/06/08	SCALE	AS SHOWN	REV. 0
CADD	RG	10/06/08			
CHECK	HAL	10/06/08			
REVIEW	RJI	10/06/08			

FIGURE 6

Drawing file: 0136054D012.dwg Feb 17, 2009 - 11:57am



LEGEND

- SOIL BORING LOCATION (UNSATURATED SOIL)
- SHALLOW SOIL SAMPLING LOCATION (UNSATURATED SOIL)
- BACKGROUND SOIL SAMPLE
- BORING LOCATION (SATURATED SOIL)
- MONITORING WELL
- WETLAND AREA BOUNDARY

NOTE

1.) MW-2A, MW-2B, AND MW-21 WERE ABANDONED IN 2007 DURING SOURCE REMOVAL ACTION. REPLACEMENT WELLS MW-2AR AND MW-2BR WERE INSTALLED IN 2008.

REFERENCES

1.) BASE MAP TAKEN FROM FILE 2702-01.DWG, TITLED "PLAN OF SURVEY", PROVIDED BY JAMES M. STEWART, INC.

2.) SOIL BORING AND SOIL SAMPLE LOCATIONS SURVEYED BY JAMES M. STEWART, INC., NOVEMBER 2002.

3.) MONITORING WELLS SHOWN WERE BASED ON SURVEY INFORMATION SUPPLIED BY JAMES M. STEWART, INC.

150 0 150
SCALE FEET

Golder Associates
Philadelphia USA

FILE No.	0136054D011
PROJECT No.	013-6054
REV.	1
SCALE	AS SHOWN
DATE	02/16/09
DESIGN	HAL
CADD	RG
CHECK	HAL
REVIEW	PSF

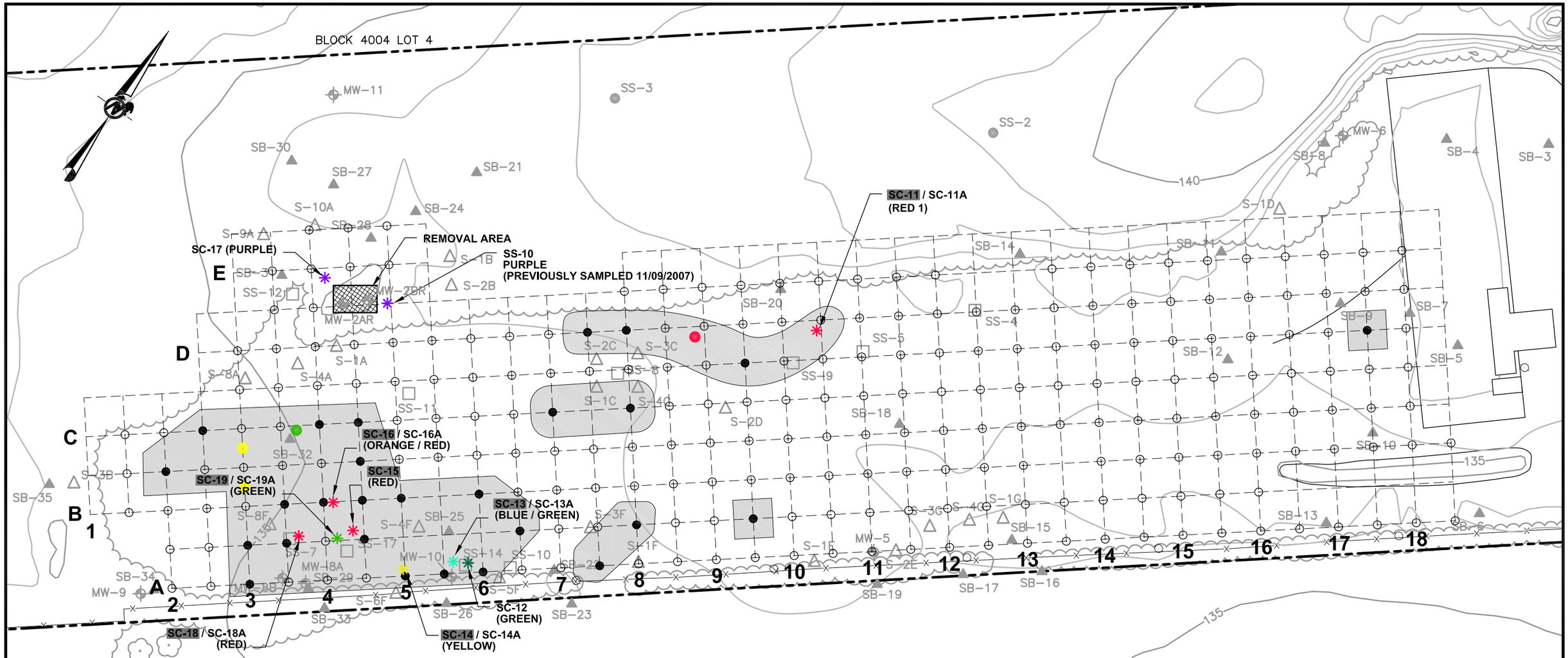
TITLE

SOIL SAMPLING AND BASE TOPOGRAPHY MAP

LIGHTMAN DRUM SITE

FIGURE 7

Drawing file: 0136054D011 Rev 1.dwg Feb 17, 2009 - 11:56am



LEGEND

- SOIL BORING LOCATION (UNSATURATED SOIL)
- SHALLOW SOIL SAMPLING LOCATION (UNSATURATED SOIL)
- MONITORING WELL
- PHASE II REMEDIAL INVESTIGATION SOIL SAMPLE LOCATION
- PHASE I REMEDIAL INVESTIGATION SOIL SAMPLE LOCATION
- UN-NATURALLY COLORED SOIL SAMPLE LOCATION (SEE NOTE 5)
- UN-NATURALLY COLORED SOIL DELINEATION LOCATION
- UN-NATURALLY COLORED SOIL FOUND AT DELINEATION LOCATION
- UN-NATURALLY COLORED SOIL FOUND BETWEEN DELINEATION LOCATIONS
- HORIZONTAL EXTENT OF UN-NATURALLY COLORED SOIL (SEE NOTE 6)

NOTES

1.) SOIL SAMPLES SC-11 THROUGH SC-19 COLLECTED JANUARY 17, 2008 AND SOIL SAMPLES SC-11A, SC-13A, SC-14A, SC-16A, SC-18A, AND SC-19A COLLECTED MARCH 26, 2008.

2.) UN-NATURALLY COLORED SOIL DELINEATION PERFORMED MARCH 26, 2008 THROUGH MARCH 28, 2008.

3.) COLORED SOIL SAMPLE LOCATIONS SC-11, SC-13, SC-14, SC-16, SC-18, SC-19, AND SELECT DELINEATION LOCATIONS WITH UN-NATURALLY COLORED SOIL WERE SURVEYED APRIL 10, 2008 BY JAMES M. STEWART, INC. SURVEY DATA PROVIDED IN APPENDIX C OF ADDENDUM TO THE REMEDIAL INVESTIGATION REPORT, DATED JUNE 6, 2008.

4.) NON-SURVEYED LOCATIONS ARE APPROXIMATE.

5.) SOIL SAMPLE LOCATIONS WHERE ANALYTES WERE DETECTED ABOVE NEW JERSEY NON-RESIDENTAL DIRECT CONTACT SOIL CLEANUP CRITERIA AND/OR IMPACT TO GROUNDWATER SOIL CLEANUP CRITERIA (NJSCC) ARE SHADED GRAY.

6.) THE HORIZONTAL EXTENT OF UN-NATURALLY COLORED SOIL SHOWN ON THE FIGURE IS THE INTERPRETED EXTENT OF SOIL WITH DETECTIONS ABOVE NJSCC.

REFERENCE

1.) BASE MAP TAKEN FROM FILE 2702-01.DWG, TITLED "PLAN OF SURVEY", PROVIDED BY JAMES M. STEWART, INC.

50 0 50
SCALE FEET

NJ Authorization #24GA28029100
Golder Associates
Philadelphia USA

FILE No.	0136054D013
PROJECT No.	013-6054
REV.	0
SCALE	AS SHOWN
DATE	10/06/08
DESIGN	HAL
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CHECK	HAL
REVIEW	RJI

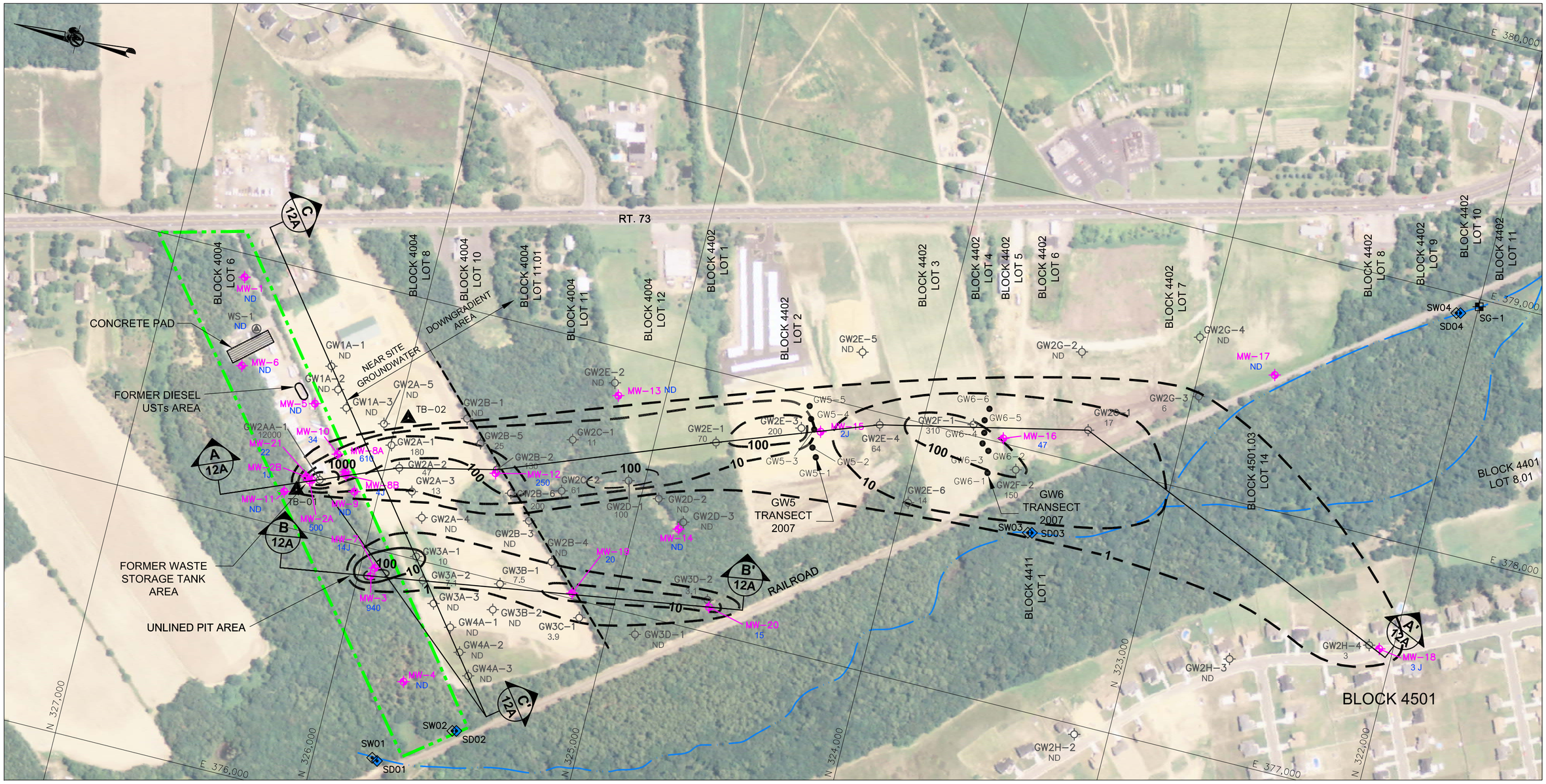
TITLE

UN-NATURALLY COLORED SOIL DELINEATION

LIGHTMAN DRUM SITE

FIGURE 8

Drawing file: 0136054D013.dwg Feb 17, 2009 - 11:57am



LEGEND

- APPROXIMATE PROPERTY LINE – LIGHTMAN DRUM SITE
- TCE ISOCONCENTRATION CONTOUR (SEE NOTE 2)
- WS–1 — ONSITE WATER SUPPLY WELL (LOCATION APPROXIMATE)
- MW–11 — MONITORING WELL
- GW3B–1 — GEOPROBE AQUIFER PROFILE BORINGS (LOCATION APPROXIMATE)
- SG–1 — STAFF GAUGE
- A / 12A — DETAIL OR CROSS SECTION DESIGNATION
  - FIGURE No. WHERE DETAIL OR CROSS SECTION IS PRESENTED
- PUMP BRANCH CREEK (SEE NOTE 4)
- SW01 — SURFACE WATER SAMPLE (LOCATION APPROXIMATE)
- SD01 — SEDIMENT SAMPLE (LOCATION APPROXIMATE)
- TEST BORING (LOCATION APPROXIMATE)
- 18 — TCE CONCENTRATIONS 2002–2004
- 47 — TCE CONCENTRATIONS (ug/L) FOR FEBRUARY 2005

NOTES

1.) ND = NON DETECT

2.) ISOCONCENTRATION CONTOURS BASED ON GEOPROBE AND MONITORING WELL DATA COLLECTED 2002–2005. DATA FROM MW–2B AND MW–8B WERE NOT CONTOURED AS THEY ARE SCREENED BELOW THE PLUME.

3.) APPROXIMATE CREEK LOCATION ESTIMATED FROM 1995 AERIAL PHOTO, EPHEMERAL IN VICINITY OF LIGHTMAN PROPERTY.

REFERENCES

1.) AERIAL PHOTOGRAPH TAKEN FROM USDA GEOSPATIAL DATA GATEWAY, DATED 2006.

2.) MONITORING WELLS, STAFF GAUGE AND PIEZOMETERS SHOWN WERE BASED ON SURVEY INFORMATION SUPPLIED BY JAMES M. STEWART, INC.

3.) GEOPROBE PROFILE BORINGS AND SURFACE WATER/SEDIMENT SAMPLING LOCATIONS WERE LOCATED IN THE FIELD BY GOLDER ASSOCIATES, INC. PERSONNEL USING A HANDHELD GPS UNIT AND ARE APPROXIMATE ONLY.

300 0 300
SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
1	02/16/09	HAL	UPDATE CONTOURS	AM	HAL	PSF

PROJECT
LIGHTMAN DRUM SITE
WINSLOW TOWNSHIP, NEW JERSEY

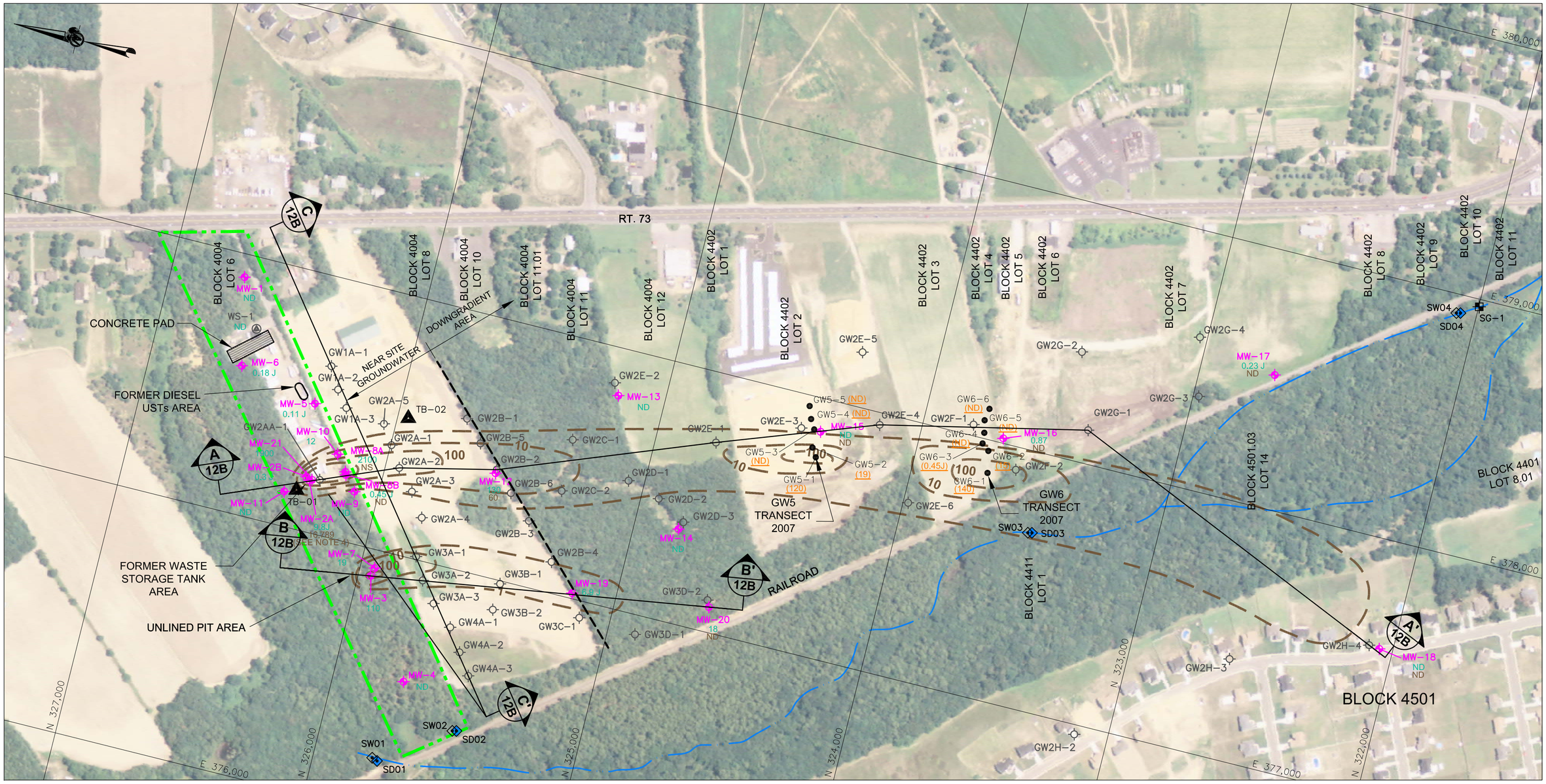
TITLE
TCE ISOCONCENTRATION CONTOURS 2002-2005

Golder Associates Philadelphia USA

PROJECT No.	013–6054		FILE No.	0136054D006	
DESIGN	HAL	10/06/08	SCALE	AS SHOWN	REV. 1
CADD	RG	10/06/08			
CHECK	HAL	10/06/08			
REVIEW	RJI	10/06/08			

FIGURE 9A

Drawing file: 0136054D006 Rev 1.dwg Feb 17, 2009 – 11:49am



LEGEND

- APPROXIMATE PROPERTY LINE – LIGHTMAN DRUM SITE
- TCE ISOCONCENTRATION CONTOUR (SEE NOTE 3)
- WS–1 — ONSITE WATER SUPPLY WELL (LOCATION APPROXIMATE)
- MW–11 — MONITORING WELL
- GW3B–1 — GEOPROBE AQUIFER PROFILE BORINGS (LOCATION APPROXIMATE)
- SG–1 — STAFF GAUGE
- A 12B — DETAIL OR CROSS SECTION DESIGNATION; FIGURE No. WHERE DETAIL OR CROSS SECTION IS PRESENTED
- PUMP BRANCH CREEK (SEE NOTE 3)
- SW01 — SURFACE WATER SAMPLE (LOCATION APPROXIMATE)
- SD01 — SEDIMENT SAMPLE (LOCATION APPROXIMATE)
- TEST BORING (LOCATION APPROXIMATE)
- 18 — TCE CONCENTRATIONS FOR MARCH 2006
- 60 — TCE CONCENTRATIONS (ug/L) FOR FEBRUARY 2007
- (0.4J) — GEOPROBE MAXIMUM TCE CONCENTRATIONS (ug/L) JULY 2007

NOTES

1.) ND = NON DETECT

2.) ISOCONCENTRATION CONTOURS BASED ON GEOPROBE AND MONITORING WELL DATA COLLECTED 2006–2007. DATA FROM MW–2B AND MW–8B WERE NOT CONTOURED AS THEY ARE SCREENED BELOW THE PLUME. WHERE MONITORING WELL DATA FROM 2006 AND 2007 WERE AVAILABLE, 2007 DATA WAS USED.

3.) APPROXIMATE CREEK LOCATION ESTIMATED FROM 1995 AERIAL PHOTO, EPHEMERAL IN VICINITY OF LIGHTMAN PROPERTY.

4.) MW–2A NOT CONTOURED. CONCENTRATIONS NOT REPRESENTATIVE.

REFERENCES

1.) AERIAL PHOTOGRAPH TAKEN FROM USDA GEOSPATIAL DATA GATEWAY, DATED 2006.

2.) MONITORING WELLS, STAFF GAUGE AND PIEZOMETERS SHOWN WERE BASED ON SURVEY INFORMATION SUPPLIED BY JAMES M. STEWART, INC.

3.) GEOPROBE PROFILE BORINGS AND SURFACE WATER/SEDIMENT SAMPLING LOCATIONS WERE LOCATED IN THE FIELD BY GOLDER ASSOCIATES, INC. PERSONNEL USING A HANDHELD GPS UNIT AND ARE APPROXIMATE ONLY.

300 0 300
SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT

LIGHTMAN DRUM SITE
WINSLOW TOWNSHIP, NEW JERSEY

TITLE

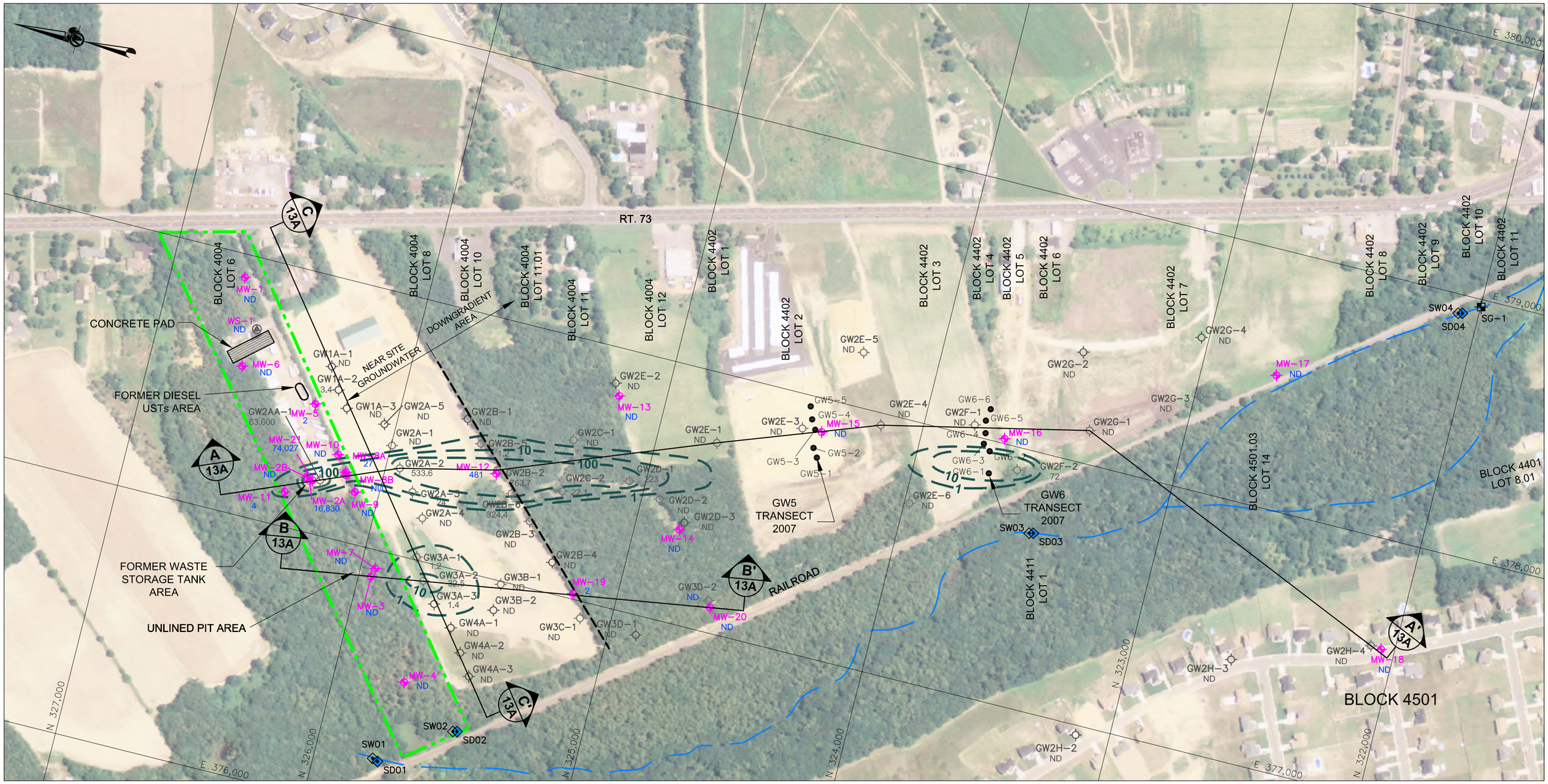
TCE ISOCONCENTRATION CONTOURS 2006-2007

Golder Associates Philadelphia USA

PROJECT No.		013–6054	FILE No.		0136054D017
DESIGN	HAL	02/13/09	SCALE	AS SHOWN	REV. 0
CADD	RG	02/16/09			
CHECK	HAL	02/16/09			
REVIEW	PSF	02/16/09			

FIGURE 9B

Drawing file: 0136054D017.dwg Feb 17, 2009 – 12:01pm



LEGEND

- APPROXIMATE PROPERTY LINE – LIGHTMAN DRUM SITE
- BTEX CONTOUR (SEE NOTE 2)
- WS-1 — ONSITE WATER SUPPLY WELL (LOCATION APPROXIMATE)
- MW-11 — MONITORING WELL
- GW3B-1 — GEOPROBE AQUIFER PROFILE BORINGS (LOCATION APPROXIMATE)
- A / 13A — DETAIL OR CROSS SECTION DESIGNATION
- FIGURE No. WHERE DETAIL OR CROSS SECTION IS PRESENTED
- PUMP BRANCH CREEK (SEE NOTE 3)
- SG-1 — STAFF GAUGE
- SW01 — SURFACE WATER SAMPLE (LOCATION APPROXIMATE)
- SD01 — SEDIMENT SAMPLE (LOCATION APPROXIMATE)
- ND — GEOPROBE BTEX CONCENTRATIONS (ug/L) 2002–2004
- 1.4 — BTEX CONCENTRATIONS (ug/L) FOR FEBRUARY 2005

NOTE

1.) ND = NOT DETECTED

2.) ISOCONCENTRATION CONTOURS BASED ON GEOPROBE AND MONITORING WELL DATA COLLECTED 2002–2005. DATA FROM MW–2B AND MW–8B WERE NOT CONTOURED AS THEY ARE SCREENED BELOW THE PLUME.

3.) APPROXIMATE CREEK LOCATION ESTIMATED FROM 1995 AERIAL PHOTO, EPHEMERAL IN VICINITY OF LIGHTMAN PROPERTY.

4.) BTEX IS THE SUM OF DETECTED CONCENTRATIONS OF BENZENE, TOLUENE, ETHYLBENZENE, AND TOTAL XYLENES.

300 0 300
SCALE FEET

REFERENCES

1.) AERIAL PHOTOGRAPH TAKEN FROM USDA GEOSPATIAL DATA GATEWAY, DATED 2006.

2.) MONITORING WELLS, STAFF GAUGE AND PIEZOMETERS SHOWN WERE BASED ON SURVEY INFORMATION SUPPLIED BY JAMES M. STEWART, INC.

3.) GEOPROBE PROFILE BORINGS AND SURFACE WATER/SEDIMENT SAMPLING LOCATIONS WERE LOCATED IN THE FIELD BY GOLDER ASSOCIATES, INC. PERSONNEL USING A HANDHELD GPS UNIT AND ARE APPROXIMATE ONLY.

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
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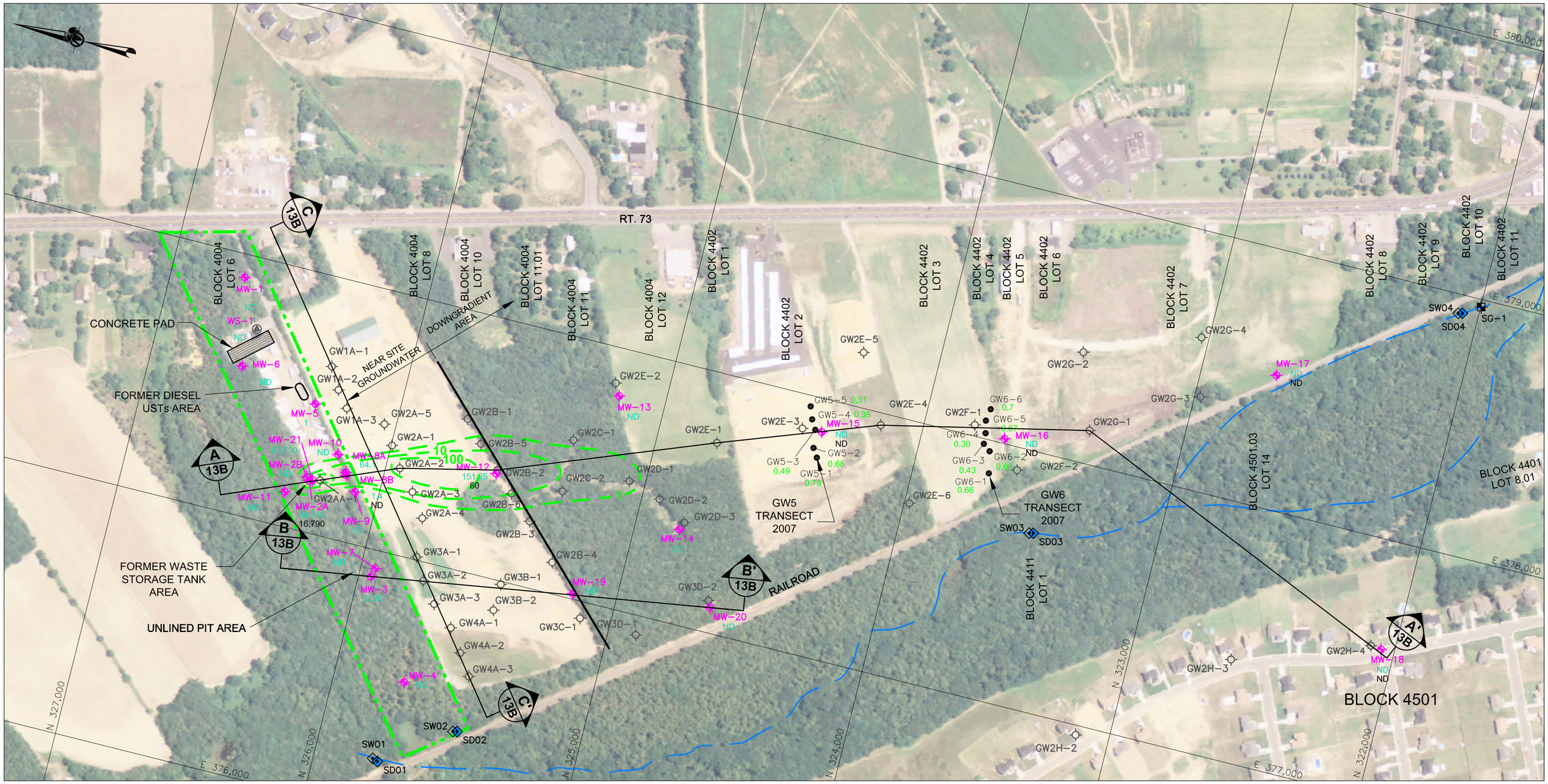
PROJECT
LIGHTMAN DRUM SITE
WINSLOW TOWNSHIP, NEW JERSEY

TITLE
TOTAL BTEX ISOCONCENTRATION CONTOURS 2002-2005

Golder Associates Philadelphia USA

PROJECT No.	013–6054		FILE No.	0136054D007	
DESIGN	HAL	10/06/08	SCALE AS SHOWN	REV.	1
CADD	RG	10/06/08			
CHECK	HAL	10/06/08	**FIGURE 10A**		
REVIEW	RJI	10/06/08			

Drawing file: 0136054D007 Rev 1.dwg Feb 17, 2009 – 11:52am



LEGEND

- APPROXIMATE PROPERTY LINE – LIGHTMAN DRUM SITE
- BTEX CONTOUR (SEE NOTE 3)
- WS-1 — ONSITE WATER SUPPLY WELL (LOCATION APPROXIMATE)
- MW-11 — MONITORING WELL
- GW3B-1 — GEOPROBE AQUIFER PROFILE BORINGS (LOCATION APPROXIMATE)
- A / 13B — DETAIL OR CROSS SECTION DESIGNATION; FIGURE No. WHERE DETAIL OR CROSS SECTION IS PRESENTED
- PUMP BRANCH CREEK (SEE NOTE 3)
- SG-1 — STAFF GAUGE
- SW01 — SURFACE WATER SAMPLE (LOCATION APPROXIMATE)
- SD01 — SEDIMENT SAMPLE (LOCATION APPROXIMATE)
- 1.4 — BTEX CONCENTRATIONS (ug/L) FOR MARCH 2006
- **0.7** — BTEX CONCENTRATIONS (ug/L) FEBRUARY 2007
- 0.7 — GEOPROBE BTEX CONCENTRATIONS (ug/L) JULY 2007

NOTE

1.) ND = NOT DETECTED

2.) ISOCONCENTRATION CONTOURS BASED ON GEOPROBE AND MONITORING WELL DATA COLLECTED 2006–2007. DATA FROM MW–2B AND MW–8B WERE NOT CONTOURED AS THEY ARE SCREENED BELOW THE PLUME. WHERE MONITORING WELL DATA FROM 2006 AND 2007 WERE AVAILABLE, 2007 DATA WAS USED.

3.) APPROXIMATE CREEK LOCATION ESTIMATED FROM 1995 AERIAL PHOTO, EPHEMERAL IN VICINITY OF LIGHTMAN PROPERTY.

4.)BTEX IS THE SUM OF DETECTED CONCENTRATIONS OF BENZENE, TOLUENE, ETHYL BENZENE, AND TOTAL XYLENES.

REFERENCES

1.) AERIAL PHOTOGRAPH TAKEN FROM USDA GEOSPATIAL DATA GATEWAY, DATED 2006.

2.) MONITORING WELLS, STAFF GAUGE AND PIEZOMETERS SHOWN WERE BASED ON SURVEY INFORMATION SUPPLIED BY JAMES M. STEWART, INC.

3.) GEOPROBE PROFILE BORINGS AND SURFACE WATER/SEDIMENT SAMPLING LOCATIONS WERE LOCATED IN THE FIELD BY GOLDER ASSOCIATES, INC. PERSONNEL USING A HANDHELD GPS UNIT AND ARE APPROXIMATE ONLY.

300 0 300
SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT
LIGHTMAN DRUM SITE
WINSLOW TOWNSHIP, NEW JERSEY

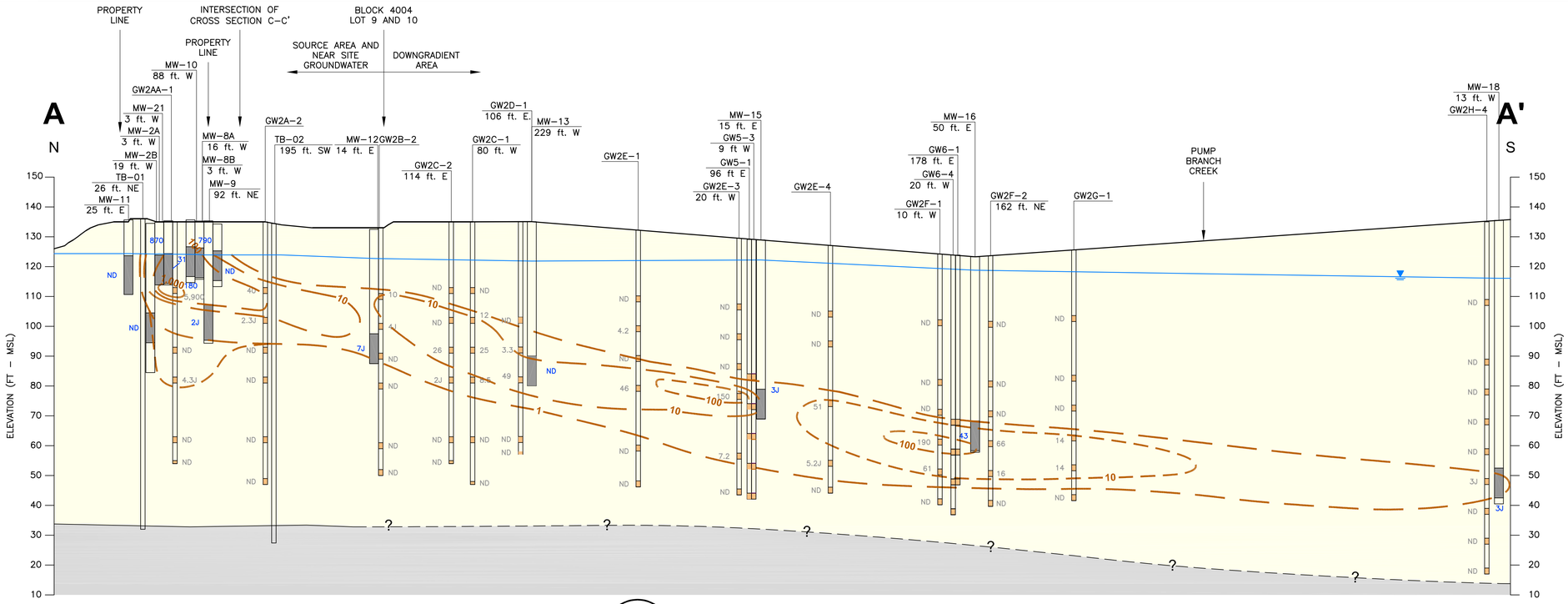
TITLE
TOTAL BTEX ISOCONCENTRATION CONTOURS 2006-2007

Golder Associates Philadelphia USA

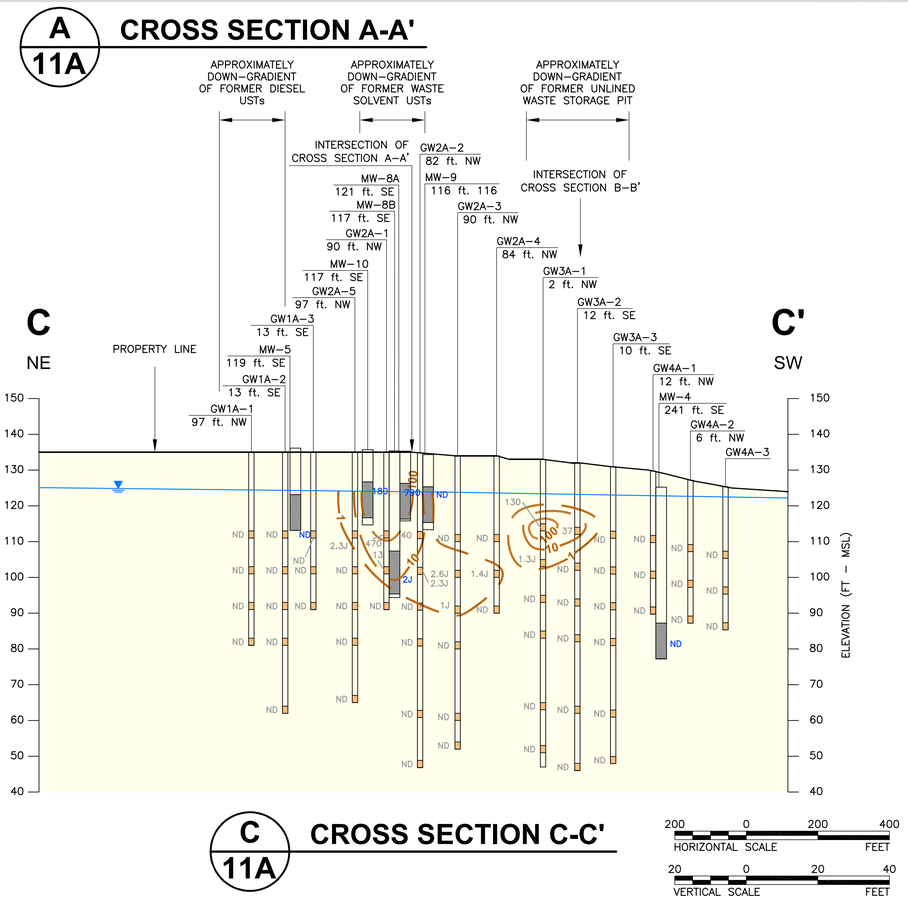
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CHECK	HAL	02/16/09			
REVIEW	PSF	02/16/09			

FIGURE 10B

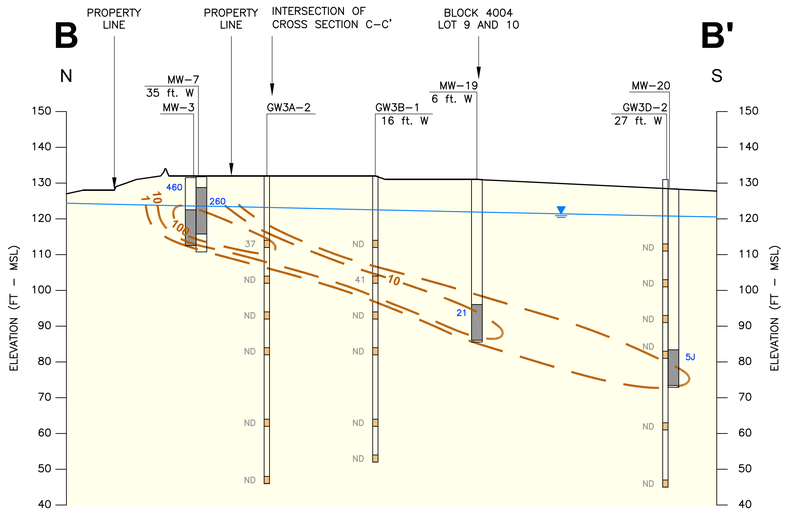
Drawing file: 0136054D021.dwg Feb 17, 2009 – 12:03pm



A 11A CROSS SECTION A-A'



B 11A CROSS SECTION B-B'



C 11A CROSS SECTION C-C'

HORIZONTAL SCALE 200 0 200 400 FEET

VERTICAL SCALE 20 0 20 40 FEET

VERTICAL EXAGGERATION 10X

LEGEND

- MW–8A / 16 ft. W — BOREHOLE LABEL; PROJECTED DISTANCE AND DIRECTION
- TOP OF BOREHOLE
- SAMPLING INTERVAL
- BOTTOM OF BOREHOLE
- 4.3 — PCE CONCENTRATIONS (ug/L) 2002–2004
- 43 — PCE CONCENTRATIONS (ug/L) FEBRUARY 2005
- 10 — PCE CONTOUR (SEE NOTES)
- WATER TABLE (MAY 3, 2005)
- COHANSEY SAND FORMATION
- KIRKWOOD FORMATION

NOTE

1.) ND = NON DETECT

2.) GEOPROBE DATA (BORINGS DESIGNATED WITH THE PREFIX GW) WERE TAKEN BETWEEN AUGUST 2002 AND DECEMBER 2004.

3.) ISOCONCENTRATION CONTOURS BASED ON GEOPROBE AND MONITORING WELL SAMPLES COLLECTED 2002–2005. GW2G2 (32–34 BGS) NOT CONTOURED.

4.) BORINGS, MONITORING WELLS AND ANALYTICAL DATA SHOWN MAY BE PROJECTED AS IDENTIFIED ON THE CROSS–SECTIONS. ISOCONCENTRATION CONTOURS ARE DEVELOPED USING PROJECTED BORINGS AND THEREFORE ASSOCIATED PLUME DIMENSIONS MAY BE PROJECTED TO THE CROSS SECTION.

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
1	02/16/09	HAL	UPDATE CROSS–SECTIONS	RG	HAL	PSF

PROJECT

LIGHTMAN DRUM SITE
WINSLOW TOWNSHIP, NEW JERSEY

TITLE

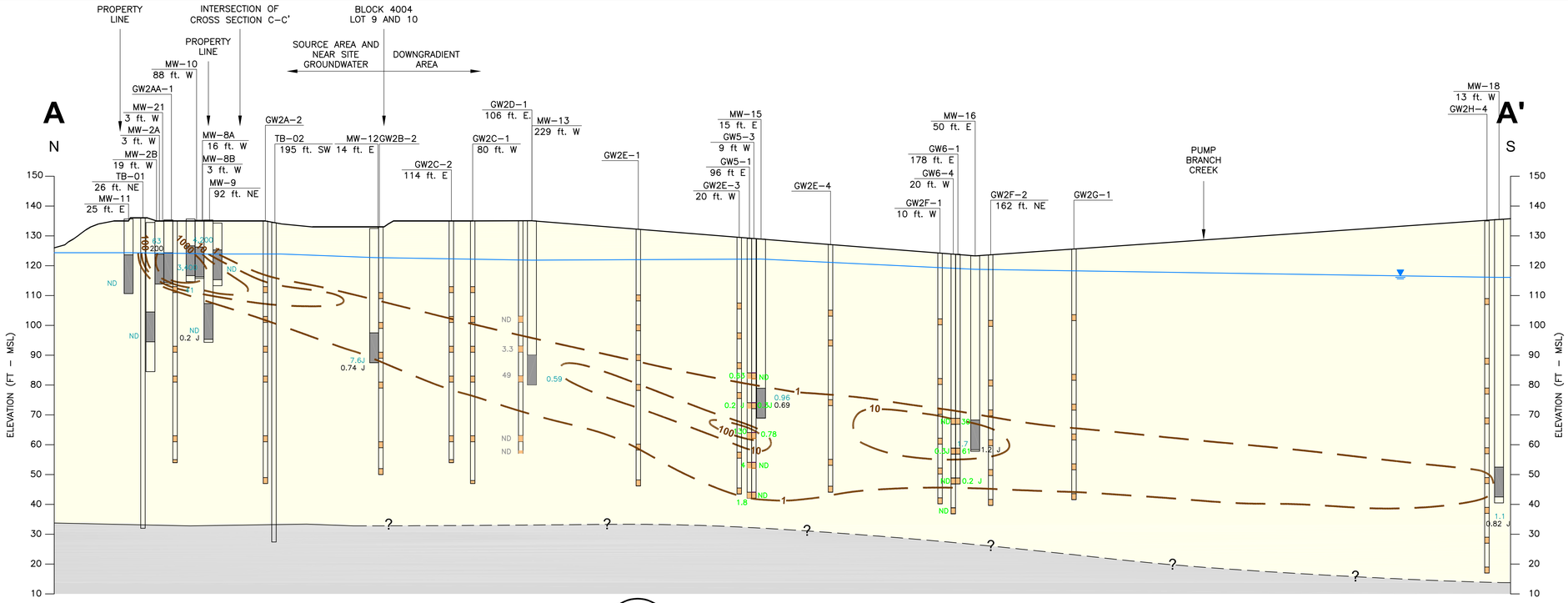
PCE ISOCONCENTRATION CONTOURS CROSS SECTIONS A-A', B-B' AND C-C' 2002-2005

Golder Associates Philadelphia USA
NJ Authorization #24GA28029100

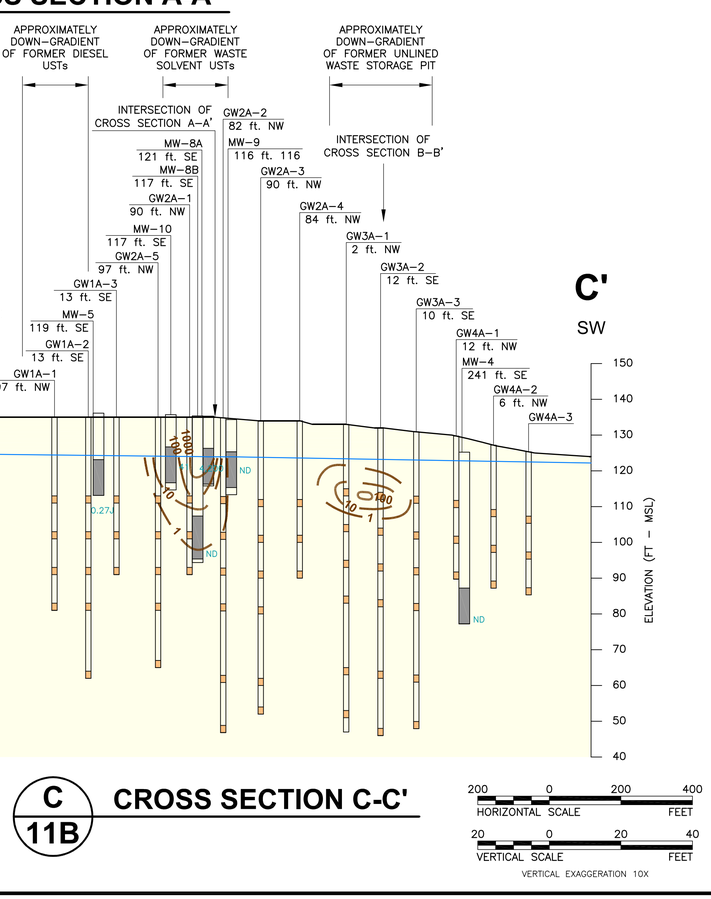
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CADD	AM	10/06/08			
CHECK	HAL	10/06/08			
REVIEW	RJI	10/06/08			

FIGURE 11A

Drawing File: 0136054D008 Rev1.dwg Feb 17, 2009 – 11:53am



A/11B CROSS SECTION A-A'



LEGEND

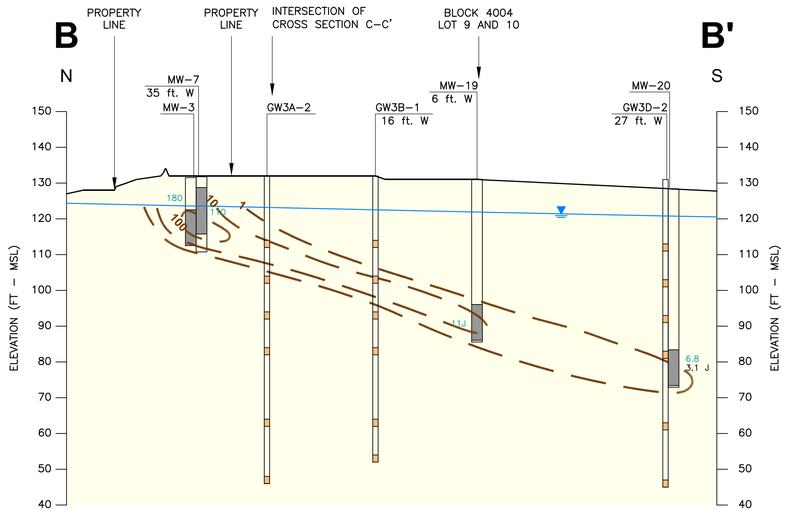
- MW–8A / 16 ft. W — BOREHOLE LABEL / PROJECTED DISTANCE AND DIRECTION
- TOP OF BOREHOLE
- SAMPLING INTERVAL
- BOTTOM OF BOREHOLE
- 1.7 — PCE CONCENTRATIONS (ug/L) MARCH 2006
- 1.7 — PCE CONCENTRATIONS (ug/L) FEBRUARY 2007
- 1.7 — PCE CONCENTRATIONS (ug/L) JULY 2007
- —10— PCE CONTOUR (SEE NOTES)
- WATER TABLE (MAY 3, 2005)
- COHANSEY SAND FORMATION
- KIRKWOOD FORMATION

NOTE

1.) ND = NON DETECT

2.) ISOCONCENTRATION CONTOURS BASED ON GEOPROBE AND MONITORING WELL SAMPLES COLLECTED 2006–2007. WHERE MONITORING WELL DATA FROM 2006–2007 WERE AVAILABLE, 2007 DATA WAS USED FOR CONTOURING.

3.) BORINGS, MONITORING WELLS AND ANALYTICAL DATA SHOWN MAY BE PROJECTED AS IDENTIFIED ON THE CROSS–SECTIONS. ISOCONCENTRATION CONTOURS ARE DEVELOPED USING PROJECTED BORINGS AND THEREFORE ASSOCIATED PLUME DIMENSIONS MAY BE PROJECTED TO THE CROSS SECTION.



B/11B CROSS SECTION B-B'

C/11B CROSS SECTION C-C'

HORIZONTAL SCALE 200 0 200 400 FEET

VERTICAL SCALE 20 0 20 40 FEET

VERTICAL EXAGGERATION 10X

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT

LIGHTMAN DRUM SITE
WINSLOW TOWNSHIP, NEW JERSEY

TITLE

PCE ISOCONCENTRATION CONTOURS CROSS SECTIONS A-A', B-B' AND C-C' 2006-2007

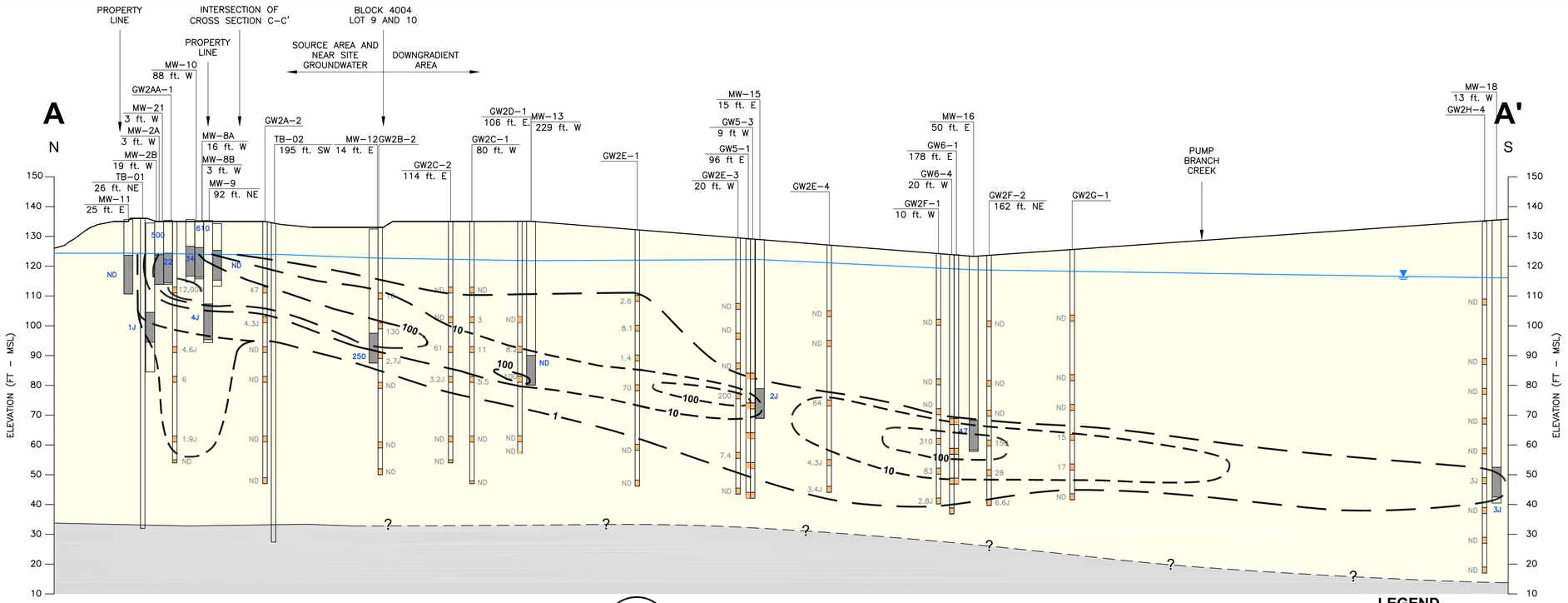
NJ Authorization #24GA28029100

Golder Associates Philadelphia USA

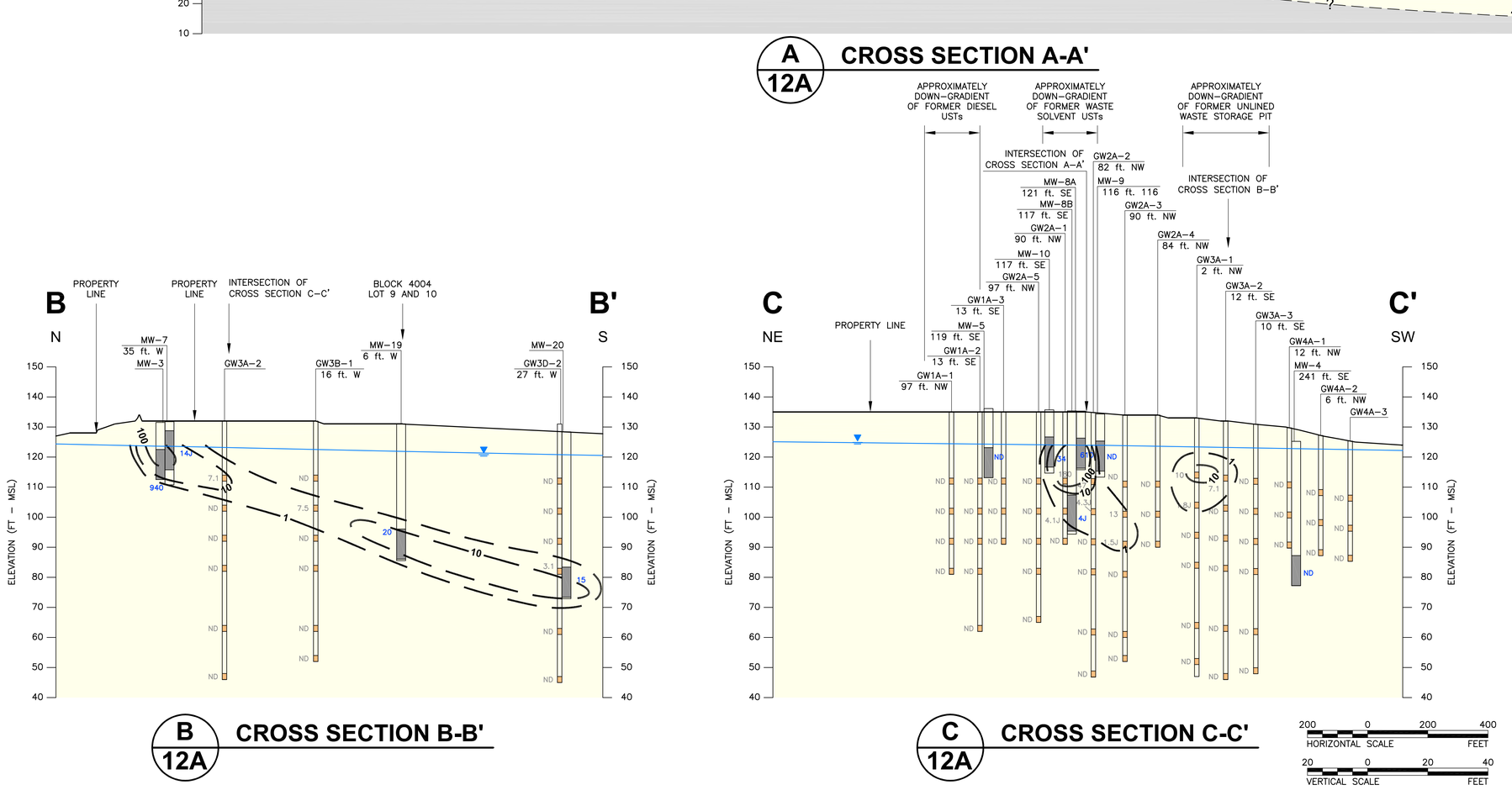
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CADD	AM	02/16/09			
CHECK	HAL	02/16/09			
REVIEW	PSF	02/16/09			

FIGURE 11B

Drawing File: 0136054D018.dwg Feb 17, 2009 - 12:01pm



A / 12A CROSS SECTION A-A'



B / 12A CROSS SECTION B-B'

C / 12A CROSS SECTION C-C'

HORIZONTAL SCALE 200 0 200 400 FEET

VERTICAL SCALE 20 0 20 40 FEET

VERTICAL EXAGGERATION 10X

LEGEND

- MW–8A / 16 ft. W — BOREHOLE LABEL; PROJECTED DISTANCE AND DIRECTION
- TOP OF BOREHOLE
- SAMPLING INTERVAL
- BOTTOM OF BOREHOLE
- 3.1 — GEOPROBE TCE CONCENTRATIONS (ug/L) 2002–2004
- 3.1 — TCE CONCENTRATIONS (ug/L) FEBRUARY 2005
- —10— TCE CONTOUR (SEE NOTE 3)
- WATER TABLE (MAY 3, 2005)
- COHANSEY SAND FORMATION
- KIRKWOOD FORMATION

NOTE

1.) ND = NON DETECT

2.) GEOPROBE DATA (BORINGS DESIGNATED WITH THE PREFIX GW) WERE TAKEN BETWEEN AUGUST 2002 AND DECEMBER 2004.

3.) ISOCONCENTRATION CONTOURS BASED ON GEOPROBE AND MONITORING WELL SAMPLES COLLECTED 2002–2005.

4.) BORINGS, MONITORING WELLS AND ANALYTICAL DATA SHOWN MAY BE PROJECTED AS IDENTIFIED ON THE CROSS–SECTIONS. ISOCONCENTRATION CONTOURS ARE DEVELOPED USING PROJECTED BORINGS AND THEREFORE ASSOCIATED PLUME DIMENSIONS MAY BE PROJECTED TO THE CROSS SECTION.

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
1	02/16/09	HAL	UPDATE CROSS–SECTIONS	RG	HAL	PSF

PROJECT

LIGHTMAN DRUM SITE
WINSLOW TOWNSHIP, NEW JERSEY

TITLE

TCE ISOCONCENTRATIONS CROSS SECTIONS A-A', B-B' AND C-C' 2002-2005

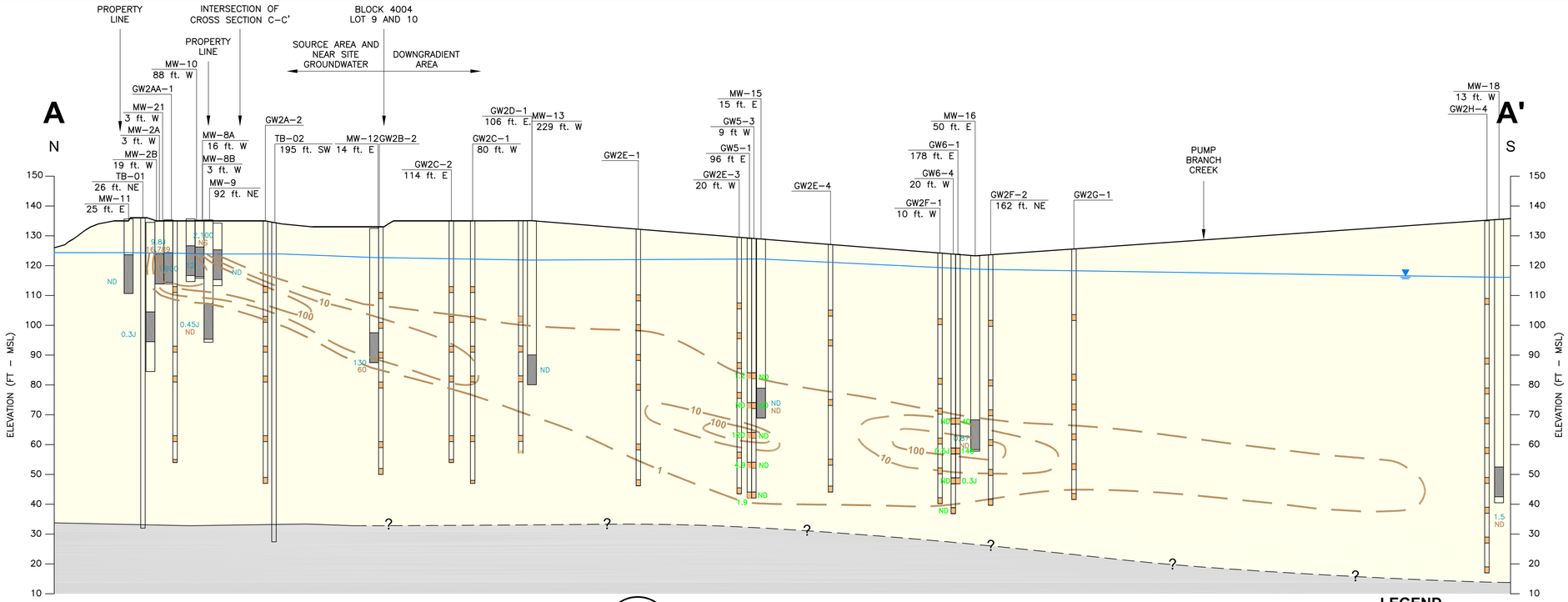
NJ Authorization #24GA28029100

Golder Associates Philadelphia USA

PROJECT No.	013–6054		FILE No.	0136054D009	
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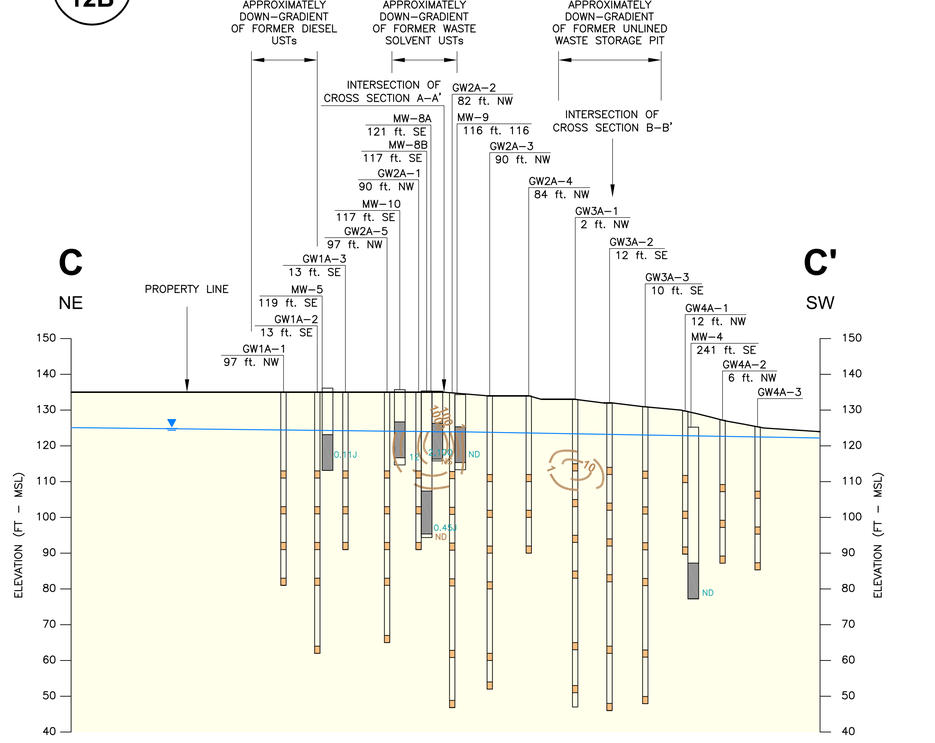
FIGURE 12A

Drawing File: 0136054D009 Rev1.dwg Feb 17, 2009 – 11:55am



A 12B CROSS SECTION A-A'

B 12B CROSS SECTION B-B'



C 12B CROSS SECTION C-C'

HORIZONTAL SCALE 200 0 200 400 FEET

VERTICAL SCALE 20 0 20 40 FEET

VERTICAL EXAGGERATION 10X

LEGEND

- MW–8A / 16 ft. W — BOREHOLE LABEL; PROJECTED DISTANCE AND DIRECTION
- TOP OF BOREHOLE
- SAMPLING INTERVAL
- BOTTOM OF BOREHOLE
- 6.3 — TCE CONCENTRATIONS (ug/L) MARCH 2006
- 6.3 — TCE CONCENTRATIONS (ug/L) FEBRUARY 2007
- 6.3 — GEOPROBE TCE CONCENTRATIONS (ug/L) JULY 2007
- —10— TCE CONTOUR (SEE NOTES)
- WATER TABLE (MAY 3, 2005)
- COHANSEY SAND FORMATION
- KIRKWOOD FORMATION

NOTE

1.) ND = NON DETECT

2.) ISOCONCENTRATION CONTOURS BASED ON GEOPROBE AND MONITORING WELL SAMPLES COLLECTED 2006–2007. WHERE MONITORING WELL DATA FROM 2006–2007 WERE AVAILABLE, 2007 DATA WAS USED FOR CONTOURING.

3.) BORINGS, MONITORING WELLS AND ANALYTICAL DATA SHOWN MAY BE PROJECTED AS IDENTIFIED ON THE CROSS–SECTIONS. ISOCONCENTRATION CONTOURS ARE DEVELOPED USING PROJECTED BORINGS AND THEREFORE ASSOCIATED PLUME DIMENSIONS MAY BE PROJECTED TO THE CROSS SECTION.

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT

LIGHTMAN DRUM SITE
WINSLOW TOWNSHIP, NEW JERSEY

TITLE

TCE ISOCONCENTRATIONS CROSS SECTIONS A-A', B-B' AND C-C' 2006-2007

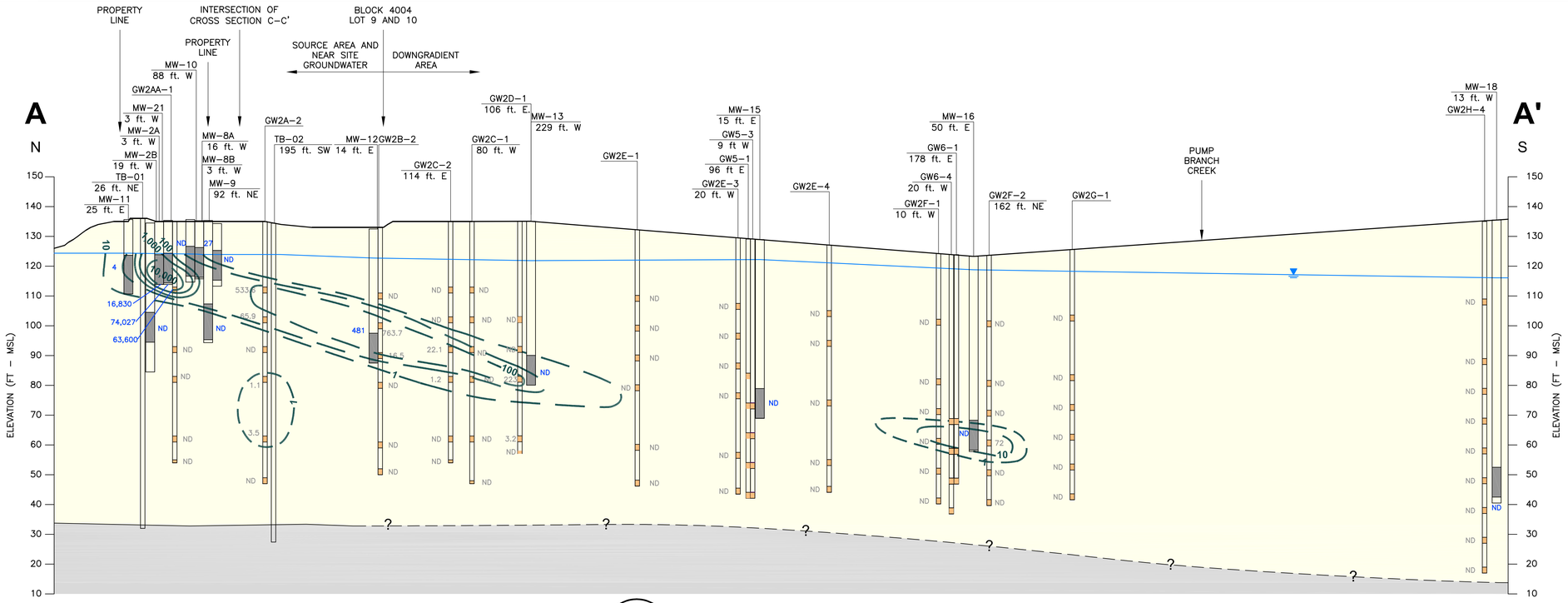
NJ Authorization #24GA28029100

Golder Associates
Philadelphia USA

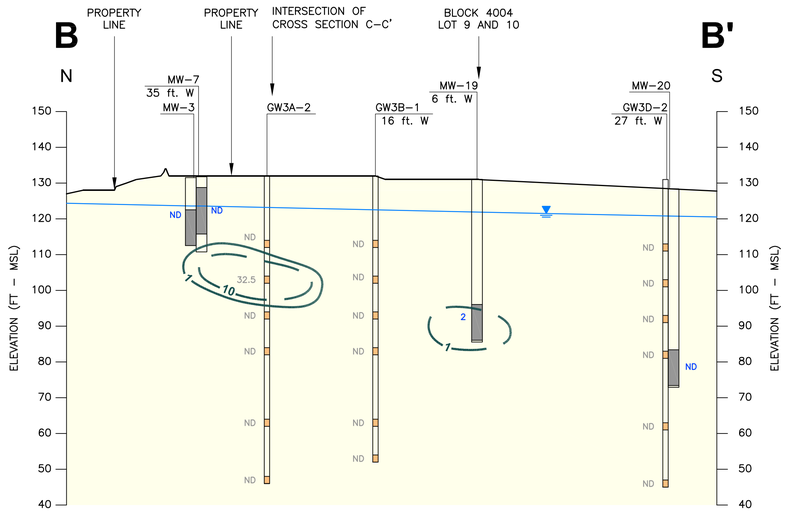
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FIGURE 12B

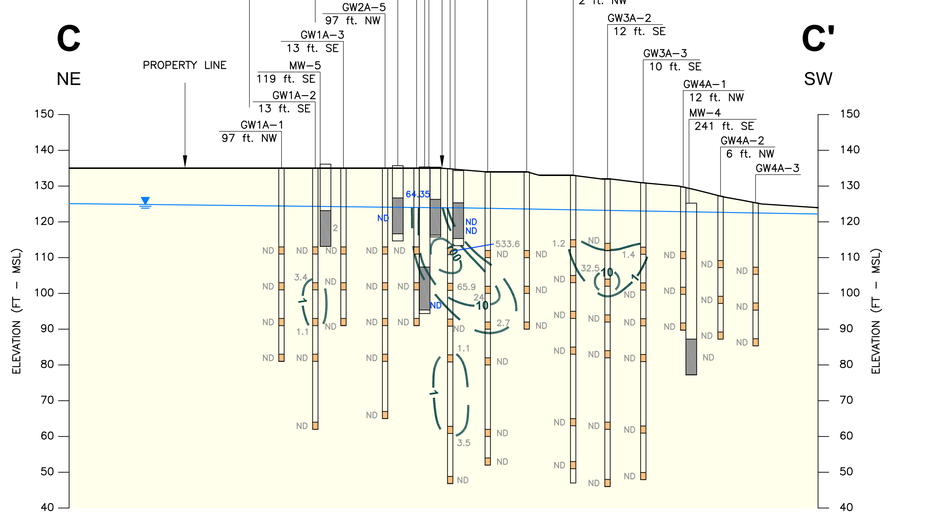
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A 13A CROSS SECTION A-A'



B 13A CROSS SECTION B-B'



C 13A CROSS SECTION C-C'

200 0 200 400
HORIZONTAL SCALE FEET

20 0 20 40
VERTICAL SCALE FEET

VERTICAL EXAGGERATION 10X

LEGEND

- MW–8A / 16 ft. W — BOREHOLE LABEL; PROJECTED DISTANCE AND DIRECTION
- TOP OF BOREHOLE
- SAMPLING INTERVAL
- BOTTOM OF BOREHOLE
- 1.4 — BTEX DETECTED CONCENTRATIONS (ug/L) 2002–2004
- 1.4 — BTEX CONCENTRATIONS (ug/L) FEBRUARY 2005
- —10— BTEX CONTOUR (SEE NOTES)
- WATER TABLE (MAY 3, 2005)
- COHANSEY SAND FORMATION
- KIRKWOOD FORMATION

NOTES

1.) ND = NON DETECT

2.) ISOCONCENTRATION CONTOURS BASED ON GEOPROBE AND MONITORING WELL SAMPLES COLLECTED 2002–2005.

3.) BORINGS, MONITORING WELLS AND ANALYTICAL DATA SHOWN MAY BE PROJECTED AS IDENTIFIED ON THE CROSS–SECTIONS. ISOCONCENTRATION CONTOURS ARE DEVELOPED USING PROJECTED BORINGS AND THEREFORE ASSOCIATED PLUME DIMENSIONS MAY BE PROJECTED TO THE CROSS SECTION.

4.) BTEX IS THE SUM OF DETECTED CONCENTRATIONS OF BENZENE, TOLUENE, ETHYLBENZENE, AND TOTAL XYLENES.

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
1	02/16/09	HAL	UPDATE CROSS–SECTIONS	RG	HAL	PSF

PROJECT

LIGHTMAN DRUM SITE
WINSLOW TOWNSHIP, NEW JERSEY

TITLE

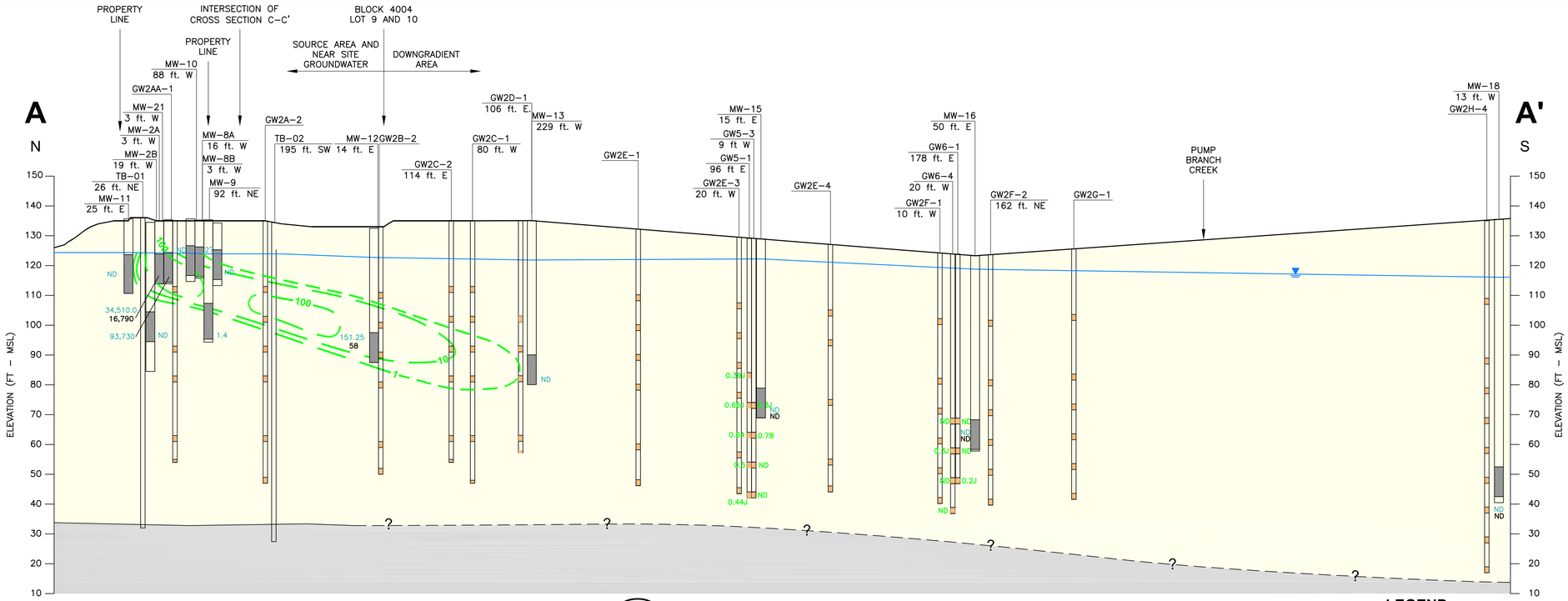
TOTAL BTEX ISOCONCENTRATIONS CROSS SECTIONS A-A', B-B' AND C-C' 2002-2005

Golder Associates
Philadelphia USA
NJ Authorization #24GA28029100

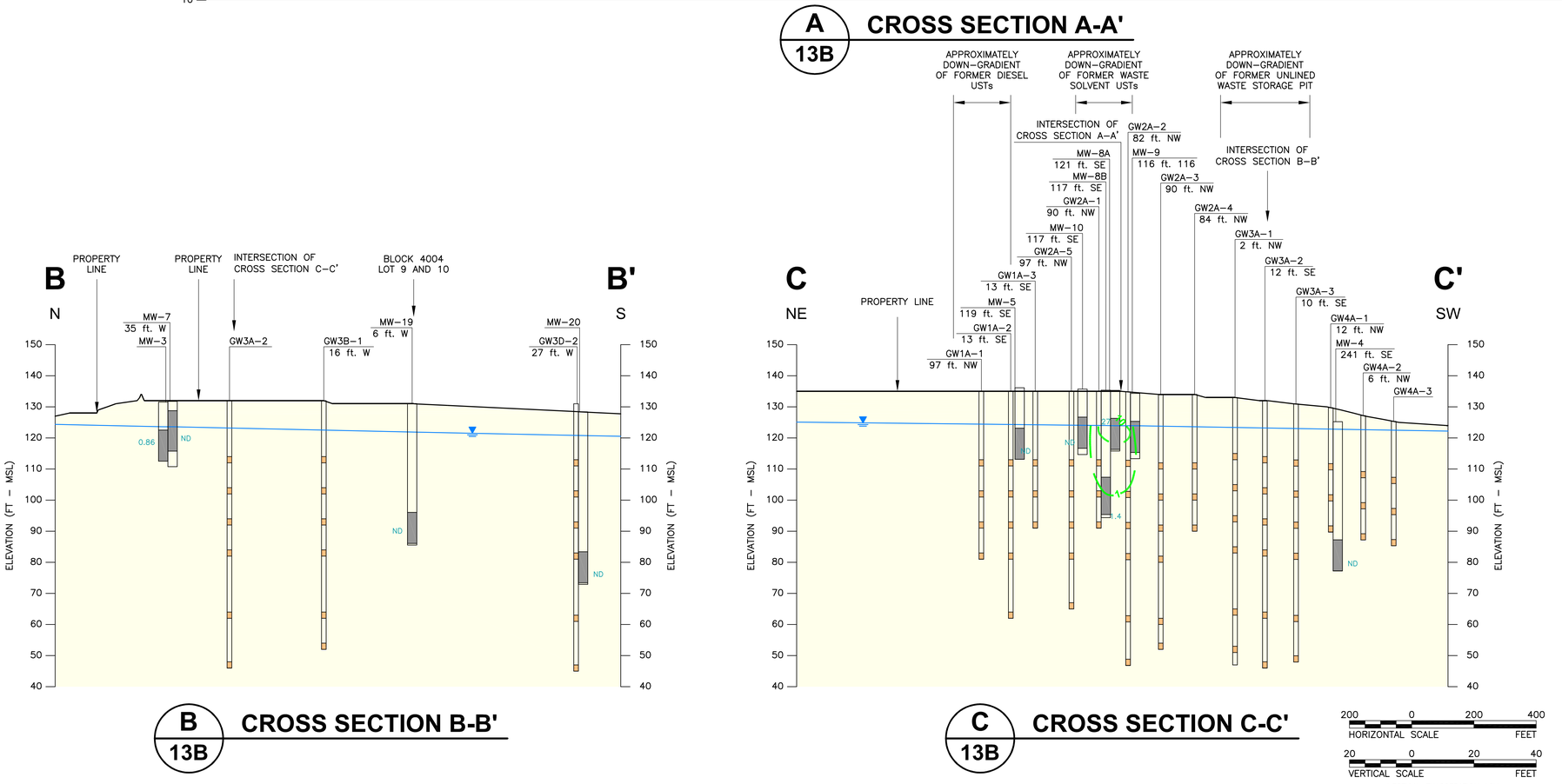
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CHECK	HAL	10/06/08			
REVIEW	RJI	10/06/08			

FIGURE 13A

Drawing File: 0136054D010 Rev1.dwg Feb 17, 2009 – 11:56am



A 13B CROSS SECTION A-A'



LEGEND

- MW–8A / 16 ft. W — BOREHOLE LABEL; PROJECTED DISTANCE AND DIRECTION
- TOP OF BOREHOLE
- SAMPLING INTERVAL
- BOTTOM OF BOREHOLE
- 1 — BTEX CONCENTRATIONS (ug/L) MARCH 2006
- 1 — BTEX CONCENTRATIONS (ug/L) FEBRUARY 2007
- 1 — GEOPROBE BTEX CONCENTRATIONS (ug/L) JULY 2007
- 10 — BTEX CONTOUR (SEE NOTES)
- WATER TABLE (MAY 3, 2005)
- COHANSEY SAND FORMATION
- KIRKWOOD FORMATION

NOTES

1.) ND = NON DETECT

2.) ISOCONCENTRATION CONTOURS BASED ON GEOPROBE AND MONITORING WELL SAMPLES COLLECTED 2006–2007. WHERE MONITORING WELL DATA FROM 2006–2007 WERE AVAILABLE, 2007 DATA WAS USED FOR CONTOURING.

3.) BORINGS, MONITORING WELLS AND ANALYTICAL DATA SHOWN MAY BE PROJECTED AS IDENTIFIED ON THE CROSS–SECTIONS. ISOCONCENTRATION CONTOURS ARE DEVELOPED USING PROJECTED BORINGS AND THEREFORE ASSOCIATED PLUME DIMENSIONS MAY BE PROJECTED TO THE CROSS SECTION.

4.) BTEX IS THE SUM OF DETECTED CONCENTRATIONS OF BENZENE, TOLUENE, ETHYLBENZENE, AND TOTAL XYLENES.

B 13B CROSS SECTION B-B'

C 13B CROSS SECTION C-C'

HORIZONTAL SCALE 200 0 200 400 FEET

VERTICAL SCALE 20 0 20 40 FEET

VERTICAL EXAGGERATION 10X

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW

PROJECT

LIGHTMAN DRUM SITE
WINSLOW TOWNSHIP, NEW JERSEY

TITLE

TOTAL BTEX ISOCONCENTRATION CONTOURS CROSS SECTIONS A-A', B-B' AND C-C' 2006-2007

NJ Authorization #24GA28029100

Golder Associates Philadelphia USA

PROJECT No.	013–6054		FILE No.	0136054D020	
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CADD	AM	02/16/09			
CHECK	HAL	02/16/09			
REVIEW	PSF	02/16/09			

FIGURE 13B

Drawing File: 0136054D020.dwg Feb 17, 2009 - 12:02pm

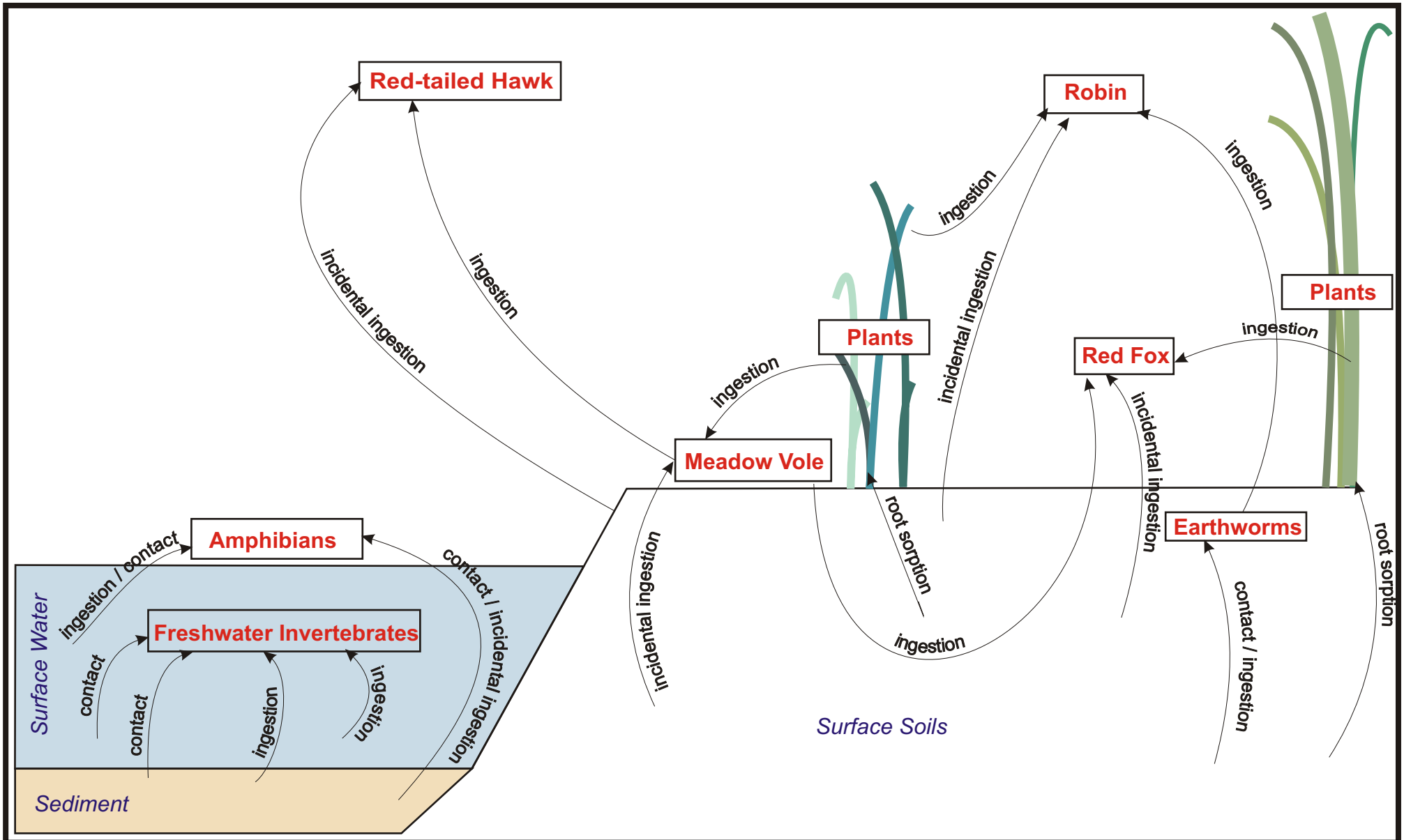


FIGURE 14

PROJECT No.	013-6054		
FILE No.	0136054D015		
REV. 0	SCALE N.T.S.		
DESIGN	HAL	02/09/09	
COREL	AM	02/16/09	
CHECK	HAL	02/16/09	
REVIEW	PSF	02/16/09	

SLERA
SITE CONCEPTUAL MODEL

LIGHTMAN DRUM
WINSLOW TOWNSHIP, NEW JERSEY

Golder Associates
Mt. Laurel, New Jersey

APPENDIX A

ProUCL OUTPUT SHEETS

SURFACE SOIL

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Phenanthrene

Raw Statistics	
Number of Valid Samples	49
Number of Unique Samples	4
Minimum	5
Maximum	18
Mean	5.571429
Median	5
Standard Deviation	2.354074
Variance	5.541667
Coefficient of Variation	0.422526
Skewness	4.30694

Gamma Statistics	
k hat	11.34853
k star (bias corrected)	10.66732
Theta hat	0.490938
Theta star	0.522289
nu hat	1112.156
nu star	1045.398
Approx.Chi Square Value (.05)	971.325
Adjusted Level of Significance	0.045102
Adjusted Chi Square Value	969.1723

Log-transformed Statistics	
Minimum of log data	1.609438
Maximum of log data	2.890372
Mean of log data	1.672946
Standard Deviation of log data	0.255057
Variance of log data	0.065054

RECOMMENDATION

Data are Non-parametric (0.05)

Use Student's-t UCL
or Modified-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.275587
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	6.135473

Gamma Distribution Test	
A-D Test Statistic	17.04846
A-D 5% Critical Value	0.74918
K-S Test Statistic	0.5406
K-S 5% Critical Value	0.126473
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	5.996303
Adjusted Gamma UCL	6.009622

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.276452
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	5.86883
95% Chebyshev (MVUE) UCL	6.38561
97.5% Chebyshev (MVUE) UCL	6.768715
99% Chebyshev (MVUE) UCL	7.521252

95% Non-parametric UCLs	
CLT UCL	6.124587
Adj-CLT UCL (Adjusted for skewness)	6.345679
Mod-t UCL (Adjusted for skewness)	6.169959
Jackknife UCL	6.135473
Standard Bootstrap UCL	N/R
Bootstrap-t UCL	N/R
Hall's Bootstrap UCL	N/R
Percentile Bootstrap UCL	N/R
BCA Bootstrap UCL	N/R
95% Chebyshev (Mean, Sd) UCL	7.03731
97.5% Chebyshev (Mean, Sd) UCL	7.671599
99% Chebyshev (Mean, Sd) UCL	8.917535

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Endrin Aldehyde

Raw Statistics	
Number of Valid Samples	49
Number of Unique Samples	5
Minimum	0.435
Maximum	4.8
Mean	0.709694
Median	0.435
Standard Deviation	0.953235
Variance	0.908657
Coefficient of Variation	1.343163
Skewness	3.406419

Gamma Statistics	
k hat	1.740241
k star (bias corrected)	1.647301
Theta hat	0.407814
Theta star	0.430822
nu hat	170.5436
nu star	161.4355
Approx.Chi Square Value (.05)	133.054
Adjusted Level of Significance	0.045102
Adjusted Chi Square Value	132.2745

Log-transformed Statistics	
Minimum of log data	-0.83241
Maximum of log data	1.568616
Mean of log data	-0.65696
Standard Deviation of log data	0.59717
Variance of log data	0.356612

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.325205
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.938092

Gamma Distribution Test	
A-D Test Statistic	16.77671
A-D 5% Critical Value	0.764987
K-S Test Statistic	0.548957
K-S 5% Critical Value	0.128524
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.861077
Adjusted Gamma UCL	0.866152

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.319529
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.733046
95% Chebyshev (MVUE) UCL	0.862504
97.5% Chebyshev (MVUE) UCL	0.968736
99% Chebyshev (MVUE) UCL	1.177408

95% Non-parametric UCLs	
CLT UCL	0.933684
Adj-CLT UCL (Adjusted for skewness)	1.004492
Mod-t UCL (Adjusted for skewness)	0.949137
Jackknife UCL	0.938092
Standard Bootstrap UCL	0.933697
Bootstrap-t UCL	1.134906
Hall's Bootstrap UCL	0.899885
Percentile Bootstrap UCL	0.95449
BCA Bootstrap UCL	0.995918
95% Chebyshev (Mean, Sd) UCL	1.303273
97.5% Chebyshev (Mean, Sd) UCL	1.560115
99% Chebyshev (Mean, Sd) UCL	2.064632

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Aluminum

Raw Statistics	
Number of Valid Samples	49
Number of Unique Samples	48
Minimum	5.75
Maximum	9260
Mean	4257.653
Median	4240
Standard Deviation	2376.414
Variance	5647342
Coefficient of Variation	0.558151
Skewness	0.011993

Gamma Statistics	
k hat	1.074149
k star (bias corrected)	1.02199
Theta hat	3963.745
Theta star	4166.041
nu hat	105.2666
nu star	100.155
Approx.Chi Square Value (.05)	78.06217
Adjusted Level of Significance	0.045102
Adjusted Chi Square Value	77.47125

Log-transformed Statistics	
Minimum of log data	1.7492
Maximum of log data	9.133459
Mean of log data	7.823502
Standard Deviation of log data	1.756377
Variance of log data	3.084861

RECOMMENDATION

Data are normal (0.05)

Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.966944
Shapiro-Wilk 5% Critical Value	0.947
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	4827.05

Gamma Distribution Test	
A-D Test Statistic	4.35943
A-D 5% Critical Value	0.777564
K-S Test Statistic	0.253171
K-S 5% Critical Value	0.130056
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	5462.639
Adjusted Gamma UCL	5504.306

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.587857
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	26510.94
95% Chebyshev (MVUE) UCL	27426.02
97.5% Chebyshev (MVUE) UCL	34598.11
99% Chebyshev (MVUE) UCL	48686.28

95% Non-parametric UCLs	
CLT UCL	4816.061
Adj-CLT UCL (Adjusted for skewness)	4816.682
Mod-t UCL (Adjusted for skewness)	4827.147
Jackknife UCL	4827.05
Standard Bootstrap UCL	4795.387
Bootstrap-t UCL	4841.851
Hall's Bootstrap UCL	4805.377
Percentile Bootstrap UCL	4812.986
BCA Bootstrap UCL	4843.654
95% Chebyshev (Mean, Sd) UCL	5737.445
97.5% Chebyshev (Mean, Sd) UCL	6377.753
99% Chebyshev (Mean, Sd) UCL	7635.513

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Arsenic

Raw Statistics	
Number of Valid Samples	49
Number of Unique Samples	28
Minimum	0.125
Maximum	3.5
Mean	1.446122
Median	1.5
Standard Deviation	0.786942
Variance	0.619278
Coefficient of Variation	0.544174
Skewness	0.167139

Gamma Statistics	
k hat	2.133295
k star (bias corrected)	2.01629
Theta hat	0.677882
Theta star	0.717219
nu hat	209.0629
nu star	197.5964
Approx.Chi Square Value (.05)	166.0672
Adjusted Level of Significance	0.045102
Adjusted Chi Square Value	165.1931

Log-transformed Statistics	
Minimum of log data	-2.07944
Maximum of log data	1.252763
Mean of log data	0.116563
Standard Deviation of log data	0.872602
Variance of log data	0.761434

RECOMMENDATION

Data are normal (0.05)

Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.960727
Shapiro-Wilk 5% Critical Value	0.947
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	1.634677

Gamma Distribution Test	
A-D Test Statistic	1.928644
A-D 5% Critical Value	0.761656
K-S Test Statistic	0.162543
K-S 5% Critical Value	0.128106
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	1.720681
Adjusted Gamma UCL	1.729785

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.798647
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	2.166369
95% Chebyshev (MVUE) UCL	2.634107
97.5% Chebyshev (MVUE) UCL	3.069853
99% Chebyshev (MVUE) UCL	3.925791

95% Non-parametric UCLs	
CLT UCL	1.631037
Adj-CLT UCL (Adjusted for skewness)	1.633906
Mod-t UCL (Adjusted for skewness)	1.635124
Jackknife UCL	1.634677
Standard Bootstrap UCL	1.634611
Bootstrap-t UCL	1.628743
Hall's Bootstrap UCL	1.635089
Percentile Bootstrap UCL	1.630204
BCA Bootstrap UCL	1.636735
95% Chebyshev (Mean, Sd) UCL	1.936151
97.5% Chebyshev (Mean, Sd) UCL	2.148187
99% Chebyshev (Mean, Sd) UCL	2.564691

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Chromium

Raw Statistics	
Number of Valid Samples	49
Number of Unique Samples	45
Minimum	0.06
Maximum	912
Mean	30.14378
Median	8.5
Standard Deviation	129.0989
Variance	16666.52
Coefficient of Variation	4.282771
Skewness	6.918262

Gamma Statistics	
k hat	0.458445
k star (bias corrected)	0.443982
Theta hat	65.75228
Theta star	67.89415
nu hat	44.92756
nu star	43.51023
Approx.Chi Square Value (.05)	29.38176
Adjusted Level of Significance	0.045102
Adjusted Chi Square Value	29.02902

Log-transformed Statistics	
Minimum of log data	-2.81341
Maximum of log data	6.81564
Mean of log data	2.001516
Standard Deviation of log data	1.618407
Variance of log data	2.619241

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.198931
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	61.07631

Gamma Distribution Test	
A-D Test Statistic	5.377155
A-D 5% Critical Value	0.824115
K-S Test Statistic	0.262336
K-S 5% Critical Value	0.134553
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	44.63867
Adjusted Gamma UCL	45.18108

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.825934
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	55.92016
95% Chebyshev (MVUE) UCL	61.32696
97.5% Chebyshev (MVUE) UCL	76.66475
99% Chebyshev (MVUE) UCL	106.7929

95% Non-parametric UCLs	
CLT UCL	60.47931
Adj-CLT UCL (Adjusted for skewness)	79.95549
Mod-t UCL (Adjusted for skewness)	64.1142
Jackknife UCL	61.07631
Standard Bootstrap UCL	59.74798
Bootstrap-t UCL	359.9424
Hall's Bootstrap UCL	185.2988
Percentile Bootstrap UCL	66.34592
BCA Bootstrap UCL	88.20429
95% Chebyshev (Mean, Sd) UCL	110.5336
97.5% Chebyshev (Mean, Sd) UCL	145.3184
99% Chebyshev (Mean, Sd) UCL	213.6463

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Iron

Raw Statistics	
Number of Valid Samples	49
Number of Unique Samples	48
Minimum	0.85
Maximum	10000
Mean	5122.933
Median	5030
Standard Deviation	2690.137
Variance	7236835
Coefficient of Variation	0.525117
Skewness	-0.20694

Gamma Statistics	
k hat	0.921678
k star (bias corrected)	0.878854
Theta hat	5558.267
Theta star	5829.104
nu hat	90.32445
nu star	86.12771
Approx.Chi Square Value (.05)	65.73103
Adjusted Level of Significance	0.045102
Adjusted Chi Square Value	65.19093

Log-transformed Statistics	
Minimum of log data	-0.16252
Maximum of log data	9.21034
Mean of log data	7.909055
Standard Deviation of log data	2.196541
Variance of log data	4.824793

RECOMMENDATION

Data are normal (0.05)

Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.95775
Shapiro-Wilk 5% Critical Value	0.947
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	5767.499

Gamma Distribution Test	
A-D Test Statistic	5.916616
A-D 5% Critical Value	0.783502
K-S Test Statistic	0.285198
K-S 5% Critical Value	0.130721
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	6712.605
Adjusted Gamma UCL	6768.218

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.50334
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	102394.5
95% Chebyshev (MVUE) UCL	79725.74
97.5% Chebyshev (MVUE) UCL	102901.5
99% Chebyshev (MVUE) UCL	148425.7

95% Non-parametric UCLs	
CLT UCL	5755.058
Adj-CLT UCL (Adjusted for skewness)	5742.919
Mod-t UCL (Adjusted for skewness)	5765.605
Jackknife UCL	5767.499
Standard Bootstrap UCL	5743.786
Bootstrap-t UCL	5750.793
Hall's Bootstrap UCL	5744.962
Percentile Bootstrap UCL	5768.363
BCA Bootstrap UCL	5760.408
95% Chebyshev (Mean, Sd) UCL	6798.08
97.5% Chebyshev (Mean, Sd) UCL	7522.918
99% Chebyshev (Mean, Sd) UCL	8946.721

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Lead

Raw Statistics	
Number of Valid Samples	49
Number of Unique Samples	42
Minimum	0.07
Maximum	54.5
Mean	11.67173
Median	9
Standard Deviation	11.24139
Variance	126.3689
Coefficient of Variation	0.963129
Skewness	2.305124

Gamma Statistics	
k hat	1.084776
k star (bias corrected)	1.031967
Theta hat	10.75958
Theta star	11.31018
nu hat	106.3081
nu star	101.1328
Approx.Chi Square Value (.05)	78.92626
Adjusted Level of Significance	0.045102
Adjusted Chi Square Value	78.33194

Log-transformed Statistics	
Minimum of log data	-2.65926
Maximum of log data	3.998201
Mean of log data	1.930003
Standard Deviation of log data	1.39008
Variance of log data	1.932322

RECOMMENDATION

Assuming gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.746933
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	14.36521

Gamma Distribution Test	
A-D Test Statistic	1.303963
A-D 5% Critical Value	0.77731
K-S Test Statistic	0.129019
K-S 5% Critical Value	0.130025
Data follow approximate gamma distibution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	14.95567
Adjusted Gamma UCL	15.06914

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.772615
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	31.51866
95% Chebyshev (MVUE) UCL	36.97325
97.5% Chebyshev (MVUE) UCL	45.42092
99% Chebyshev (MVUE) UCL	62.01473

95% Non-parametric UCLs	
CLT UCL	14.31323
Adj-CLT UCL (Adjusted for skewness)	14.87829
Mod-t UCL (Adjusted for skewness)	14.45335
Jackknife UCL	14.36521
Standard Bootstrap UCL	14.31812
Bootstrap-t UCL	15.47031
Hall's Bootstrap UCL	15.05878
Percentile Bootstrap UCL	14.59122
BCA Bootstrap UCL	15.04224
95% Chebyshev (Mean, Sd) UCL	18.67175
97.5% Chebyshev (Mean, Sd) UCL	21.70066
99% Chebyshev (Mean, Sd) UCL	27.65037

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Vanadium

Raw Statistics	
Number of Valid Samples	49
Number of Unique Samples	42
Minimum	0.0395
Maximum	18.6
Mean	9.242122
Median	9.4
Standard Deviation	4.50901
Variance	20.33117
Coefficient of Variation	0.487876
Skewness	-0.27875

Gamma Statistics	
k hat	1.45618
k star (bias corrected)	1.380632
Theta hat	6.346827
Theta star	6.694127
nu hat	142.7056
nu star	135.3019
Approx.Chi Square Value (.05)	109.4227
Adjusted Level of Significance	0.045102
Adjusted Chi Square Value	108.7182

Log-transformed Statistics	
Minimum of log data	-3.23145
Maximum of log data	2.923162
Mean of log data	1.842666
Standard Deviation of log data	1.408706
Variance of log data	1.984453

RECOMMENDATION

Data are normal (0.05)

Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.970012
Shapiro-Wilk 5% Critical Value	0.947
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	10.3225

Gamma Distribution Test	
A-D Test Statistic	4.375027
A-D 5% Critical Value	0.768406
K-S Test Statistic	0.248768
K-S 5% Critical Value	0.128951
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	11.42795
Adjusted Gamma UCL	11.502

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.574016
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	30.00596
95% Chebyshev (MVUE) UCL	35.05141
97.5% Chebyshev (MVUE) UCL	43.12651
99% Chebyshev (MVUE) UCL	58.98848

95% Non-parametric UCLs	
CLT UCL	10.30165
Adj-CLT UCL (Adjusted for skewness)	10.27424
Mod-t UCL (Adjusted for skewness)	10.31822
Jackknife UCL	10.3225
Standard Bootstrap UCL	10.28272
Bootstrap-t UCL	10.27302
Hall's Bootstrap UCL	10.30597
Percentile Bootstrap UCL	10.28007
BCA Bootstrap UCL	10.33265
95% Chebyshev (Mean, Sd) UCL	12.04988
97.5% Chebyshev (Mean, Sd) UCL	13.2648
99% Chebyshev (Mean, Sd) UCL	15.65128

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Nickel

Raw Statistics	
Number of Valid Samples	49
Number of Unique Samples	38
Minimum	0.07
Maximum	12.2
Mean	3.020408
Median	2.6
Standard Deviation	2.340672
Variance	5.478746
Coefficient of Variation	0.774952
Skewness	2.188057

Gamma Statistics	
k hat	1.890325
k star (bias corrected)	1.788196
Theta hat	1.597825
Theta star	1.689081
nu hat	185.2518
nu star	175.2432
Approx.Chi Square Value (.05)	145.6217
Adjusted Level of Significance	0.045102
Adjusted Chi Square Value	144.805

Log-transformed Statistics	
Minimum of log data	-2.65926
Maximum of log data	2.501436
Mean of log data	0.81815
Standard Deviation of log data	0.880015
Variance of log data	0.774427

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.79306
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	3.581241

Gamma Distribution Test	
A-D Test Statistic	0.871407
A-D 5% Critical Value	0.763507
K-S Test Statistic	0.129348
K-S 5% Critical Value	0.128337
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	3.634801
Adjusted Gamma UCL	3.655302

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.887883
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	4.412294
95% Chebyshev (MVUE) UCL	5.367364
97.5% Chebyshev (MVUE) UCL	6.260893
99% Chebyshev (MVUE) UCL	8.016057

95% Non-parametric UCLs	
CLT UCL	3.570417
Adj-CLT UCL (Adjusted for skewness)	3.682099
Mod-t UCL (Adjusted for skewness)	3.598661
Jackknife UCL	3.581241
Standard Bootstrap UCL	3.562036
Bootstrap-t UCL	3.782743
Hall's Bootstrap UCL	3.789142
Percentile Bootstrap UCL	3.630612
BCA Bootstrap UCL	3.70102
95% Chebyshev (Mean, Sd) UCL	4.477944
97.5% Chebyshev (Mean, Sd) UCL	5.108621
99% Chebyshev (Mean, Sd) UCL	6.347464

SURFACE WATER

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Arsenic

Raw Statistics	
Number of Valid Samples	5
Number of Unique Samples	5
Minimum	0
Maximum	11
Mean	3.945
Median	2.9
Standard Deviation	4.187347
Variance	17.53388
Coefficient of Variation	1.061431
Skewness	1.597708

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.853928
Shapiro-Wilk 5% Critical Value	0.762
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	7.937177

Gamma Statistics Not Available

Lognormal Statistics Not Available

RECOMMENDATION

Data are normal (0.05)

Use Student's-t UCL

95% Non-parametric UCLs	
CLT UCL	7.025216
Adj-CLT UCL (Adjusted for skewness)	8.454922
Mod-t UCL (Adjusted for skewness)	8.160182
Jackknife UCL	7.937177
Standard Bootstrap UCL	6.667504
Bootstrap-t UCL	11.29006
Hall's Bootstrap UCL	22.08035
Percentile Bootstrap UCL	7.005
BCA Bootstrap UCL	7.765
95% Chebyshev (Mean, Sd) UCL	12.10764
97.5% Chebyshev (Mean, Sd) UCL	15.63962
99% Chebyshev (Mean, Sd) UCL	22.57752

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Iron

Raw Statistics	
Number of Valid Samples	5
Number of Unique Samples	5
Minimum	0
Maximum	22500
Mean	11800
Median	12100
Standard Deviation	7996.249
Variance	63940000
Coefficient of Variation	0.677648
Skewness	-0.33893

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.925812
Shapiro-Wilk 5% Critical Value	0.762
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	19423.55

Gamma Statistics Not Available

Lognormal Statistics Not Available

RECOMMENDATION

Data are normal (0.05)

Use Student's-t UCL

95% Non-parametric UCLs	
CLT UCL	17682.05
Adj-CLT UCL (Adjusted for skewness)	17102.88
Mod-t UCL (Adjusted for skewness)	19333.21
Jackknife UCL	19423.55
Standard Bootstrap UCL	17072.92
Bootstrap-t UCL	17480.96
Hall's Bootstrap UCL	17590.61
Percentile Bootstrap UCL	16660
BCA Bootstrap UCL	16300
95% Chebyshev (Mean, Sd) UCL	27387.56
97.5% Chebyshev (Mean, Sd) UCL	34132.31
99% Chebyshev (Mean, Sd) UCL	47381.06

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Lead

Raw Statistics	
Number of Valid Samples	5
Number of Unique Samples	5
Minimum	0
Maximum	22.8
Mean	12.41
Median	10.75
Standard Deviation	8.63325
Variance	74.533
Coefficient of Variation	0.695669
Skewness	-0.41096

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.959628
Shapiro-Wilk 5% Critical Value	0.762
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	20.64086

Gamma Statistics Not Available

Lognormal Statistics Not Available

RECOMMENDATION
Data are normal (0.05)

Use Student's-t UCL

95% Non-parametric UCLs	
CLT UCL	18.76063
Adj-CLT UCL (Adjusted for skewness)	18.00242
Mod-t UCL (Adjusted for skewness)	20.52259
Jackknife UCL	20.64086
Standard Bootstrap UCL	18.10541
Bootstrap-t UCL	21.23334
Hall's Bootstrap UCL	21.87626
Percentile Bootstrap UCL	17.95
BCA Bootstrap UCL	17.26
95% Chebyshev (Mean, Sd) UCL	29.2393
97.5% Chebyshev (Mean, Sd) UCL	36.52135
99% Chebyshev (Mean, Sd) UCL	50.82554

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Vanadium

Raw Statistics	
Number of Valid Samples	5
Number of Unique Samples	5
Minimum	0
Maximum	13.8
Mean	8.69
Median	9.7
Standard Deviation	5.495498
Variance	30.2005
Coefficient of Variation	0.632393
Skewness	-1.15554

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.910316
Shapiro-Wilk 5% Critical Value	0.762
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	13.92936

Gamma Statistics Not Available

Lognormal Statistics Not Available

95% Non-parametric UCLs	
CLT UCL	12.73249
Adj-CLT UCL (Adjusted for skewness)	11.37542
Mod-t UCL (Adjusted for skewness)	13.71768
Jackknife UCL	13.92936
Standard Bootstrap UCL	12.38967
Bootstrap-t UCL	12.65293
Hall's Bootstrap UCL	11.59248
Percentile Bootstrap UCL	12.05
BCA Bootstrap UCL	11.5
95% Chebyshev (Mean, Sd) UCL	19.4027
97.5% Chebyshev (Mean, Sd) UCL	24.03809
99% Chebyshev (Mean, Sd) UCL	33.14342

RECOMMENDATION

Data are normal (0.05)

Use Student's-t UCL

Recommended UCL exceeds the maximum observation

SEDIMENT

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Aluminum

Raw Statistics	
Number of Valid Samples	8
Number of Unique Samples	8
Minimum	11.65
Maximum	7540
Mean	3619.581
Median	3515
Standard Deviation	2917.379
Variance	8511102
Coefficient of Variation	0.805999
Skewness	0.078461

Gamma Statistics	
k hat	0.706249
k star (bias corrected)	0.524739
Theta hat	5125.08
Theta star	6897.872
nu hat	11.29998
nu star	8.395821
Approx.Chi Square Value (.05)	2.965608
Adjusted Level of Significance	0.01946
Adjusted Chi Square Value	2.212135

Log-transformed Statistics	
Minimum of log data	2.455306
Maximum of log data	8.927977
Mean of log data	7.339462
Standard Deviation of log data	2.150738
Variance of log data	4.625673

RECOMMENDATION

Data are normal (0.05)

Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.898378
Shapiro-Wilk 5% Critical Value	0.818
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	5573.743

Gamma Distribution Test	
A-D Test Statistic	0.550297
A-D 5% Critical Value	0.748147
K-S Test Statistic	0.262138
K-S 5% Critical Value	0.304923
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	10247.26
Adjusted Gamma UCL	13737.57

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.749446
Shapiro-Wilk 5% Critical Value	0.818
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	3718392
95% Chebyshev (MVUE) UCL	35084.74
97.5% Chebyshev (MVUE) UCL	46583.24
99% Chebyshev (MVUE) UCL	69169.8

95% Non-parametric UCLs	
CLT UCL	5316.164
Adj-CLT UCL (Adjusted for skewness)	5346.737
Mod-t UCL (Adjusted for skewness)	5578.512
Jackknife UCL	5573.743
Standard Bootstrap UCL	5235.647
Bootstrap-t UCL	5617.366
Hall's Bootstrap UCL	4935.254
Percentile Bootstrap UCL	5187.5
BCA Bootstrap UCL	5188.75
95% Chebyshev (Mean, Sd) UCL	8115.565
97.5% Chebyshev (Mean, Sd) UCL	10060.98
99% Chebyshev (Mean, Sd) UCL	13882.37

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Arsenic

Raw Statistics	
Number of Valid Samples	8
Number of Unique Samples	8
Minimum	0.305
Maximum	8.6
Mean	2.02875
Median	0.95
Standard Deviation	2.819563
Variance	7.949934
Coefficient of Variation	1.389803
Skewness	2.294714

Gamma Statistics	
k hat	0.938398
k star (bias corrected)	0.669832
Theta hat	2.16193
Theta star	3.028745
nu hat	15.01437
nu star	10.71731
Approx.Chi Square Value (.05)	4.394008
Adjusted Level of Significance	0.01946
Adjusted Chi Square Value	3.429054

Log-transformed Statistics	
Minimum of log data	-1.18744
Maximum of log data	2.151762
Mean of log data	0.087623
Standard Deviation of log data	1.112124
Variance of log data	1.236819

RECOMMENDATION

Assuming gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.657097
Shapiro-Wilk 5% Critical Value	0.818
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	3.917391

Gamma Distribution Test	
A-D Test Statistic	0.62266
A-D 5% Critical Value	0.737873
K-S Test Statistic	0.306519
K-S 5% Critical Value	0.302101
Data follow approximate gamma distibution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	4.948271
Adjusted Gamma UCL	6.340741

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.923938
Shapiro-Wilk 5% Critical Value	0.818
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	9.972283
95% Chebyshev (MVUE) UCL	5.008908
97.5% Chebyshev (MVUE) UCL	6.387933
99% Chebyshev (MVUE) UCL	9.09676

95% Non-parametric UCLs	
CLT UCL	3.668449
Adj-CLT UCL (Adjusted for skewness)	4.532622
Mod-t UCL (Adjusted for skewness)	4.052184
Jackknife UCL	3.917391
Standard Bootstrap UCL	3.581052
Bootstrap-t UCL	13.56652
Hall's Bootstrap UCL	13.80718
Percentile Bootstrap UCL	3.765625
BCA Bootstrap UCL	4.47
95% Chebyshev (Mean, Sd) UCL	6.373988
97.5% Chebyshev (Mean, Sd) UCL	8.254176
99% Chebyshev (Mean, Sd) UCL	11.94744

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Iron

Raw Statistics	
Number of Valid Samples	8
Number of Unique Samples	8
Minimum	2.55
Maximum	6860
Mean	2648.069
Median	1691
Standard Deviation	2826.385
Variance	7988454
Coefficient of Variation	1.067338
Skewness	0.844771

Gamma Statistics	
k hat	0.517598
k star (bias corrected)	0.406832
Theta hat	5116.074
Theta star	6508.999
nu hat	8.281565
nu star	6.509311
Approx.Chi Square Value (.05)	1.90489
Adjusted Level of Significance	0.01946
Adjusted Chi Square Value	1.341318

Log-transformed Statistics	
Minimum of log data	0.936093
Maximum of log data	8.833463
Mean of log data	6.660954
Standard Deviation of log data	2.577342
Variance of log data	6.642694

RECOMMENDATION

Data follow gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.81754
Shapiro-Wilk 5% Critical Value	0.818
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	4541.28

Gamma Distribution Test	
A-D Test Statistic	0.370274
A-D 5% Critical Value	0.761156
K-S Test Statistic	0.18922
K-S 5% Critical Value	0.308643
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	9048.87
Adjusted Gamma UCL	12850.87

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.798151
Shapiro-Wilk 5% Critical Value	0.818
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	52201324
95% Chebyshev (MVUE) UCL	36156.34
97.5% Chebyshev (MVUE) UCL	48328.34
99% Chebyshev (MVUE) UCL	72237.89

95% Non-parametric UCLs	
CLT UCL	4291.735
Adj-CLT UCL (Adjusted for skewness)	4610.639
Mod-t UCL (Adjusted for skewness)	4591.022
Jackknife UCL	4541.28
Standard Bootstrap UCL	4181.223
Bootstrap-t UCL	5496.741
Hall's Bootstrap UCL	5205.003
Percentile Bootstrap UCL	4251.5
BCA Bootstrap UCL	4445
95% Chebyshev (Mean, Sd) UCL	7003.821
97.5% Chebyshev (Mean, Sd) UCL	8888.559
99% Chebyshev (Mean, Sd) UCL	12590.76

Recommended UCL exceeds the maximum observation

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Lead

Raw Statistics	
Number of Valid Samples	8
Number of Unique Samples	8
Minimum	0.245
Maximum	165
Mean	43.39313
Median	19.85
Standard Deviation	55.43932
Variance	3073.518
Coefficient of Variation	1.277606
Skewness	1.807724

Gamma Statistics	
k hat	0.582162
k star (bias corrected)	0.447185
Theta hat	74.53788
Theta star	97.03626
nu hat	9.314593
nu star	7.154954
Approx.Chi Square Value (.05)	2.255378
Adjusted Level of Significance	0.01946
Adjusted Chi Square Value	1.624726

Log-transformed Statistics	
Minimum of log data	-1.4065
Maximum of log data	5.105945
Mean of log data	2.704195
Standard Deviation of log data	2.029862
Variance of log data	4.120339

RECOMMENDATION

Data follow gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.786216
Shapiro-Wilk 5% Critical Value	0.818
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	80.5283

Gamma Distribution Test	
A-D Test Statistic	0.13787
A-D 5% Critical Value	0.756704
K-S Test Statistic	0.117409
K-S 5% Critical Value	0.30737
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	137.6602
Adjusted Gamma UCL	191.0943

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.924385
Shapiro-Wilk 5% Critical Value	0.818
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	15709.82
95% Chebyshev (MVUE) UCL	279.8336
97.5% Chebyshev (MVUE) UCL	370.5993
99% Chebyshev (MVUE) UCL	548.8909

95% Non-parametric UCLs	
CLT UCL	75.6335
Adj-CLT UCL (Adjusted for skewness)	89.01918
Mod-t UCL (Adjusted for skewness)	82.6162
Jackknife UCL	80.5283
Standard Bootstrap UCL	73.33443
Bootstrap-t UCL	123.539
Hall's Bootstrap UCL	197.89
Percentile Bootstrap UCL	76.19313
BCA Bootstrap UCL	84.14313
95% Chebyshev (Mean, Sd) UCL	128.8308
97.5% Chebyshev (Mean, Sd) UCL	165.7998
99% Chebyshev (Mean, Sd) UCL	238.4182

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Vanadium

Raw Statistics	
Number of Valid Samples	8
Number of Unique Samples	7
Minimum	0.145
Maximum	36.7
Mean	12.56813
Median	9.4
Standard Deviation	12.92494
Variance	167.0541
Coefficient of Variation	1.028391
Skewness	0.953992

Gamma Statistics	
k hat	0.690825
k star (bias corrected)	0.515099
Theta hat	18.19292
Theta star	24.39944
nu hat	11.0532
nu star	8.241582
Approx.Chi Square Value (.05)	2.875001
Adjusted Level of Significance	0.01946
Adjusted Chi Square Value	2.136386

Log-transformed Statistics	
Minimum of log data	-1.93102
Maximum of log data	3.602777
Mean of log data	1.654732
Standard Deviation of log data	1.82697
Variance of log data	3.337819

RECOMMENDATION

Data are normal (0.05)

Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.878646
Shapiro-Wilk 5% Critical Value	0.818
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	21.2257

Gamma Distribution Test	
A-D Test Statistic	0.270446
A-D 5% Critical Value	0.749211
K-S Test Statistic	0.21353
K-S 5% Critical Value	0.305227
Data follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	36.02825
Adjusted Gamma UCL	48.48433

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.900766
Shapiro-Wilk 5% Critical Value	0.818
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1516.742
95% Chebyshev (MVUE) UCL	70.86205
97.5% Chebyshev (MVUE) UCL	93.36421
99% Chebyshev (MVUE) UCL	137.5653

95% Non-parametric UCLs	
CLT UCL	20.08454
Adj-CLT UCL (Adjusted for skewness)	21.73143
Mod-t UCL (Adjusted for skewness)	21.48258
Jackknife UCL	21.2257
Standard Bootstrap UCL	19.45056
Bootstrap-t UCL	24.4732
Hall's Bootstrap UCL	23.70265
Percentile Bootstrap UCL	20.05
BCA Bootstrap UCL	21.01813
95% Chebyshev (Mean, Sd) UCL	32.4868
97.5% Chebyshev (Mean, Sd) UCL	41.10562
99% Chebyshev (Mean, Sd) UCL	58.03564

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Acenaphthylene

Raw Statistics	
Number of Valid Samples	9
Number of Unique Samples	7
Minimum	0.00E+00
Maximum	33.5
Mean	7.444444
Median	4.2462864
Standard Deviation	14.77211
Variance	218.2153
Coefficient of Variation	1.984313
Skewness	1.619848

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.536101
Shapiro-Wilk 5% Critical Value	0.829
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	16.60093

Gamma Statistics Not Available

Lognormal Statistics Not Available

RECOMMENDATION
Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

95% Non-parametric UCLs	
CLT UCL	15.54376
Adj-CLT UCL (Adjusted for skewness)	18.38466
Mod-t UCL (Adjusted for skewness)	17.04405
Jackknife UCL	16.60093
Standard Bootstrap UCL	15.16032
Bootstrap-t UCL	-1.#QNAN
Hall's Bootstrap UCL	--1.#IND
Percentile Bootstrap UCL	14.88889
BCA Bootstrap UCL	11.16667
95% Chebyshev (Mean, Sd) UCL	2.89E+01
97.5% Chebyshev (Mean, Sd) UCL	3.82E+01
99% Chebyshev (Mean, Sd) UCL	5.64E+01

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Benzo(g,h,i)perylene

Raw Statistics	
Number of Valid Samples	9
Number of Unique Samples	8
Minimum	0
Maximum	70
Mean	10
Median	3.25E-304
Standard Deviation	23.45208
Variance	550
Coefficient of Variation	2.345208
Skewness	2.616554

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.517198
Shapiro-Wilk 5% Critical Value	0.829
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	24.53676

Gamma Statistics Not Available

Lognormal Statistics Not Available

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

95% Non-parametric UCLs	
CLT UCL	22.85841
Adj-CLT UCL (Adjusted for skewness)	30.14374
Mod-t UCL (Adjusted for skewness)	25.67312
Jackknife UCL	24.53676
Standard Bootstrap UCL	22.24997
Bootstrap-t UCL	########
Hall's Bootstrap UCL	--1.#IND
Percentile Bootstrap UCL	23.33333
BCA Bootstrap UCL	25.55556
95% Chebyshev (Mean, Sd) UCL	44.07508
97.5% Chebyshev (Mean, Sd) UCL	58.8194
99% Chebyshev (Mean, Sd) UCL	87.78175

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Endrin Aldehyde

Raw Statistics	
Number of Valid Samples	8
Number of Unique Samples	6
Minimum	0
Maximum	33.5
Mean	4.29375
Median	6.97E-304
Standard Deviation	11.80267
Variance	139.303
Coefficient of Variation	2.748802
Skewness	2.826935

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.430307
Shapiro-Wilk 5% Critical Value	0.818
Data not normal at 5% significance level	
95% UCL (Assuming Normal Distribution)	
Student's-t UCL	12.19959

Gamma Statistics Not Available

Lognormal Statistics Not Available

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

95% Non-parametric UCLs	
CLT UCL	11.15752
Adj-CLT UCL (Adjusted for skewness)	15.61394
Mod-t UCL (Adjusted for skewness)	12.8947
Jackknife UCL	12.19959
Standard Bootstrap UCL	10.65405
Bootstrap-t UCL	345.5142
Hall's Bootstrap UCL	345.6365
Percentile Bootstrap UCL	12.61438
BCA Bootstrap UCL	16.75
95% Chebyshev (Mean, Sd) UCL	22.48289
97.5% Chebyshev (Mean, Sd) UCL	30.35334
99% Chebyshev (Mean, Sd) UCL	45.81332

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Phenanthrene

Raw Statistics	
Number of Valid Samples	9
Number of Unique Samples	8
Minimum	0
Maximum	160
Mean	22.05556
Median	0.00E+00
Standard Deviation	52.87866
Variance	2796.153
Coefficient of Variation	2.397521
Skewness	2.779423

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.559052
Shapiro-Wilk 5% Critical Value	0.829
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	54.83236

Gamma Statistics Not Available

Lognormal Statistics Not Available

RECOMMENDATION
Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

95% Non-parametric UCLs	
CLT UCL	51.04811
Adj-CLT UCL (Adjusted for skewness)	68.49721
Mod-t UCL (Adjusted for skewness)	57.55407
Jackknife UCL	54.83236
Standard Bootstrap UCL	49.96196
Bootstrap-t UCL	704.1903
Hall's Bootstrap UCL	741.2414
Percentile Bootstrap UCL	53.88889
BCA Bootstrap UCL	74.83333
95% Chebyshev (Mean, Sd) UCL	98.88647
97.5% Chebyshev (Mean, Sd) UCL	132.1313
99% Chebyshev (Mean, Sd) UCL	197.4342

General UCL Statistics for Full Data Sets

User Selected Options	
From File	C:\Documents and Settings\lin\Desktop\Data for ProUCL.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Benzo(a)Pyrene

General Statistics

Number of Valid Observations	8	Number of Distinct Observations	8
Raw Statistics		Log-transformed Statistics	
Minimum	10	Minimum of Log Data	2.303
Maximum	900	Maximum of Log Data	6.802
Mean	397.9	Mean of log Data	5.343
Median	245	SD of log Data	1.513
SD	361.3		
Coefficient of Variation	0.908		
Skewness	0.528		

Warning: There are only 8 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set, the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.857	Shapiro Wilk Test Statistic	0.887
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	639.9	95% H-UCL	10075
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1738
95% Adjusted-CLT UCL	633.4	97.5% Chebyshev (MVUE) UCL	2266
95% Modified-t UCL	643.8	99% Chebyshev (MVUE) UCL	3302
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.651	Data appear Normal at 5% Significance Level	
Theta Star	611.5		
nu star	10.41		
Approximate Chi Square Value (.05)	4.2	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	608
Adjusted Chi Square Value	3.262	95% Jackknife UCL	639.9
		95% Standard Bootstrap UCL	590.8
Anderson-Darling Test Statistic	0.298	95% Bootstrap-t UCL	681
Anderson-Darling 5% Critical Value	0.739	95% Hall's Bootstrap UCL	570.4
Kolmogorov-Smirnov Test Statistic	0.199	95% Percentile Bootstrap UCL	596.3
Kolmogorov-Smirnov 5% Critical Value	0.302	95% BCA Bootstrap UCL	602.5
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	954.6
		97.5% Chebyshev(Mean, Sd) UCL	1195
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1669
95% Approximate Gamma UCL	986.2		
95% Adjusted Gamma UCL	1270		
Potential UCL to Use		Use 95% Student's-t UCL	639.9

GROUNDWATER

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: 1,1,2-Trichloroethane

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	5
Minimum	0.05
Maximum	2.7
Mean	0.503125
Median	0.75
Standard Deviation	0.532797
Variance	0.283873
Coefficient of Variation	1.058976
Skewness	1.83027

Gamma Statistics	
k hat	0.759499
k star (bias corrected)	0.725919
Theta hat	0.662444
Theta star	0.693087
nu hat	72.91188
nu star	69.68822
Approx.Chi Square Value (.05)	51.46761
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	50.98235

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	0.993252
Mean of log data	-1.47377
Standard Deviation of log data	1.433344
Variance of log data	2.054476

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.695958
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.632162

Gamma Distribution Test	
A-D Test Statistic	6.440881
A-D 5% Critical Value	0.79139
K-S Test Statistic	0.314589
K-S 5% Critical Value	0.132986
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.681242
Adjusted Gamma UCL	0.687726

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.694692
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1.155234
95% Chebyshev (MVUE) UCL	1.335924
97.5% Chebyshev (MVUE) UCL	1.64825
99% Chebyshev (MVUE) UCL	2.261754

95% Non-parametric UCLs	
CLT UCL	0.629619
Adj-CLT UCL (Adjusted for skewness)	0.651326
Mod-t UCL (Adjusted for skewness)	0.635548
Jackknife UCL	0.632162
Standard Bootstrap UCL	0.626206
Bootstrap-t UCL	0.664517
Hall's Bootstrap UCL	0.684891
Percentile Bootstrap UCL	0.639583
BCA Bootstrap UCL	0.661458
95% Chebyshev (Mean, Sd) UCL	0.838336
97.5% Chebyshev (Mean, Sd) UCL	0.983382
99% Chebyshev (Mean, Sd) UCL	1.268297

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: 1,2,3-Trichlorobenzene

Raw Statistics	
Number of Valid Samples	24
Number of Unique Samples	9
Minimum	0.05
Maximum	280
Mean	19.90208
Median	0.05
Standard Deviation	60.88344
Variance	3706.793
Coefficient of Variation	3.059149
Skewness	3.814623

Gamma Statistics	
k hat	0.179912
k star (bias corrected)	0.1852
Theta hat	110.6215
Theta star	107.4624
nu hat	8.635756
nu star	8.88962
Approx.Chi Square Value (.05)	3.259666
Adjusted Level of Significance	0.0392
Adjusted Chi Square Value	3.023554

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	5.63479
Mean of log data	-1.16697
Standard Deviation of log data	2.831714
Variance of log data	8.018607

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.380032
Shapiro-Wilk 5% Critical Value	0.916
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	41.2017

Gamma Distribution Test	
A-D Test Statistic	4.293606
A-D 5% Critical Value	0.902593
K-S Test Statistic	0.35421
K-S 5% Critical Value	0.197781
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	54.27609
Adjusted Gamma UCL	58.51456

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.69442
Shapiro-Wilk 5% Critical Value	0.916
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	430.3735
95% Chebyshev (MVUE) UCL	39.46445
97.5% Chebyshev (MVUE) UCL	52.4912
99% Chebyshev (MVUE) UCL	78.07974

95% Non-parametric UCLs	
CLT UCL	40.34396
Adj-CLT UCL (Adjusted for skewness)	50.68395
Mod-t UCL (Adjusted for skewness)	42.81453
Jackknife UCL	41.2017
Standard Bootstrap UCL	40.32289
Bootstrap-t UCL	76.30476
Hall's Bootstrap UCL	90.70256
Percentile Bootstrap UCL	42.57875
BCA Bootstrap UCL	55.17167
95% Chebyshev (Mean, Sd) UCL	74.07352
97.5% Chebyshev (Mean, Sd) UCL	97.51354
99% Chebyshev (Mean, Sd) UCL	143.5569

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: 1,2,4-Trichlorobenzene

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	9
Minimum	0.05
Maximum	590
Mean	14.77146
Median	0.425
Standard Deviation	85.88789
Variance	7376.73
Coefficient of Variation	5.814449
Skewness	6.683146

Gamma Statistics	
k hat	0.190264
k star (bias corrected)	0.192262
Theta hat	77.63655
Theta star	76.82999
nu hat	18.26537
nu star	18.45711
Approx.Chi Square Value (.05)	9.720624
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	9.523514

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	6.380123
Mean of log data	-1.20526
Standard Deviation of log data	1.893962
Variance of log data	3.587092

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.182066
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	35.57246

Gamma Distribution Test	
A-D Test Statistic	11.8352
A-D 5% Critical Value	0.912951
K-S Test Statistic	0.480406
K-S 5% Critical Value	0.142138
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	28.04743
Adjusted Gamma UCL	28.62793

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.722839
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	4.644337
95% Chebyshev (MVUE) UCL	4.423135
97.5% Chebyshev (MVUE) UCL	5.628514
99% Chebyshev (MVUE) UCL	7.996247

95% Non-parametric UCLs	
CLT UCL	35.16246
Adj-CLT UCL (Adjusted for skewness)	47.94014
Mod-t UCL (Adjusted for skewness)	37.56552
Jackknife UCL	35.57246
Standard Bootstrap UCL	34.67567
Bootstrap-t UCL	1476.393
Hall's Bootstrap UCL	1135.164
Percentile Bootstrap UCL	37.69271
BCA Bootstrap UCL	53.51
95% Chebyshev (Mean, Sd) UCL	68.80807
97.5% Chebyshev (Mean, Sd) UCL	92.18976
99% Chebyshev (Mean, Sd) UCL	138.1186

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: 1,2-Dichlorobenzene

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	9
Minimum	0.05
Maximum	87
Mean	2.747917
Median	0.435
Standard Deviation	13.09354
Variance	171.4408
Coefficient of Variation	4.764898
Skewness	6.087341

Gamma Statistics	
k hat	0.290648
k star (bias corrected)	0.286371
Theta hat	9.454462
Theta star	9.595652
nu hat	27.90217
nu star	27.49162
Approx.Chi Square Value (.05)	16.5309
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	16.26674

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	4.465908
Mean of log data	-1.37396
Standard Deviation of log data	1.599766
Variance of log data	2.55925

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.21744
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	5.919013

Gamma Distribution Test	
A-D Test Statistic	9.333658
A-D 5% Critical Value	0.866356
K-S Test Statistic	0.404214
K-S 5% Critical Value	0.139196
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	4.569907
Adjusted Gamma UCL	4.64412

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.762234
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1.84887
95% Chebyshev (MVUE) UCL	2.028992
97.5% Chebyshev (MVUE) UCL	2.534919
99% Chebyshev (MVUE) UCL	3.528716

95% Non-parametric UCLs	
CLT UCL	5.856509
Adj-CLT UCL (Adjusted for skewness)	7.630796
Mod-t UCL (Adjusted for skewness)	6.195766
Jackknife UCL	5.919013
Standard Bootstrap UCL	5.893128
Bootstrap-t UCL	110.2891
Hall's Bootstrap UCL	38.89914
Percentile Bootstrap UCL	6.331146
BCA Bootstrap UCL	8.824375
95% Chebyshev (Mean, Sd) UCL	10.98576
97.5% Chebyshev (Mean, Sd) UCL	14.55028
99% Chebyshev (Mean, Sd) UCL	21.55208

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: 1,2-Dichloroethane

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	3
Minimum	0.05
Maximum	2
Mean	0.378125
Median	0.35
Standard Deviation	0.383559
Variance	0.147118
Coefficient of Variation	1.014372
Skewness	1.526835

Gamma Statistics	
k hat	0.824169
k star (bias corrected)	0.786547
Theta hat	0.458796
Theta star	0.48074
nu hat	79.1202
nu star	75.50852
Approx.Chi Square Value (.05)	56.49061
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	55.98098

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	0.693147
Mean of log data	-1.68984
Standard Deviation of log data	1.329432
Variance of log data	1.76739

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.669487
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.471018

Gamma Distribution Test	
A-D Test Statistic	7.452317
A-D 5% Critical Value	0.787984
K-S Test Statistic	0.336603
K-S 5% Critical Value	0.132616
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.505423
Adjusted Gamma UCL	0.510024

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.665813
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.753571
95% Chebyshev (MVUE) UCL	0.891929
97.5% Chebyshev (MVUE) UCL	1.090914
99% Chebyshev (MVUE) UCL	1.481781

95% Non-parametric UCLs	
CLT UCL	0.469187
Adj-CLT UCL (Adjusted for skewness)	0.482224
Mod-t UCL (Adjusted for skewness)	0.473052
Jackknife UCL	0.471018
Standard Bootstrap UCL	N/R
Bootstrap-t UCL	N/R
Hall's Bootstrap UCL	N/R
Percentile Bootstrap UCL	N/R
BCA Bootstrap UCL	N/R
95% Chebyshev (Mean, Sd) UCL	0.619442
97.5% Chebyshev (Mean, Sd) UCL	0.723861
99% Chebyshev (Mean, Sd) UCL	0.92897

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: 1,4-Dichlorobenzene

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	13
Minimum	0.05
Maximum	130
Mean	4.668542
Median	0.8
Standard Deviation	19.70656
Variance	388.3485
Coefficient of Variation	4.221139
Skewness	5.922868

Gamma Statistics	
k hat	0.302229
k star (bias corrected)	0.297228
Theta hat	15.44704
Theta star	15.70691
nu hat	29.01397
nu star	28.53393
Approx.Chi Square Value (.05)	17.34234
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	17.07119

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	4.867534
Mean of log data	-0.738
Standard Deviation of log data	1.856191
Variance of log data	3.445445

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.248674
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	9.441231

Gamma Distribution Test	
A-D Test Statistic	6.964684
A-D 5% Critical Value	0.861666
K-S Test Statistic	0.392917
K-S 5% Critical Value	0.138886
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	7.681306
Adjusted Gamma UCL	7.803313

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.814493
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	6.681303
95% Chebyshev (MVUE) UCL	6.504087
97.5% Chebyshev (MVUE) UCL	8.259081
99% Chebyshev (MVUE) UCL	11.70643

95% Non-parametric UCLs	
CLT UCL	9.347159
Adj-CLT UCL (Adjusted for skewness)	11.94542
Mod-t UCL (Adjusted for skewness)	9.846506
Jackknife UCL	9.441231
Standard Bootstrap UCL	9.319452
Bootstrap-t UCL	52.17547
Hall's Bootstrap UCL	43.09131
Percentile Bootstrap UCL	10.01833
BCA Bootstrap UCL	13.50396
95% Chebyshev (Mean, Sd) UCL	17.06698
97.5% Chebyshev (Mean, Sd) UCL	22.4318
99% Chebyshev (Mean, Sd) UCL	32.96994

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: 2-Methylnaphthalene

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	8
Minimum	0.85
Maximum	10
Mean	1.497917
Median	0.95
Standard Deviation	2.135564
Variance	4.560634
Coefficient of Variation	1.425689
Skewness	3.747265

Gamma Statistics	
k hat	1.767082
k star (bias corrected)	1.670528
Theta hat	0.847678
Theta star	0.896672
nu hat	169.6399
nu star	160.3707
Approx.Chi Square Value (.05)	132.087
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	131.2936

Log-transformed Statistics	
Minimum of log data	-0.16252
Maximum of log data	2.302585
Mean of log data	0.095189
Standard Deviation of log data	0.570035
Variance of log data	0.32494

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.293408
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	2.015124

Gamma Distribution Test	
A-D Test Statistic	14.87273
A-D 5% Critical Value	0.764528
K-S Test Statistic	0.490589
K-S 5% Critical Value	0.129812
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	1.818664
Adjusted Gamma UCL	1.829655

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.35935
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1.519544
95% Chebyshev (MVUE) UCL	1.780662
97.5% Chebyshev (MVUE) UCL	1.993463
99% Chebyshev (MVUE) UCL	2.411468

95% Non-parametric UCLs	
CLT UCL	2.00493
Adj-CLT UCL (Adjusted for skewness)	2.183072
Mod-t UCL (Adjusted for skewness)	2.042911
Jackknife UCL	2.015124
Standard Bootstrap UCL	1.999816
Bootstrap-t UCL	2.208465
Hall's Bootstrap UCL	1.845721
Percentile Bootstrap UCL	2.0625
BCA Bootstrap UCL	2.252083
95% Chebyshev (Mean, Sd) UCL	2.841513
97.5% Chebyshev (Mean, Sd) UCL	3.422888
99% Chebyshev (Mean, Sd) UCL	4.564887

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Benzene

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	8
Minimum	0.05
Maximum	140
Mean	5.822917
Median	0.65
Standard Deviation	25.34401
Variance	642.3187
Coefficient of Variation	4.352459
Skewness	4.826832

Gamma Statistics	
k hat	0.242207
k star (bias corrected)	0.240958
Theta hat	24.04108
Theta star	24.1657
nu hat	23.25187
nu star	23.13196
Approx.Chi Square Value (.05)	13.18881
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	12.95539

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	4.941642
Mean of log data	-1.18576
Standard Deviation of log data	1.897031
Variance of log data	3.598727

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.242073
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	11.96093

Gamma Distribution Test	
A-D Test Statistic	9.373779
A-D 5% Critical Value	0.887862
K-S Test Statistic	0.43893
K-S 5% Critical Value	0.140582
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	10.21286
Adjusted Gamma UCL	10.39687

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.750859
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	4.776253
95% Chebyshev (MVUE) UCL	4.540446
97.5% Chebyshev (MVUE) UCL	5.778769
99% Chebyshev (MVUE) UCL	8.211215

95% Non-parametric UCLs	
CLT UCL	11.83994
Adj-CLT UCL (Adjusted for skewness)	14.56312
Mod-t UCL (Adjusted for skewness)	12.38569
Jackknife UCL	11.96093
Standard Bootstrap UCL	11.57225
Bootstrap-t UCL	99.66427
Hall's Bootstrap UCL	116.1052
Percentile Bootstrap UCL	12.27604
BCA Bootstrap UCL	15.95938
95% Chebyshev (Mean, Sd) UCL	21.76817
97.5% Chebyshev (Mean, Sd) UCL	28.6677
99% Chebyshev (Mean, Sd) UCL	42.22048

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: beta-BHC

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	14
Minimum	0.00445
Maximum	0.22
Mean	0.010224
Median	0.004725
Standard Deviation	0.031604
Variance	0.000999
Coefficient of Variation	3.091203
Skewness	6.531583

Gamma Statistics	
k hat	0.925848
k star (bias corrected)	0.881871
Theta hat	0.011043
Theta star	0.011593
nu hat	88.88138
nu star	84.65963
Approx.Chi Square Value (.05)	64.44826
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	63.90212

Log-transformed Statistics	
Minimum of log data	-5.41485
Maximum of log data	-1.51413
Mean of log data	-5.21225
Standard Deviation of log data	0.643826
Variance of log data	0.414512

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.191177
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.017878

Gamma Distribution Test	
A-D Test Statistic	16.47413
A-D 5% Critical Value	0.782629
K-S Test Statistic	0.528652
K-S 5% Critical Value	0.132034
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.01343
Adjusted Gamma UCL	0.013545

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.284233
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.008082
95% Chebyshev (MVUE) UCL	0.009588
97.5% Chebyshev (MVUE) UCL	0.010851
99% Chebyshev (MVUE) UCL	0.013332

95% Non-parametric UCLs	
CLT UCL	0.017727
Adj-CLT UCL (Adjusted for skewness)	0.022322
Mod-t UCL (Adjusted for skewness)	0.018595
Jackknife UCL	0.017878
Standard Bootstrap UCL	0.017543
Bootstrap-t UCL	0.683224
Hall's Bootstrap UCL	0.201702
Percentile Bootstrap UCL	0.019161
BCA Bootstrap UCL	0.027195
95% Chebyshev (Mean, Sd) UCL	0.030108
97.5% Chebyshev (Mean, Sd) UCL	0.038712
99% Chebyshev (Mean, Sd) UCL	0.055612

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Chlorobenzene

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	12
Minimum	0.05
Maximum	86
Mean	3.595833
Median	0.365
Standard Deviation	13.05614
Variance	170.4627
Coefficient of Variation	3.630907
Skewness	5.70557

Gamma Statistics	
k hat	0.286799
k star (bias corrected)	0.282763
Theta hat	12.53784
Theta star	12.7168
nu hat	27.53266
nu star	27.1452
Approx.Chi Square Value (.05)	16.26219
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	16.00038

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	4.454347
Mean of log data	-1.14229
Standard Deviation of log data	1.932705
Variance of log data	3.735348

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.307062
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	6.757871

Gamma Distribution Test	
A-D Test Statistic	6.798113
A-D 5% Critical Value	0.868065
K-S Test Statistic	0.391114
K-S 5% Critical Value	0.139306
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	6.002242
Adjusted Gamma UCL	6.100455

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.806114
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	5.512657
95% Chebyshev (MVUE) UCL	5.127251
97.5% Chebyshev (MVUE) UCL	6.538225
99% Chebyshev (MVUE) UCL	9.30981

95% Non-parametric UCLs	
CLT UCL	6.695545
Adj-CLT UCL (Adjusted for skewness)	8.353807
Mod-t UCL (Adjusted for skewness)	7.016526
Jackknife UCL	6.757871
Standard Bootstrap UCL	6.604429
Bootstrap-t UCL	14.21507
Hall's Bootstrap UCL	16.29196
Percentile Bootstrap UCL	6.916354
BCA Bootstrap UCL	9.036146
95% Chebyshev (Mean, Sd) UCL	11.81014
97.5% Chebyshev (Mean, Sd) UCL	15.36448
99% Chebyshev (Mean, Sd) UCL	22.34628

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Chloroform

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	13
Minimum	0.05
Maximum	2.7
Mean	0.407083
Median	0.415
Standard Deviation	0.499588
Variance	0.249588
Coefficient of Variation	1.227238
Skewness	3.074166

Gamma Statistics	
k hat	0.992832
k star (bias corrected)	0.944669
Theta hat	0.410022
Theta star	0.430927
nu hat	95.31191
nu star	90.68825
Approx.Chi Square Value (.05)	69.72583
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	69.1567

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	0.993252
Mean of log data	-1.48061
Standard Deviation of log data	1.155217
Variance of log data	1.334526

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.601398
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.528077

Gamma Distribution Test	
A-D Test Statistic	3.881914
A-D 5% Critical Value	0.779101
K-S Test Statistic	0.243803
K-S 5% Critical Value	0.131651
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.529469
Adjusted Gamma UCL	0.533826

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.79497
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.674869
95% Chebyshev (MVUE) UCL	0.81812
97.5% Chebyshev (MVUE) UCL	0.98451
99% Chebyshev (MVUE) UCL	1.311352

95% Non-parametric UCLs	
CLT UCL	0.525693
Adj-CLT UCL (Adjusted for skewness)	0.559881
Mod-t UCL (Adjusted for skewness)	0.53341
Jackknife UCL	0.528077
Standard Bootstrap UCL	0.525078
Bootstrap-t UCL	0.620728
Hall's Bootstrap UCL	0.955141
Percentile Bootstrap UCL	0.527604
BCA Bootstrap UCL	0.565104
95% Chebyshev (Mean, Sd) UCL	0.721401
97.5% Chebyshev (Mean, Sd) UCL	0.857406
99% Chebyshev (Mean, Sd) UCL	1.124562

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: cis-1,2-Dichloroethene

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	22
Minimum	0.05
Maximum	1400
Mean	94.9675
Median	0.7
Standard Deviation	256.9835
Variance	66040.52
Coefficient of Variation	2.706015
Skewness	3.779032

Gamma Statistics	
k hat	0.188592
k star (bias corrected)	0.190694
Theta hat	503.5617
Theta star	498.0112
nu hat	18.10479
nu star	18.30658
Approx.Chi Square Value (.05)	9.611397
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	9.415525

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	7.244228
Mean of log data	0.615647
Standard Deviation of log data	3.287699
Variance of log data	10.80896

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.442733
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	157.2058

Gamma Distribution Test	
A-D Test Statistic	3.986376
A-D 5% Critical Value	0.914042
K-S Test Statistic	0.290321
K-S 5% Critical Value	0.142198
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	180.8821
Adjusted Gamma UCL	184.645

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.862683
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	5592.513
95% Chebyshev (MVUE) UCL	987.9333
97.5% Chebyshev (MVUE) UCL	1314.464
99% Chebyshev (MVUE) UCL	1955.871

95% Non-parametric UCLs	
CLT UCL	155.979
Adj-CLT UCL (Adjusted for skewness)	177.5975
Mod-t UCL (Adjusted for skewness)	160.5778
Jackknife UCL	157.2058
Standard Bootstrap UCL	154.7735
Bootstrap-t UCL	229.5391
Hall's Bootstrap UCL	238.8497
Percentile Bootstrap UCL	158.2008
BCA Bootstrap UCL	186.3944
95% Chebyshev (Mean, Sd) UCL	256.6494
97.5% Chebyshev (Mean, Sd) UCL	326.6093
99% Chebyshev (Mean, Sd) UCL	464.032

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: delta-BHC

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	15
Minimum	0.00445
Maximum	0.05
Mean	0.006268
Median	0.004725
Standard Deviation	0.00698
Variance	4.87E-05
Coefficient of Variation	1.113662
Skewness	5.688879

Gamma Statistics	
k hat	3.151291
k star (bias corrected)	2.968225
Theta hat	0.001989
Theta star	0.002112
nu hat	302.524
nu star	284.9496
Approx.Chi Square Value (.05)	246.8444
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	245.7496

Log-transformed Statistics	
Minimum of log data	-5.41485
Maximum of log data	-2.99573
Mean of log data	-5.23932
Standard Deviation of log data	0.424505
Variance of log data	0.180204

RECOMMENDATION

Data are Non-parametric (0.05)

Use Student's-t UCL
or Modified-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.26851
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.007958

Gamma Distribution Test	
A-D Test Statistic	13.41646
A-D 5% Critical Value	0.75591
K-S Test Statistic	0.451905
K-S 5% Critical Value	0.128731
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.007235
Adjusted Gamma UCL	0.007267

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.380679
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.006502
95% Chebyshev (MVUE) UCL	0.007396
97.5% Chebyshev (MVUE) UCL	0.008089
99% Chebyshev (MVUE) UCL	0.009452

95% Non-parametric UCLs	
CLT UCL	0.007925
Adj-CLT UCL (Adjusted for skewness)	0.008809
Mod-t UCL (Adjusted for skewness)	0.008096
Jackknife UCL	0.007958
Standard Bootstrap UCL	0.007902
Bootstrap-t UCL	0.013278
Hall's Bootstrap UCL	0.016552
Percentile Bootstrap UCL	0.008105
BCA Bootstrap UCL	0.009218
95% Chebyshev (Mean, Sd) UCL	0.010659
97.5% Chebyshev (Mean, Sd) UCL	0.012559
99% Chebyshev (Mean, Sd) UCL	0.016292

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Dieldrin

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	9
Minimum	0.009
Maximum	0.1
Mean	0.011969
Median	0.0095
Standard Deviation	0.013348
Variance	0.000178
Coefficient of Variation	1.115196
Skewness	6.427518

Gamma Statistics	
k hat	3.617078
k star (bias corrected)	3.404899
Theta hat	0.003309
Theta star	0.003515
nu hat	347.2394
nu star	326.8703
Approx.Chi Square Value (.05)	285.9731
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	284.7926

Log-transformed Statistics	
Minimum of log data	-4.71053
Maximum of log data	-2.30259
Mean of log data	-4.57001
Standard Deviation of log data	0.37813
Variance of log data	0.142983

RECOMMENDATION

Data are Non-parametric (0.05)

Use Student's-t UCL
or Modified-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.217536
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.015201

Gamma Distribution Test	
A-D Test Statistic	13.86827
A-D 5% Critical Value	0.754451
K-S Test Statistic	0.463656
K-S 5% Critical Value	0.128524
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.01368
Adjusted Gamma UCL	0.013737

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.329573
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.012291
95% Chebyshev (MVUE) UCL	0.013827
97.5% Chebyshev (MVUE) UCL	0.015004
99% Chebyshev (MVUE) UCL	0.017316

95% Non-parametric UCLs	
CLT UCL	0.015138
Adj-CLT UCL (Adjusted for skewness)	0.017047
Mod-t UCL (Adjusted for skewness)	0.015499
Jackknife UCL	0.015201
Standard Bootstrap UCL	0.015198
Bootstrap-t UCL	0.073683
Hall's Bootstrap UCL	0.033309
Percentile Bootstrap UCL	0.015703
BCA Bootstrap UCL	0.019057
95% Chebyshev (Mean, Sd) UCL	0.020366
97.5% Chebyshev (Mean, Sd) UCL	0.024
99% Chebyshev (Mean, Sd) UCL	0.031138

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Ethylbenzene

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	10
Minimum	0.05
Maximum	3100
Mean	111.2044
Median	0.42
Standard Deviation	500.1472
Variance	250147.2
Coefficient of Variation	4.49755
Skewness	5.238647

Gamma Statistics	
k hat	0.135123
k star (bias corrected)	0.140567
Theta hat	822.9863
Theta star	791.1146
nu hat	12.97181
nu star	13.4944
Approx.Chi Square Value (.05)	6.225594
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	6.072285

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	8.039157
Mean of log data	-1.06225
Standard Deviation of log data	2.558844
Variance of log data	6.547683

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.254779
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	232.3339

Gamma Distribution Test	
A-D Test Statistic	12.61653
A-D 5% Critical Value	0.948921
K-S Test Statistic	0.492286
K-S 5% Critical Value	0.144107
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	241.0431
Adjusted Gamma UCL	247.1288

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.657872
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	46.59423
95% Chebyshev (MVUE) UCL	24.79888
97.5% Chebyshev (MVUE) UCL	32.44998
99% Chebyshev (MVUE) UCL	47.47908

95% Non-parametric UCLs	
CLT UCL	229.9464
Adj-CLT UCL (Adjusted for skewness)	288.2716
Mod-t UCL (Adjusted for skewness)	241.4315
Jackknife UCL	232.3339
Standard Bootstrap UCL	227.1094
Bootstrap-t UCL	588.2562
Hall's Bootstrap UCL	8160.387
Percentile Bootstrap UCL	240.3779
BCA Bootstrap UCL	317.4185
95% Chebyshev (Mean, Sd) UCL	425.8734
97.5% Chebyshev (Mean, Sd) UCL	562.031
99% Chebyshev (Mean, Sd) UCL	829.4861

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Heptachlor Epoxide

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	15
Minimum	0.00445
Maximum	0.5
Mean	0.017922
Median	0.004725
Standard Deviation	0.072514
Variance	0.005258
Coefficient of Variation	4.046124
Skewness	6.545975

Gamma Statistics	
k hat	0.560307
k star (bias corrected)	0.539177
Theta hat	0.031986
Theta star	0.033239
nu hat	53.78946
nu star	51.76095
Approx.Chi Square Value (.05)	36.23399
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	35.83099

Log-transformed Statistics	
Minimum of log data	-5.41485
Maximum of log data	-0.69315
Mean of log data	-5.13579
Standard Deviation of log data	0.852004
Variance of log data	0.725911

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.20067
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.035484

Gamma Distribution Test	
A-D Test Statistic	16.31055
A-D 5% Critical Value	0.808613
K-S Test Statistic	0.542933
K-S 5% Critical Value	0.134652
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.025602
Adjusted Gamma UCL	0.02589

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.325968
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.01108
95% Chebyshev (MVUE) UCL	0.013455
97.5% Chebyshev (MVUE) UCL	0.015654
99% Chebyshev (MVUE) UCL	0.019974

95% Non-parametric UCLs	
CLT UCL	0.035138
Adj-CLT UCL (Adjusted for skewness)	0.045704
Mod-t UCL (Adjusted for skewness)	0.037132
Jackknife UCL	0.035484
Standard Bootstrap UCL	0.034625
Bootstrap-t UCL	0.153674
Hall's Bootstrap UCL	0.159506
Percentile Bootstrap UCL	0.038543
BCA Bootstrap UCL	0.056298
95% Chebyshev (Mean, Sd) UCL	0.063544
97.5% Chebyshev (Mean, Sd) UCL	0.083285
99% Chebyshev (Mean, Sd) UCL	0.122062

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Phenanthrene

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	7
Minimum	0.85
Maximum	26
Mean	1.476042
Median	0.95
Standard Deviation	3.61551
Variance	13.07191
Coefficient of Variation	2.449463
Skewness	6.925396

Gamma Statistics	
k hat	1.499383
k star (bias corrected)	1.41956
Theta hat	0.984433
Theta star	1.039788
nu hat	143.9407
nu star	136.2778
Approx.Chi Square Value (.05)	110.301
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	109.5782

Log-transformed Statistics	
Minimum of log data	-0.16252
Maximum of log data	3.258097
Mean of log data	0.020223
Standard Deviation of log data	0.481124
Variance of log data	0.23148

RECOMMENDATION

Data are Non-parametric (0.05)

Use Student's-t UCL
or Modified-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.157639
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	2.351674

Gamma Distribution Test	
A-D Test Statistic	16.25181
A-D 5% Critical Value	0.767496
K-S Test Statistic	0.504064
K-S 5% Critical Value	0.13016
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	1.823662
Adjusted Gamma UCL	1.83569

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.241386
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1.306376
95% Chebyshev (MVUE) UCL	1.504484
97.5% Chebyshev (MVUE) UCL	1.661079
99% Chebyshev (MVUE) UCL	1.968679

95% Non-parametric UCLs	
CLT UCL	2.334415
Adj-CLT UCL (Adjusted for skewness)	2.891798
Mod-t UCL (Adjusted for skewness)	2.438615
Jackknife UCL	2.351674
Standard Bootstrap UCL	2.324665
Bootstrap-t UCL	38.34754
Hall's Bootstrap UCL	9.245145
Percentile Bootstrap UCL	2.51875
BCA Bootstrap UCL	3.05
95% Chebyshev (Mean, Sd) UCL	3.75075
97.5% Chebyshev (Mean, Sd) UCL	4.735018
99% Chebyshev (Mean, Sd) UCL	6.668423

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Tetrachloroethene

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	29
Minimum	0.05
Maximum	4200
Mean	223.0791
Median	1.25
Standard Deviation	779.4932
Variance	607609.6
Coefficient of Variation	3.494246
Skewness	4.454474

Gamma Statistics	
k hat	0.177329
k star (bias corrected)	0.180134
Theta hat	1257.998
Theta star	1238.403
nu hat	17.02355
nu star	17.29291
Approx.Chi Square Value (.05)	8.880529
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	8.69313

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	8.34284
Mean of log data	1.179869
Standard Deviation of log data	3.146883
Variance of log data	9.902873

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.327186
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	411.8628

Gamma Distribution Test	
A-D Test Statistic	4.68626
A-D 5% Critical Value	0.921389
K-S Test Statistic	0.250757
K-S 5% Critical Value	0.1426
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	434.3982
Adjusted Gamma UCL	443.7625

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.913464
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	5076.189
95% Chebyshev (MVUE) UCL	1155.074
97.5% Chebyshev (MVUE) UCL	1533.107
99% Chebyshev (MVUE) UCL	2275.681

95% Non-parametric UCLs	
CLT UCL	408.1418
Adj-CLT UCL (Adjusted for skewness)	485.4362
Mod-t UCL (Adjusted for skewness)	423.9192
Jackknife UCL	411.8628
Standard Bootstrap UCL	409.3244
Bootstrap-t UCL	1003.056
Hall's Bootstrap UCL	1151.266
Percentile Bootstrap UCL	427.902
BCA Bootstrap UCL	505.2022
95% Chebyshev (Mean, Sd) UCL	713.4994
97.5% Chebyshev (Mean, Sd) UCL	925.7047
99% Chebyshev (Mean, Sd) UCL	1342.541

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Toluene

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	5
Minimum	0.05
Maximum	630
Mean	16.14479
Median	0.4
Standard Deviation	92.40489
Variance	8538.663
Coefficient of Variation	5.723511
Skewness	6.545141

Gamma Statistics	
k hat	0.172377
k star (bias corrected)	0.175492
Theta hat	93.65988
Theta star	91.99723
nu hat	16.54817
nu star	16.84725
Approx.Chi Square Value (.05)	8.561878
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	8.37828

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	6.44572
Mean of log data	-1.5862
Standard Deviation of log data	1.912688
Variance of log data	3.658375

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.187495
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	38.52413

Gamma Distribution Test	
A-D Test Statistic	13.05712
A-D 5% Critical Value	0.924619
K-S Test Statistic	0.516115
K-S 5% Critical Value	0.142777
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	31.76818
Adjusted Gamma UCL	32.46433

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.647067
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	3.34291
95% Chebyshev (MVUE) UCL	3.147945
97.5% Chebyshev (MVUE) UCL	4.009914
99% Chebyshev (MVUE) UCL	5.703086

95% Non-parametric UCLs	
CLT UCL	38.08302
Adj-CLT UCL (Adjusted for skewness)	51.54637
Mod-t UCL (Adjusted for skewness)	40.62414
Jackknife UCL	38.52413
Standard Bootstrap UCL	38.02784
Bootstrap-t UCL	2086.925
Hall's Bootstrap UCL	1565.118
Percentile Bootstrap UCL	42.28958
BCA Bootstrap UCL	60.92396
95% Chebyshev (Mean, Sd) UCL	74.28159
97.5% Chebyshev (Mean, Sd) UCL	99.43743
99% Chebyshev (Mean, Sd) UCL	148.8512

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Trichloroethene

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	31
Minimum	0.05
Maximum	2100
Mean	141.1977
Median	0.935
Standard Deviation	429.3971
Variance	184381.9
Coefficient of Variation	3.041106
Skewness	3.790134

Gamma Statistics	
k hat	0.186213
k star (bias corrected)	0.188464
Theta hat	758.2587
Theta star	749.2038
nu hat	17.87646
nu star	18.09251
Approx.Chi Square Value (.05)	9.456375
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	9.262273

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	7.649693
Mean of log data	0.954178
Standard Deviation of log data	3.129939
Variance of log data	9.79652

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.382932
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	245.1925

Gamma Distribution Test	
A-D Test Statistic	4.242267
A-D 5% Critical Value	0.915593
K-S Test Statistic	0.23314
K-S 5% Critical Value	0.142282
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	270.1481
Adjusted Gamma UCL	275.8093

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.909463
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	3748.206
95% Chebyshev (MVUE) UCL	878.1101
97.5% Chebyshev (MVUE) UCL	1165.132
99% Chebyshev (MVUE) UCL	1728.93

95% Non-parametric UCLs	
CLT UCL	243.1427
Adj-CLT UCL (Adjusted for skewness)	279.3714
Mod-t UCL (Adjusted for skewness)	250.8434
Jackknife UCL	245.1925
Standard Bootstrap UCL	239.0506
Bootstrap-t UCL	377.6193
Hall's Bootstrap UCL	333.9413
Percentile Bootstrap UCL	248.6347
BCA Bootstrap UCL	297.9742
95% Chebyshev (Mean, Sd) UCL	411.3541
97.5% Chebyshev (Mean, Sd) UCL	528.2511
99% Chebyshev (Mean, Sd) UCL	757.8724

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Vinyl Chloride

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	4
Minimum	0.05
Maximum	6.6
Mean	0.330833
Median	0.32
Standard Deviation	0.934777
Variance	0.873808
Coefficient of Variation	2.825522
Skewness	6.684053

Gamma Statistics	
k hat	0.738954
k star (bias corrected)	0.706658
Theta hat	0.447705
Theta star	0.468166
nu hat	70.93956
nu star	67.83917
Approx.Chi Square Value (.05)	49.87881
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	49.40151

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	1.88707
Mean of log data	-1.91789
Standard Deviation of log data	1.092332
Variance of log data	1.19319

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.243202
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.557225

Gamma Distribution Test	
A-D Test Statistic	6.106417
A-D 5% Critical Value	0.792864
K-S Test Statistic	0.315927
K-S 5% Critical Value	0.133134
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.44996
Adjusted Gamma UCL	0.454307

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.709873
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.392482
95% Chebyshev (MVUE) UCL	0.47783
97.5% Chebyshev (MVUE) UCL	0.571342
99% Chebyshev (MVUE) UCL	0.755026

95% Non-parametric UCLs	
CLT UCL	0.552763
Adj-CLT UCL (Adjusted for skewness)	0.69185
Mod-t UCL (Adjusted for skewness)	0.57892
Jackknife UCL	0.557225
Standard Bootstrap UCL	N/R
Bootstrap-t UCL	N/R
Hall's Bootstrap UCL	N/R
Percentile Bootstrap UCL	N/R
BCA Bootstrap UCL	N/R
95% Chebyshev (Mean, Sd) UCL	0.918951
97.5% Chebyshev (Mean, Sd) UCL	1.17343
99% Chebyshev (Mean, Sd) UCL	1.673304

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Xylenes (total)

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	15
Minimum	0.05
Maximum	90000
Mean	4447.53
Median	0.345
Standard Deviation	17241.51
Variance	2.97E+08
Coefficient of Variation	3.876649
Skewness	4.260741

Gamma Statistics	
k hat	0.094798
k star (bias corrected)	0.102762
Theta hat	46915.66
Theta star	43279.74
nu hat	9.100647
nu star	9.86519
Approx.Chi Square Value (.05)	3.856847
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	3.740644

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	11.40756
Mean of log data	-0.22383
Standard Deviation of log data	3.85916
Variance of log data	14.89311

RECOMMENDATION

Data are Non-parametric (0.05)

Use Hall's Bootstrap UCL

In case Hall's Bootstrap method yields an erratic, unreasonably large UCL value, use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.295506
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	8623.214

Gamma Distribution Test	
A-D Test Statistic	11.5904
A-D 5% Critical Value	1.032159
K-S Test Statistic	0.416573
K-S 5% Critical Value	0.14814
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	11376.06
Adjusted Gamma UCL	11729.46

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.675321
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	47540.08
95% Chebyshev (MVUE) UCL	2447.274
97.5% Chebyshev (MVUE) UCL	3279.734
99% Chebyshev (MVUE) UCL	4914.94

95% Non-parametric UCLs	
CLT UCL	8540.909
Adj-CLT UCL (Adjusted for skewness)	10176.22
Mod-t UCL (Adjusted for skewness)	8878.289
Jackknife UCL	8623.214
Standard Bootstrap UCL	8476.469
Bootstrap-t UCL	18053.84
Hall's Bootstrap UCL	11516.51
Percentile Bootstrap UCL	8905.197
BCA Bootstrap UCL	10416.5
95% Chebyshev (Mean, Sd) UCL	15295.08
97.5% Chebyshev (Mean, Sd) UCL	19988.82
99% Chebyshev (Mean, Sd) UCL	29208.76

C:\Documents and Settings\lin\Desktop\Data for ProUCL.xls
Variable: Xylenes (total)

Raw Statistics
Normal Distribution Test
Number of Valid Samples
48
Shapiro-Wilk Test Statisitic
0.295506026 8
Number of Unique Samples
14
Shapiro-Wilk 5%

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: 2,4-Dimethylphenol

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	12
Minimum	0.85
Maximum	300
Mean	8.041667
Median	0.95
Standard Deviation	43.14354
Variance	1861.365
Coefficient of Variation	5.365
Skewness	6.876143

Gamma Statistics	
k hat	0.36968
k star (bias corrected)	0.360464
Theta hat	21.75302
Theta star	22.30919
nu hat	35.48933
nu star	34.60458
Approx.Chi Square Value (.05)	22.14594
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	21.83635

Log-transformed Statistics	
Minimum of log data	-0.16252
Maximum of log data	5.703782
Mean of log data	0.281778
Standard Deviation of log data	1.048434
Variance of log data	1.099214

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.172924
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	18.49051

Gamma Distribution Test	
A-D Test Statistic	14.98026
A-D 5% Critical Value	0.845385
K-S Test Statistic	0.506957
K-S 5% Critical Value	0.137617
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	12.56567
Adjusted Gamma UCL	12.74382

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.430421
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	3.302211
95% Chebyshev (MVUE) UCL	4.027084
97.5% Chebyshev (MVUE) UCL	4.792856
99% Chebyshev (MVUE) UCL	6.297067

95% Non-parametric UCLs	
CLT UCL	18.28455
Adj-CLT UCL (Adjusted for skewness)	24.88845
Mod-t UCL (Adjusted for skewness)	19.52058
Jackknife UCL	18.49051
Standard Bootstrap UCL	18.15348
Bootstrap-t UCL	155.5459
Hall's Bootstrap UCL	134.5837
Percentile Bootstrap UCL	20.30729
BCA Bootstrap UCL	27.60938
95% Chebyshev (Mean, Sd) UCL	35.18555
97.5% Chebyshev (Mean, Sd) UCL	46.93073
99% Chebyshev (Mean, Sd) UCL	70.00186

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: bis(2-Ethylhexyl)Phthalate

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	11
Minimum	1.35
Maximum	17
Mean	1.939063
Median	1.45
Standard Deviation	2.369385
Variance	5.613987
Coefficient of Variation	1.221923
Skewness	5.911894

Gamma Statistics	
k hat	2.91647
k star (bias corrected)	2.74808
Theta hat	0.664866
Theta star	0.705606
nu hat	279.9811
nu star	263.8156
Approx.Chi Square Value (.05)	227.1963
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	226.1471

Log-transformed Statistics	
Minimum of log data	0.300105
Maximum of log data	2.833213
Mean of log data	0.481077
Standard Deviation of log data	0.428729
Variance of log data	0.183808

RECOMMENDATION

Data are Non-parametric (0.05)

Use Student's-t UCL
or Modified-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.249827
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	2.512899

Gamma Distribution Test	
A-D Test Statistic	13.37349
A-D 5% Critical Value	0.756849
K-S Test Statistic	0.463892
K-S 5% Critical Value	0.128857
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	2.2516
Adjusted Gamma UCL	2.262046

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.374932
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1.989434
95% Chebyshev (MVUE) UCL	2.265003
97.5% Chebyshev (MVUE) UCL	2.479251
99% Chebyshev (MVUE) UCL	2.9001

95% Non-parametric UCLs	
CLT UCL	2.501588
Adj-CLT UCL (Adjusted for skewness)	2.813406
Mod-t UCL (Adjusted for skewness)	2.561536
Jackknife UCL	2.512899
Standard Bootstrap UCL	2.508665
Bootstrap-t UCL	6.514023
Hall's Bootstrap UCL	6.008081
Percentile Bootstrap UCL	2.577083
BCA Bootstrap UCL	2.951042
95% Chebyshev (Mean, Sd) UCL	3.429768
97.5% Chebyshev (Mean, Sd) UCL	4.074798
99% Chebyshev (Mean, Sd) UCL	5.341833

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: 4-Methylphenol

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	13
Minimum	1.05
Maximum	1100
Mean	27.08177
Median	1.15
Standard Deviation	158.6746
Variance	25177.62
Coefficient of Variation	5.859091
Skewness	6.860321

Gamma Statistics	
k hat	0.25757
k star (bias corrected)	0.255361
Theta hat	105.1434
Theta star	106.053
nu hat	24.72672
nu star	24.51463
Approx.Chi Square Value (.05)	14.23894
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	13.99549

Log-transformed Statistics	
Minimum of log data	0.04879
Maximum of log data	7.003065
Mean of log data	0.554457
Standard Deviation of log data	1.321347
Variance of log data	1.745957

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.172317
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	65.51081

Gamma Distribution Test	
A-D Test Statistic	15.8157
A-D 5% Critical Value	0.881041
K-S Test Statistic	0.536835
K-S 5% Critical Value	0.140142
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	46.62562
Adjusted Gamma UCL	47.43666

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.404176
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	6.997755
95% Chebyshev (MVUE) UCL	8.2951
97.5% Chebyshev (MVUE) UCL	10.13852
99% Chebyshev (MVUE) UCL	13.75956

95% Non-parametric UCLs	
CLT UCL	64.75336
Adj-CLT UCL (Adjusted for skewness)	88.98545
Mod-t UCL (Adjusted for skewness)	69.29053
Jackknife UCL	65.51081
Standard Bootstrap UCL	64.05157
Bootstrap-t UCL	613.0413
Hall's Bootstrap UCL	629.9028
Percentile Bootstrap UCL	72.0651
BCA Bootstrap UCL	99.55885
95% Chebyshev (Mean, Sd) UCL	126.9123
97.5% Chebyshev (Mean, Sd) UCL	170.1091
99% Chebyshev (Mean, Sd) UCL	254.9608

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Naphthalene

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	9
Minimum	0.85
Maximum	17
Mean	1.519792
Median	0.95
Standard Deviation	2.634787
Variance	6.9421
Coefficient of Variation	1.73365
Skewness	5.233258

Gamma Statistics	
k hat	1.670909
k star (bias corrected)	1.580366
Theta hat	0.90956
Theta star	0.96167
nu hat	160.4073
nu star	151.7152
Approx.Chi Square Value (.05)	124.2388
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	123.4701

Log-transformed Statistics	
Minimum of log data	-0.16252
Maximum of log data	2.833213
Mean of log data	0.090418
Standard Deviation of log data	0.549088
Variance of log data	0.301497

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.258723
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	2.157905

Gamma Distribution Test	
A-D Test Statistic	13.79282
A-D 5% Critical Value	0.765592
K-S Test Statistic	0.468467
K-S 5% Critical Value	0.129937
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	1.855905
Adjusted Gamma UCL	1.867459

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.386369
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1.484078
95% Chebyshev (MVUE) UCL	1.7324
97.5% Chebyshev (MVUE) UCL	1.933267
99% Chebyshev (MVUE) UCL	2.327832

95% Non-parametric UCLs	
CLT UCL	2.145327
Adj-CLT UCL (Adjusted for skewness)	2.45227
Mod-t UCL (Adjusted for skewness)	2.205782
Jackknife UCL	2.157905
Standard Bootstrap UCL	2.130623
Bootstrap-t UCL	9.795146
Hall's Bootstrap UCL	6.969963
Percentile Bootstrap UCL	2.194792
BCA Bootstrap UCL	2.53125
95% Chebyshev (Mean, Sd) UCL	3.177475
97.5% Chebyshev (Mean, Sd) UCL	3.894756
99% Chebyshev (Mean, Sd) UCL	5.303716

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Antimony

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	5
Minimum	0.6
Maximum	60
Mean	29.92188
Median	19.325
Standard Deviation	29.48903
Variance	869.603
Coefficient of Variation	0.985534
Skewness	0.038043

Gamma Statistics	
k hat	0.431049
k star (bias corrected)	0.417997
Theta hat	69.41642
Theta star	71.5839
nu hat	41.3807
nu star	40.12774
Approx.Chi Square Value (.05)	26.61109
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	26.26934

Log-transformed Statistics	
Minimum of log data	-0.51083
Maximum of log data	4.094345
Mean of log data	1.890185
Standard Deviation of log data	2.246103
Variance of log data	5.044978

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.643504
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	37.06376

Gamma Distribution Test	
A-D Test Statistic	7.276995
A-D 5% Critical Value	0.830573
K-S Test Statistic	0.321101
K-S 5% Critical Value	0.136462
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	45.12018
Adjusted Gamma UCL	45.70717

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.66253
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	297.7848
95% Chebyshev (MVUE) UCL	218.5836
97.5% Chebyshev (MVUE) UCL	282.8501
99% Chebyshev (MVUE) UCL	409.0894

95% Non-parametric UCLs	
CLT UCL	36.92299
Adj-CLT UCL (Adjusted for skewness)	36.94796
Mod-t UCL (Adjusted for skewness)	37.06765
Jackknife UCL	37.06376
Standard Bootstrap UCL	36.83793
Bootstrap-t UCL	37.00603
Hall's Bootstrap UCL	36.67769
Percentile Bootstrap UCL	36.71042
BCA Bootstrap UCL	36.60625
95% Chebyshev (Mean, Sd) UCL	48.47498
97.5% Chebyshev (Mean, Sd) UCL	56.50293
99% Chebyshev (Mean, Sd) UCL	72.27227

Recommended UCL exceeds the maximum observation

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Arsenic

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	6
Minimum	0.7
Maximum	10
Mean	5.30625
Median	3
Standard Deviation	4.578275
Variance	20.9606
Coefficient of Variation	0.862808
Skewness	0.052326

Gamma Statistics	
k hat	0.902387
k star (bias corrected)	0.859876
Theta hat	5.88024
Theta star	6.170946
nu hat	86.62911
nu star	82.54813
Approx.Chi Square Value (.05)	62.60614
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	62.06824

Log-transformed Statistics	
Minimum of log data	-0.35667
Maximum of log data	2.302585
Mean of log data	1.02125
Standard Deviation of log data	1.287756
Variance of log data	1.658316

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.652422
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	6.415052

Gamma Distribution Test	
A-D Test Statistic	7.004255
A-D 5% Critical Value	0.783865
K-S Test Statistic	0.322939
K-S 5% Critical Value	0.132168
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	6.996454
Adjusted Gamma UCL	7.057088

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.670693
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	10.46291
95% Chebyshev (MVUE) UCL	12.47532
97.5% Chebyshev (MVUE) UCL	15.20225
99% Chebyshev (MVUE) UCL	20.55876

95% Non-parametric UCLs	
CLT UCL	6.393197
Adj-CLT UCL (Adjusted for skewness)	6.39853
Mod-t UCL (Adjusted for skewness)	6.415884
Jackknife UCL	6.415052
Standard Bootstrap UCL	6.415293
Bootstrap-t UCL	6.443215
Hall's Bootstrap UCL	6.404866
Percentile Bootstrap UCL	6.372917
BCA Bootstrap UCL	6.372917
95% Chebyshev (Mean, Sd) UCL	8.186685
97.5% Chebyshev (Mean, Sd) UCL	9.433051
99% Chebyshev (Mean, Sd) UCL	11.8813

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Recommended UCL exceeds the maximum observation

Consider using 95% or 97.5% Chebyshev (Mean, Sd) UCL

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Cadmium

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	21
Minimum	0.1
Maximum	102
Mean	7.239896
Median	2.5
Standard Deviation	19.67096
Variance	386.9466
Coefficient of Variation	2.717022
Skewness	4.486444

Gamma Statistics	
k hat	0.377058
k star (bias corrected)	0.367381
Theta hat	19.20102
Theta star	19.70679
nu hat	36.19756
nu star	35.26855
Approx.Chi Square Value (.05)	22.67841
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	22.36483

Log-transformed Statistics	
Minimum of log data	-2.30259
Maximum of log data	4.624973
Mean of log data	0.217678
Standard Deviation of log data	2.028985
Variance of log data	4.116781

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.353631
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	12.00396

Gamma Distribution Test	
A-D Test Statistic	2.938032
A-D 5% Critical Value	0.843605
K-S Test Statistic	0.200748
K-S 5% Critical Value	0.137478
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	11.25919
Adjusted Gamma UCL	11.41706

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.856089
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	28.38608
95% Chebyshev (MVUE) UCL	24.76201
97.5% Chebyshev (MVUE) UCL	31.73226
99% Chebyshev (MVUE) UCL	45.42397

95% Non-parametric UCLs	
CLT UCL	11.91006
Adj-CLT UCL (Adjusted for skewness)	13.87463
Mod-t UCL (Adjusted for skewness)	12.31039
Jackknife UCL	12.00396
Standard Bootstrap UCL	11.92495
Bootstrap-t UCL	30.27404
Hall's Bootstrap UCL	36.75883
Percentile Bootstrap UCL	12.04729
BCA Bootstrap UCL	14.87823
95% Chebyshev (Mean, Sd) UCL	19.61594
97.5% Chebyshev (Mean, Sd) UCL	24.97106
99% Chebyshev (Mean, Sd) UCL	35.49016

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Chromium

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	41
Minimum	0.2
Maximum	28.2
Mean	4.895208
Median	2.55
Standard Deviation	6.003685
Variance	36.04424
Coefficient of Variation	1.226441
Skewness	2.373029

Gamma Statistics	
k hat	0.99259
k star (bias corrected)	0.944442
Theta hat	4.931752
Theta star	5.183174
nu hat	95.28866
nu star	90.66645
Approx.Chi Square Value (.05)	69.7067
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	69.13765

Log-transformed Statistics	
Minimum of log data	-1.60944
Maximum of log data	3.339322
Mean of log data	1.006223
Standard Deviation of log data	1.117609
Variance of log data	1.24905

RECOMMENDATION

Assuming gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.698043
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	6.349228

Gamma Distribution Test	
A-D Test Statistic	0.90631
A-D 5% Critical Value	0.779114
K-S Test Statistic	0.11792
K-S 5% Critical Value	0.131652
Data follow approximate gamma distibution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	6.367124
Adjusted Gamma UCL	6.419529

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.977906
Shapiro-Wilk 5% Critical Value	0.947
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	7.616206
95% Chebyshev (MVUE) UCL	9.258971
97.5% Chebyshev (MVUE) UCL	11.09988
99% Chebyshev (MVUE) UCL	14.71599

95% Non-parametric UCLs	
CLT UCL	6.320568
Adj-CLT UCL (Adjusted for skewness)	6.637715
Mod-t UCL (Adjusted for skewness)	6.398696
Jackknife UCL	6.349228
Standard Bootstrap UCL	6.336438
Bootstrap-t UCL	6.816948
Hall's Bootstrap UCL	6.706214
Percentile Bootstrap UCL	6.43625
BCA Bootstrap UCL	6.618958
95% Chebyshev (Mean, Sd) UCL	8.672444
97.5% Chebyshev (Mean, Sd) UCL	10.30686
99% Chebyshev (Mean, Sd) UCL	13.51735

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Iron

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	47
Minimum	4.5
Maximum	55700
Mean	3316.756
Median	766
Standard Deviation	8640.421
Variance	74656876
Coefficient of Variation	2.605082
Skewness	5.092406

Gamma Statistics	
k hat	0.41033
k star (bias corrected)	0.398574
Theta hat	8083.136
Theta star	8321.565
nu hat	39.39172
nu star	38.26307
Approx.Chi Square Value (.05)	25.09487
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	24.76372

Log-transformed Statistics	
Minimum of log data	1.504077
Maximum of log data	10.92774
Mean of log data	6.50963
Standard Deviation of log data	1.937123
Variance of log data	3.752447

RECOMMENDATION
Data are lognormal (0.05)

Use 95% Chebyshev (MVUE) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.403329
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	5409.361

Gamma Distribution Test	
A-D Test Statistic	2.110918
A-D 5% Critical Value	0.835574
K-S Test Statistic	0.196568
K-S 5% Critical Value	0.136852
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	5057.18
Adjusted Gamma UCL	5124.806

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.969453
Shapiro-Wilk 5% Critical Value	0.947
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	11748.36
95% Chebyshev (MVUE) UCL	10896.68
97.5% Chebyshev (MVUE) UCL	13898.62
99% Chebyshev (MVUE) UCL	19795.34

95% Non-parametric UCLs	
CLT UCL	5368.115
Adj-CLT UCL (Adjusted for skewness)	6347.598
Mod-t UCL (Adjusted for skewness)	5562.141
Jackknife UCL	5409.361
Standard Bootstrap UCL	5338.483
Bootstrap-t UCL	8173.847
Hall's Bootstrap UCL	12393.47
Percentile Bootstrap UCL	5611.242
BCA Bootstrap UCL	6614.744
95% Chebyshev (Mean, Sd) UCL	8752.902
97.5% Chebyshev (Mean, Sd) UCL	11105.13
99% Chebyshev (Mean, Sd) UCL	15725.62

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Lead

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	11
Minimum	0.5
Maximum	22
Mean	2.341667
Median	2.45
Standard Deviation	3.10544
Variance	9.643759
Coefficient of Variation	1.326167
Skewness	5.56234

Gamma Statistics	
k hat	1.400244
k star (bias corrected)	1.326618
Theta hat	1.672328
Theta star	1.765141
nu hat	134.4234
nu star	127.3553
Approx.Chi Square Value (.05)	102.2843
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	101.5893

Log-transformed Statistics	
Minimum of log data	-0.69315
Maximum of log data	3.091042
Mean of log data	0.453082
Standard Deviation of log data	0.88197
Variance of log data	0.777872

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.417901
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	3.093766

Gamma Distribution Test	
A-D Test Statistic	3.845139
A-D 5% Critical Value	0.769725
K-S Test Statistic	0.258419
K-S 5% Critical Value	0.130448
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	2.915636
Adjusted Gamma UCL	2.935582

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.782211
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	3.08184
95% Chebyshev (MVUE) UCL	3.749033
97.5% Chebyshev (MVUE) UCL	4.377916
99% Chebyshev (MVUE) UCL	5.613235

95% Non-parametric UCLs	
CLT UCL	3.078942
Adj-CLT UCL (Adjusted for skewness)	3.463463
Mod-t UCL (Adjusted for skewness)	3.153744
Jackknife UCL	3.093766
Standard Bootstrap UCL	3.087852
Bootstrap-t UCL	3.935208
Hall's Bootstrap UCL	6.129154
Percentile Bootstrap UCL	3.175
BCA Bootstrap UCL	3.6625
95% Chebyshev (Mean, Sd) UCL	4.295463
97.5% Chebyshev (Mean, Sd) UCL	5.140873
99% Chebyshev (Mean, Sd) UCL	6.801516

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Manganese

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	46
Minimum	0.05
Maximum	229
Mean	51.70313
Median	19.15
Standard Deviation	58.5462
Variance	3427.658
Coefficient of Variation	1.132353
Skewness	1.607536

Gamma Statistics	
k hat	0.888564
k star (bias corrected)	0.846918
Theta hat	58.18726
Theta star	61.04856
nu hat	85.30218
nu star	81.30413
Approx.Chi Square Value (.05)	61.52247
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	60.98948

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	5.433722
Mean of log data	3.286542
Standard Deviation of log data	1.39018
Variance of log data	1.932602

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.753466
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	65.8823

Gamma Distribution Test	
A-D Test Statistic	1.468781
A-D 5% Critical Value	0.784593
K-S Test Statistic	0.182957
K-S 5% Critical Value	0.132247
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	68.32752
Adjusted Gamma UCL	68.92464

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.855474
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	123.3476
95% Chebyshev (MVUE) UCL	144.1499
97.5% Chebyshev (MVUE) UCL	177.2239
99% Chebyshev (MVUE) UCL	242.1913

95% Non-parametric UCLs	
CLT UCL	65.60282
Adj-CLT UCL (Adjusted for skewness)	67.69789
Mod-t UCL (Adjusted for skewness)	66.20909
Jackknife UCL	65.8823
Standard Bootstrap UCL	65.49217
Bootstrap-t UCL	68.01133
Hall's Bootstrap UCL	67.33586
Percentile Bootstrap UCL	65.55208
BCA Bootstrap UCL	67.95938
95% Chebyshev (Mean, Sd) UCL	88.53764
97.5% Chebyshev (Mean, Sd) UCL	104.476
99% Chebyshev (Mean, Sd) UCL	135.7837

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Nickel

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	41
Minimum	0.45
Maximum	40
Mean	8.352083
Median	4.4
Standard Deviation	9.673483
Variance	93.57627
Coefficient of Variation	1.158212
Skewness	1.789494

Gamma Statistics	
k hat	1.001396
k star (bias corrected)	0.952697
Theta hat	8.340442
Theta star	8.766774
nu hat	96.134
nu star	91.45896
Approx.Chi Square Value (.05)	70.40235
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	69.83034

Log-transformed Statistics	
Minimum of log data	-0.79851
Maximum of log data	3.688879
Mean of log data	1.546194
Standard Deviation of log data	1.084829
Variance of log data	1.176855

RECOMMENDATION

Data are lognormal (0.05)

Use H-UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.735544
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	10.69488

Gamma Distribution Test	
A-D Test Statistic	1.695374
A-D 5% Critical Value	0.778693
K-S Test Statistic	0.155375
K-S 5% Critical Value	0.131606
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	10.8501
Adjusted Gamma UCL	10.93898

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.950855
Shapiro-Wilk 5% Critical Value	0.947
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	12.38758
95% Chebyshev (MVUE) UCL	15.08681
97.5% Chebyshev (MVUE) UCL	18.02516
99% Chebyshev (MVUE) UCL	23.79697

95% Non-parametric UCLs	
CLT UCL	10.64871
Adj-CLT UCL (Adjusted for skewness)	11.03405
Mod-t UCL (Adjusted for skewness)	10.75499
Jackknife UCL	10.69488
Standard Bootstrap UCL	10.65751
Bootstrap-t UCL	11.20664
Hall's Bootstrap UCL	10.92051
Percentile Bootstrap UCL	10.69688
BCA Bootstrap UCL	10.91042
95% Chebyshev (Mean, Sd) UCL	14.43818
97.5% Chebyshev (Mean, Sd) UCL	17.07164
99% Chebyshev (Mean, Sd) UCL	22.24457

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Thallium

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	6
Minimum	1.95
Maximum	10
Mean	6.101042
Median	6.6
Standard Deviation	3.930601
Variance	15.44963
Coefficient of Variation	0.644251
Skewness	-0.05022

Gamma Statistics	
k hat	1.967964
k star (bias corrected)	1.858855
Theta hat	3.100179
Theta star	3.28215
nu hat	188.9246
nu star	178.4501
Approx.Chi Square Value (.05)	148.5477
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	147.7046

Log-transformed Statistics	
Minimum of log data	0.667829
Maximum of log data	2.302585
Mean of log data	1.533373
Standard Deviation of log data	0.795359
Variance of log data	0.632596

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.661599
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	7.052985

Gamma Distribution Test	
A-D Test Statistic	7.181075
A-D 5% Critical Value	0.762306
K-S Test Statistic	0.316847
K-S 5% Critical Value	0.129552
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	7.32917
Adjusted Gamma UCL	7.371004

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.663355
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	8.131633
95% Chebyshev (MVUE) UCL	9.829278
97.5% Chebyshev (MVUE) UCL	11.35475
99% Chebyshev (MVUE) UCL	14.35124

95% Non-parametric UCLs	
CLT UCL	7.034222
Adj-CLT UCL (Adjusted for skewness)	7.029828
Mod-t UCL (Adjusted for skewness)	7.0523
Jackknife UCL	7.052985
Standard Bootstrap UCL	7.028575
Bootstrap-t UCL	7.089101
Hall's Bootstrap UCL	6.998425
Percentile Bootstrap UCL	7.023958
BCA Bootstrap UCL	7.055208
95% Chebyshev (Mean, Sd) UCL	8.573991
97.5% Chebyshev (Mean, Sd) UCL	9.644038
99% Chebyshev (Mean, Sd) UCL	11.74594

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Vanadium

Raw Statistics	
Number of Valid Samples	48
Number of Unique Samples	31
Minimum	0.15
Maximum	50
Mean	12.01125
Median	1.25
Standard Deviation	20.04383
Variance	401.755
Coefficient of Variation	1.668755
Skewness	1.388125

Gamma Statistics	
k hat	0.38337
k star (bias corrected)	0.373298
Theta hat	31.33069
Theta star	32.176
nu hat	36.80354
nu star	35.83665
Approx.Chi Square Value (.05)	23.13499
Adjusted Level of Significance	0.045
Adjusted Chi Square Value	22.81803

Log-transformed Statistics	
Minimum of log data	-1.89712
Maximum of log data	3.912023
Mean of log data	0.757579
Standard Deviation of log data	1.919693
Variance of log data	3.685219

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.561629
Shapiro-Wilk 5% Critical Value	0.947
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	16.86562

Gamma Distribution Test	
A-D Test Statistic	4.92832
A-D 5% Critical Value	0.842081
K-S Test Statistic	0.288602
K-S 5% Critical Value	0.137359
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	18.60571
Adjusted Gamma UCL	18.86416

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.851488
Shapiro-Wilk 5% Critical Value	0.947
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	35.52553
95% Chebyshev (MVUE) UCL	33.31018
97.5% Chebyshev (MVUE) UCL	42.44723
99% Chebyshev (MVUE) UCL	60.39519

95% Non-parametric UCLs	
CLT UCL	16.76994
Adj-CLT UCL (Adjusted for skewness)	17.38931
Mod-t UCL (Adjusted for skewness)	16.96223
Jackknife UCL	16.86562
Standard Bootstrap UCL	16.72675
Bootstrap-t UCL	17.48957
Hall's Bootstrap UCL	16.92534
Percentile Bootstrap UCL	16.93771
BCA Bootstrap UCL	17.63708
95% Chebyshev (Mean, Sd) UCL	24.62188
97.5% Chebyshev (Mean, Sd) UCL	30.07851
99% Chebyshev (Mean, Sd) UCL	40.79701

ON-PROPERTY GROUNDWATER

Data File C:\Documents and Settings\lin\Desktop\Data Variable: 1,2,4-Trichlorobenzene

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	7
Minimum	0.05
Maximum	590
Mean	23.3585
Median	0.425
Standard Deviation	108.4048
Variance	11751.6
Coefficient of Variation	4.640913
Skewness	5.277476

Gamma Statistics	
k hat	0.180459
k star (bias corrected)	0.184635
Theta hat	129.4394
Theta star	126.5115
nu hat	10.82754
nu star	11.07812
Approx.Chi Square Value (.05)	4.625361
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	4.386303

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	6.380123
Mean of log data	-0.9923
Standard Deviation of log data	2.175482
Variance of log data	4.732721

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.231998
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	56.98747

Gamma Distribution Test	
A-D Test Statistic	7.001714
A-D 5% Critical Value	0.90751
K-S Test Statistic	0.472565
K-S 5% Critical Value	0.177917
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	55.94553
Adjusted Gamma UCL	58.99461

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.729029
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	20.84435
95% Chebyshev (MVUE) UCL	10.61424
97.5% Chebyshev (MVUE) UCL	13.83838
99% Chebyshev (MVUE) UCL	20.17157

95% Non-parametric UCLs	
CLT UCL	55.9133
Adj-CLT UCL (Adjusted for skewness)	76.29
Mod-t UCL (Adjusted for skewness)	60.16582
Jackknife UCL	56.98747
Standard Bootstrap UCL	55.04078
Bootstrap-t UCL	2789.236
Hall's Bootstrap UCL	2317.39
Percentile Bootstrap UCL	60.11367
BCA Bootstrap UCL	91.63017
95% Chebyshev (Mean, Sd) UCL	109.6295
97.5% Chebyshev (Mean, Sd) UCL	146.959
99% Chebyshev (Mean, Sd) UCL	220.2856

Data File C:\Documents and Settings\lin\Desktop\Data Variable: 1,2,3-Trichlorobenzene

Raw Statistics	
Number of Valid Samples	15
Number of Unique Samples	7
Minimum	0.05
Maximum	280
Mean	31.488
Median	0.05
Standard Deviation	75.53343
Variance	5705.299
Coefficient of Variation	2.3988
Skewness	2.948396

Gamma Statistics	
k hat	0.180879
k star (bias corrected)	0.189147
Theta hat	174.0837
Theta star	166.4735
nu hat	5.426355
nu star	5.674417
Approx.Chi Square Value (.05)	1.475341
Adjusted Level of Significance	0.03235
Adjusted Chi Square Value	1.229543

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	5.63479
Mean of log data	-0.68258
Standard Deviation of log data	3.31372
Variance of log data	10.98074

RECOMMENDATION

Data are Non-parametric (0.05)

Use Hall's Bootstrap UCL

In case Hall's Bootstrap method yields an erratic, unreasonably large UCL value, use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.494885
Shapiro-Wilk 5% Critical Value	0.881
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	65.83821

Gamma Distribution Test	
A-D Test Statistic	2.201488
A-D 5% Critical Value	0.883351
K-S Test Statistic	0.352301
K-S 5% Critical Value	0.245814
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	121.1083
Adjusted Gamma UCL	145.319

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.714546
Shapiro-Wilk 5% Critical Value	0.881
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	72776.33
95% Chebyshev (MVUE) UCL	150.8104
97.5% Chebyshev (MVUE) UCL	202.4138
99% Chebyshev (MVUE) UCL	303.7787

95% Non-parametric UCLs	
CLT UCL	63.567
Adj-CLT UCL (Adjusted for skewness)	79.43105
Mod-t UCL (Adjusted for skewness)	68.31268
Jackknife UCL	65.83821
Standard Bootstrap UCL	62.42766
Bootstrap-t UCL	119.9019
Hall's Bootstrap UCL	146.8772
Percentile Bootstrap UCL	63.488
BCA Bootstrap UCL	81.59333
95% Chebyshev (Mean, Sd) UCL	116.4981
97.5% Chebyshev (Mean, Sd) UCL	153.282
99% Chebyshev (Mean, Sd) UCL	225.5369

Data File C:\Documents and Settings\lin\Desktop\Data Variable: 1,2-Dichlorobenzene

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	7
Minimum	0.05
Maximum	87
Mean	4.183167
Median	0.435
Standard Deviation	16.49549
Variance	272.1013
Coefficient of Variation	3.943303
Skewness	4.787946

Gamma Statistics	
k hat	0.266752
k star (bias corrected)	0.262299
Theta hat	15.68188
Theta star	15.94811
nu hat	16.0051
nu star	15.73792
Approx.Chi Square Value (.05)	7.776366
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	7.45398

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	4.465908
Mean of log data	-1.20388
Standard Deviation of log data	1.769181
Variance of log data	3.130001

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.272285
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	9.300343

Gamma Distribution Test	
A-D Test Statistic	6.142691
A-D 5% Critical Value	0.868373
K-S Test Statistic	0.443581
K-S 5% Critical Value	0.174807
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	8.465952
Adjusted Gamma UCL	8.832107

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.75019
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	4.521912
95% Chebyshev (MVUE) UCL	3.628833
97.5% Chebyshev (MVUE) UCL	4.647363
99% Chebyshev (MVUE) UCL	6.648067

95% Non-parametric UCLs	
CLT UCL	9.136892
Adj-CLT UCL (Adjusted for skewness)	11.94992
Mod-t UCL (Adjusted for skewness)	9.739119
Jackknife UCL	9.300343
Standard Bootstrap UCL	9.132559
Bootstrap-t UCL	216.9784
Hall's Bootstrap UCL	121.8917
Percentile Bootstrap UCL	9.948833
BCA Bootstrap UCL	14.7515
95% Chebyshev (Mean, Sd) UCL	17.31065
97.5% Chebyshev (Mean, Sd) UCL	22.99092
99% Chebyshev (Mean, Sd) UCL	34.14872

Data File C:\Documents and Settings\lin\Desktop\Data Variable: 1,4-Dichlorobenzene

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	7
Minimum	0.05
Maximum	130
Mean	6.527333
Median	0.8
Standard Deviation	24.8204
Variance	616.0521
Coefficient of Variation	3.802533
Skewness	4.694172

Gamma Statistics	
k hat	0.263978
k star (bias corrected)	0.259802
Theta hat	24.72683
Theta star	25.12424
nu hat	15.83866
nu star	15.58813
Approx.Chi Square Value (.05)	7.671185
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	7.35128

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	4.867534
Mean of log data	-0.79116
Standard Deviation of log data	1.975123
Variance of log data	3.901111

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.282999
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	14.22703

Gamma Distribution Test	
A-D Test Statistic	5.321094
A-D 5% Critical Value	0.869589
K-S Test Statistic	0.445947
K-S 5% Critical Value	0.174906
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	13.26378
Adjusted Gamma UCL	13.84098

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.77562
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	12.87768
95% Chebyshev (MVUE) UCL	8.397228
97.5% Chebyshev (MVUE) UCL	10.86124
99% Chebyshev (MVUE) UCL	15.7013

95% Non-parametric UCLs	
CLT UCL	13.98109
Adj-CLT UCL (Adjusted for skewness)	18.13089
Mod-t UCL (Adjusted for skewness)	14.87432
Jackknife UCL	14.22703
Standard Bootstrap UCL	13.69962
Bootstrap-t UCL	174.6702
Hall's Bootstrap UCL	153.6946
Percentile Bootstrap UCL	15.029
BCA Bootstrap UCL	20.96
95% Chebyshev (Mean, Sd) UCL	26.27996
97.5% Chebyshev (Mean, Sd) UCL	34.82694
99% Chebyshev (Mean, Sd) UCL	51.61582

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Benzene

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	4
Minimum	0.05
Maximum	10
Mean	0.736667
Median	0.65
Standard Deviation	1.790585
Variance	3.206195
Coefficient of Variation	2.430659
Skewness	5.094033

Gamma Statistics	
k hat	0.560559
k star (bias corrected)	0.526725
Theta hat	1.314165
Theta star	1.398579
nu hat	33.63353
nu star	31.60351
Approx.Chi Square Value (.05)	19.75581
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	19.21499

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	2.302585
Mean of log data	-1.4191
Standard Deviation of log data	1.492729
Variance of log data	2.228239

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.334323
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	1.292136

Gamma Distribution Test	
A-D Test Statistic	3.331029
A-D 5% Critical Value	0.803976
K-S Test Statistic	0.292324
K-S 5% Critical Value	0.16848
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	1.178451
Adjusted Gamma UCL	1.211619

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.748644
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1.735931
95% Chebyshev (MVUE) UCL	1.713653
97.5% Chebyshev (MVUE) UCL	2.158241
99% Chebyshev (MVUE) UCL	3.031549

95% Non-parametric UCLs	
CLT UCL	1.274393
Adj-CLT UCL (Adjusted for skewness)	1.599268
Mod-t UCL (Adjusted for skewness)	1.34281
Jackknife UCL	1.292136
Standard Bootstrap UCL	N/R
Bootstrap-t UCL	N/R
Hall's Bootstrap UCL	N/R
Percentile Bootstrap UCL	N/R
BCA Bootstrap UCL	N/R
95% Chebyshev (Mean, Sd) UCL	2.161655
97.5% Chebyshev (Mean, Sd) UCL	2.778248
99% Chebyshev (Mean, Sd) UCL	3.989426

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Chlorobenzene

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	7
Minimum	0.05
Maximum	86
Mean	3.5615
Median	0.365
Standard Deviation	15.63374
Variance	244.4139
Coefficient of Variation	4.389651
Skewness	5.408012

Gamma Statistics	
k hat	0.270501
k star (bias corrected)	0.265673
Theta hat	13.16633
Theta star	13.40559
nu hat	16.23004
nu star	15.94037
Approx.Chi Square Value (.05)	7.918867
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	7.593145

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	4.454347
Mean of log data	-1.32237
Standard Deviation of log data	1.814841
Variance of log data	3.293647

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.233197
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	8.411348

Gamma Distribution Test	
A-D Test Statistic	5.122183
A-D 5% Critical Value	0.86673
K-S Test Statistic	0.415668
K-S 5% Critical Value	0.174673
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	7.169158
Adjusted Gamma UCL	7.476693

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.794124
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	4.594953
95% Chebyshev (MVUE) UCL	3.535942
97.5% Chebyshev (MVUE) UCL	4.53913
99% Chebyshev (MVUE) UCL	6.509698

95% Non-parametric UCLs	
CLT UCL	8.256435
Adj-CLT UCL (Adjusted for skewness)	11.26778
Mod-t UCL (Adjusted for skewness)	8.881056
Jackknife UCL	8.411348
Standard Bootstrap UCL	8.169511
Bootstrap-t UCL	52.68602
Hall's Bootstrap UCL	46.01372
Percentile Bootstrap UCL	9.2465
BCA Bootstrap UCL	12.1805
95% Chebyshev (Mean, Sd) UCL	16.00318
97.5% Chebyshev (Mean, Sd) UCL	21.38671
99% Chebyshev (Mean, Sd) UCL	31.9616

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Chloroform

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	7
Minimum	0.05
Maximum	2.7
Mean	0.4505
Median	0.415
Standard Deviation	0.618084
Variance	0.382028
Coefficient of Variation	1.371996
Skewness	2.504158

Gamma Statistics	
k hat	0.782579
k star (bias corrected)	0.726544
Theta hat	0.575661
Theta star	0.620059
nu hat	46.95475
nu star	43.59261
Approx.Chi Square Value (.05)	29.44955
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	28.77854

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	0.993252
Mean of log data	-1.55799
Standard Deviation of log data	1.298655
Variance of log data	1.686505

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.62746
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.64224

Gamma Distribution Test	
A-D Test Statistic	2.381353
A-D 5% Critical Value	0.786186
K-S Test Statistic	0.246505
K-S 5% Critical Value	0.166095
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.666851
Adjusted Gamma UCL	0.6824

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.804683
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.966062
95% Chebyshev (MVUE) UCL	1.053466
97.5% Chebyshev (MVUE) UCL	1.307545
99% Chebyshev (MVUE) UCL	1.806633

95% Non-parametric UCLs	
CLT UCL	0.636116
Adj-CLT UCL (Adjusted for skewness)	0.691243
Mod-t UCL (Adjusted for skewness)	0.650839
Jackknife UCL	0.64224
Standard Bootstrap UCL	0.629234
Bootstrap-t UCL	0.79463
Hall's Bootstrap UCL	0.757115
Percentile Bootstrap UCL	0.649333
BCA Bootstrap UCL	0.6815
95% Chebyshev (Mean, Sd) UCL	0.942385
97.5% Chebyshev (Mean, Sd) UCL	1.155225
99% Chebyshev (Mean, Sd) UCL	1.573306

Data File C:\Documents and Settings\lin\Desktop\Data Variable: cis-1,2-Dichloroethene

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	13
Minimum	0.05
Maximum	1400
Mean	98.853
Median	0.7
Standard Deviation	299.3104
Variance	89586.74
Coefficient of Variation	3.027834
Skewness	3.748697

Gamma Statistics	
k hat	0.180144
k star (bias corrected)	0.184352
Theta hat	548.7454
Theta star	536.2202
nu hat	10.80862
nu star	11.06109
Approx.Chi Square Value (.05)	4.614393
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	4.375666

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	7.244228
Mean of log data	0.442008
Standard Deviation of log data	3.276799
Variance of log data	10.73741

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.382011
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	191.7041

Gamma Distribution Test	
A-D Test Statistic	2.9563
A-D 5% Critical Value	0.907669
K-S Test Statistic	0.340825
K-S 5% Critical Value	0.177929
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	236.959
Adjusted Gamma UCL	249.887

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.858743
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	12050.97
95% Chebyshev (MVUE) UCL	666.1741
97.5% Chebyshev (MVUE) UCL	890.1427
99% Chebyshev (MVUE) UCL	1330.086

95% Non-parametric UCLs	
CLT UCL	188.7383
Adj-CLT UCL (Adjusted for skewness)	228.7016
Mod-t UCL (Adjusted for skewness)	197.9376
Jackknife UCL	191.7041
Standard Bootstrap UCL	187.7742
Bootstrap-t UCL	570.3117
Hall's Bootstrap UCL	549.8401
Percentile Bootstrap UCL	199.1067
BCA Bootstrap UCL	238.9747
95% Chebyshev (Mean, Sd) UCL	337.051
97.5% Chebyshev (Mean, Sd) UCL	440.1194
99% Chebyshev (Mean, Sd) UCL	642.5774

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Ethylbenzene

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	8
Minimum	0.05
Maximum	3100
Mean	177.76
Median	0.42
Standard Deviation	627.0497
Variance	393191.3
Coefficient of Variation	3.527507
Skewness	4.084899

Gamma Statistics	
k hat	0.13451
k star (bias corrected)	0.143281
Theta hat	1321.536
Theta star	1240.636
nu hat	8.07061
nu star	8.596883
Approx.Chi Square Value (.05)	3.084625
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	2.896621

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	8.039157
Mean of log data	-0.6232
Standard Deviation of log data	3.054192
Variance of log data	9.328088

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.330123
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	372.2813

Gamma Distribution Test	
A-D Test Statistic	6.74802
A-D 5% Critical Value	0.930742
K-S Test Statistic	0.472642
K-S 5% Critical Value	0.179626
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	495.419
Adjusted Gamma UCL	527.574

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.695034
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1308.029
95% Chebyshev (MVUE) UCL	127.8845
97.5% Chebyshev (MVUE) UCL	170.3464
99% Chebyshev (MVUE) UCL	253.7546

95% Non-parametric UCLs	
CLT UCL	366.0679
Adj-CLT UCL (Adjusted for skewness)	457.2989
Mod-t UCL (Adjusted for skewness)	386.5115
Jackknife UCL	372.2813
Standard Bootstrap UCL	356.2881
Bootstrap-t UCL	933.6187
Hall's Bootstrap UCL	1099.869
Percentile Bootstrap UCL	383.6927
BCA Bootstrap UCL	507.5563
95% Chebyshev (Mean, Sd) UCL	676.7802
97.5% Chebyshev (Mean, Sd) UCL	892.7066
99% Chebyshev (Mean, Sd) UCL	1316.852

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Isopropylbenzene

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	4
Minimum	0.05
Maximum	54
Mean	2.546667
Median	0.65
Standard Deviation	9.951269
Variance	99.02775
Coefficient of Variation	3.907566
Skewness	5.127304

Gamma Statistics	
k hat	0.307611
k star (bias corrected)	0.299072
Theta hat	8.27885
Theta star	8.515222
nu hat	18.45667
nu star	17.94434
Approx.Chi Square Value (.05)	9.349276
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	8.991563

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	3.988984
Mean of log data	-1.29775
Standard Deviation of log data	1.771551
Variance of log data	3.138393

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.260002
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	5.633716

Gamma Distribution Test	
A-D Test Statistic	5.07851
A-D 5% Critical Value	0.852101
K-S Test Statistic	0.432516
K-S 5% Critical Value	0.173451
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	4.887891
Adjusted Gamma UCL	5.082347

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.747478
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	4.14527
95% Chebyshev (MVUE) UCL	3.319527
97.5% Chebyshev (MVUE) UCL	4.251774
99% Chebyshev (MVUE) UCL	6.082994

95% Non-parametric UCLs	
CLT UCL	5.53511
Adj-CLT UCL (Adjusted for skewness)	7.352411
Mod-t UCL (Adjusted for skewness)	5.917178
Jackknife UCL	5.633716
Standard Bootstrap UCL	N/R
Bootstrap-t UCL	N/R
Hall's Bootstrap UCL	N/R
Percentile Bootstrap UCL	N/R
BCA Bootstrap UCL	N/R
95% Chebyshev (Mean, Sd) UCL	10.46611
97.5% Chebyshev (Mean, Sd) UCL	13.89286
99% Chebyshev (Mean, Sd) UCL	20.62404

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Tetrachloroethene

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	16
Minimum	0.05
Maximum	4200
Mean	353.0597
Median	0.485
Standard Deviation	968.5429
Variance	938075.3
Coefficient of Variation	2.743284
Skewness	3.437618

Gamma Statistics	
k hat	0.166224
k star (bias corrected)	0.171824
Theta hat	2124.001
Theta star	2054.779
nu hat	9.973431
nu star	10.30942
Approx.Chi Square Value (.05)	4.135204
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	3.911357

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	8.34284
Mean of log data	1.312362
Standard Deviation of log data	3.861441
Variance of log data	14.91073

RECOMMENDATION

Data are Non-parametric (0.05)

Use Hall's Bootstrap UCL

In case Hall's Bootstrap method yields an erratic, unreasonably large UCL value, use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.417635
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	653.5178

Gamma Distribution Test	
A-D Test Statistic	2.318843
A-D 5% Critical Value	0.914707
K-S Test Statistic	0.299233
K-S 5% Critical Value	0.178446
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	880.2083
Adjusted Gamma UCL	930.5826

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.85949
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	881078.3
95% Chebyshev (MVUE) UCL	8027.765
97.5% Chebyshev (MVUE) UCL	10786.83
99% Chebyshev (MVUE) UCL	16206.47

95% Non-parametric UCLs	
CLT UCL	643.9207
Adj-CLT UCL (Adjusted for skewness)	762.5073
Mod-t UCL (Adjusted for skewness)	672.0149
Jackknife UCL	653.5178
Standard Bootstrap UCL	643.3856
Bootstrap-t UCL	1545.816
Hall's Bootstrap UCL	1892.487
Percentile Bootstrap UCL	649.5567
BCA Bootstrap UCL	815.8817
95% Chebyshev (Mean, Sd) UCL	1123.848
97.5% Chebyshev (Mean, Sd) UCL	1457.368
99% Chebyshev (Mean, Sd) UCL	2112.505

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Toluene

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	5
Minimum	0.05
Maximum	630
Mean	25.69667
Median	0.4
Standard Deviation	116.5625
Variance	13586.81
Coefficient of Variation	4.536093
Skewness	5.164028

Gamma Statistics	
k hat	0.164453
k star (bias corrected)	0.17023
Theta hat	156.255
Theta star	150.9524
nu hat	9.867202
nu star	10.21382
Approx.Chi Square Value (.05)	4.07498
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	3.853061

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	6.44572
Mean of log data	-1.36431
Standard Deviation of log data	2.263249
Variance of log data	5.122295

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.240589
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	61.85629

Gamma Distribution Test	
A-D Test Statistic	7.494402
A-D 5% Critical Value	0.915602
K-S Test Statistic	0.496466
K-S 5% Critical Value	0.178512
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	64.40792
Adjusted Gamma UCL	68.11753

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.670036
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	19.78161
95% Chebyshev (MVUE) UCL	8.90847
97.5% Chebyshev (MVUE) UCL	11.64976
99% Chebyshev (MVUE) UCL	17.03448

95% Non-parametric UCLs	
CLT UCL	60.70129
Adj-CLT UCL (Adjusted for skewness)	82.14039
Mod-t UCL (Adjusted for skewness)	65.20036
Jackknife UCL	61.85629
Standard Bootstrap UCL	61.03342
Bootstrap-t UCL	3362.273
Hall's Bootstrap UCL	3327.59
Percentile Bootstrap UCL	67.51667
BCA Bootstrap UCL	97.19
95% Chebyshev (Mean, Sd) UCL	118.4597
97.5% Chebyshev (Mean, Sd) UCL	158.5983
99% Chebyshev (Mean, Sd) UCL	237.4429

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Trichloroethene

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	20
Minimum	0.05
Maximum	2100
Mean	209.3472
Median	0.475
Standard Deviation	532.5757
Variance	283636.9
Coefficient of Variation	2.543983
Skewness	2.9014

Gamma Statistics	
k hat	0.175082
k star (bias corrected)	0.179796
Theta hat	1195.709
Theta star	1164.359
nu hat	10.50492
nu star	10.78776
Approx.Chi Square Value (.05)	4.439006
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	4.205636

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	7.649693
Mean of log data	1.053797
Standard Deviation of log data	3.426546
Variance of log data	11.74122

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.457941
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	374.561

Gamma Distribution Test	
A-D Test Statistic	2.787701
A-D 5% Critical Value	0.910229
K-S Test Statistic	0.258981
K-S 5% Critical Value	0.178117
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	508.7596
Adjusted Gamma UCL	536.9906

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.887177
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	50600.8
95% Chebyshev (MVUE) UCL	1838.935
97.5% Chebyshev (MVUE) UCL	2461.497
99% Chebyshev (MVUE) UCL	3684.4

95% Non-parametric UCLs	
CLT UCL	369.2838
Adj-CLT UCL (Adjusted for skewness)	424.32
Mod-t UCL (Adjusted for skewness)	383.1456
Jackknife UCL	374.561
Standard Bootstrap UCL	361.4833
Bootstrap-t UCL	597.4065
Hall's Bootstrap UCL	477.4281
Percentile Bootstrap UCL	370.8357
BCA Bootstrap UCL	413.862
95% Chebyshev (Mean, Sd) UCL	633.1828
97.5% Chebyshev (Mean, Sd) UCL	816.5769
99% Chebyshev (Mean, Sd) UCL	1176.819

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Vinyl Chloride

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	3
Minimum	0.05
Maximum	6.6
Mean	0.403333
Median	0.32
Standard Deviation	1.178115
Variance	1.387954
Coefficient of Variation	2.920945
Skewness	5.36207

Gamma Statistics	
k hat	0.617264
k star (bias corrected)	0.577759
Theta hat	0.653422
Theta star	0.698099
nu hat	37.03581
nu star	34.66556
Approx.Chi Square Value (.05)	22.19479
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	21.61869

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	1.88707
Mean of log data	-1.90482
Standard Deviation of log data	1.171897
Variance of log data	1.373342

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.263647
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.768804

Gamma Distribution Test	
A-D Test Statistic	4.337373
A-D 5% Critical Value	0.799131
K-S Test Statistic	0.364205
K-S 5% Critical Value	0.167824
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.629958
Adjusted Gamma UCL	0.646745

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.709818
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.526667
95% Chebyshev (MVUE) UCL	0.601553
97.5% Chebyshev (MVUE) UCL	0.738437
99% Chebyshev (MVUE) UCL	1.007318

95% Non-parametric UCLs	
CLT UCL	0.75713
Adj-CLT UCL (Adjusted for skewness)	0.982129
Mod-t UCL (Adjusted for skewness)	0.803899
Jackknife UCL	0.768804
Standard Bootstrap UCL	N/R
Bootstrap-t UCL	N/R
Hall's Bootstrap UCL	N/R
Percentile Bootstrap UCL	N/R
BCA Bootstrap UCL	N/R
95% Chebyshev (Mean, Sd) UCL	1.340903
97.5% Chebyshev (Mean, Sd) UCL	1.746591
99% Chebyshev (Mean, Sd) UCL	2.543485

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Xylenes (total)

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	12
Minimum	0.05
Maximum	90000
Mean	7103.227
Median	0.345
Standard Deviation	21501.67
Variance	4.62E+08
Coefficient of Variation	3.027028
Skewness	3.262451

Gamma Statistics	
k hat	0.096052
k star (bias corrected)	0.108669
Theta hat	73951.82
Theta star	65365.65
nu hat	5.763126
nu star	6.520147
Approx.Chi Square Value (.05)	1.910649
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	1.770562

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	11.40756
Mean of log data	0.370724
Standard Deviation of log data	4.49205
Variance of log data	20.17852

RECOMMENDATION

Data are Non-parametric (0.05)

Use Hall's Bootstrap UCL

In case Hall's Bootstrap method yields an erratic, unreasonably large UCL value, use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.383777
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	13773.4

Gamma Distribution Test	
A-D Test Statistic	6.173559
A-D 5% Critical Value	0.975834
K-S Test Statistic	0.391603
K-S 5% Critical Value	0.182709
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	24239.97
Adjusted Gamma UCL	26157.84

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.705491
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	25823885
95% Chebyshev (MVUE) UCL	20272.55
97.5% Chebyshev (MVUE) UCL	27328.55
99% Chebyshev (MVUE) UCL	41188.7

95% Non-parametric UCLs	
CLT UCL	13560.35
Adj-CLT UCL (Adjusted for skewness)	16058.82
Mod-t UCL (Adjusted for skewness)	14163.11
Jackknife UCL	13773.4
Standard Bootstrap UCL	13312.76
Bootstrap-t UCL	24908.03
Hall's Bootstrap UCL	18406.94
Percentile Bootstrap UCL	13935.44
BCA Bootstrap UCL	16400.43
95% Chebyshev (Mean, Sd) UCL	24214.74
97.5% Chebyshev (Mean, Sd) UCL	31618.9
99% Chebyshev (Mean, Sd) UCL	46162.95

C:\Documents and Settings\lin\Desktop\Data for ProUCL.xls
Variable: Xylenes (total)

Raw Statistics
Normal Distribution Test
Number of Valid Samples
48
Shapiro-Wilk Test Statisitic
0.295506026 8
Number of Unique Samples
14
Shapiro-Wilk 5%

Data File C:\Documents and Settings\lin\Desktop\Data Variable: 2,4-Dimethylphenol

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	8
Minimum	0.85
Maximum	300
Mean	11.945
Median	0.95
Standard Deviation	54.51617
Variance	2972.013
Coefficient of Variation	4.563932
Skewness	5.44226

Gamma Statistics	
k hat	0.322088
k star (bias corrected)	0.312102
Theta hat	37.08612
Theta star	38.2728
nu hat	19.32529
nu star	18.72609
Approx.Chi Square Value (.05)	9.916216
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	9.546491

Log-transformed Statistics	
Minimum of log data	-0.16252
Maximum of log data	5.703782
Mean of log data	0.364077
Standard Deviation of log data	1.254348
Variance of log data	1.573389

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.213514
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	28.85683

Gamma Distribution Test	
A-D Test Statistic	9.233799
A-D 5% Critical Value	0.848869
K-S Test Statistic	0.519755
K-S 5% Critical Value	0.17313
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	22.55731
Adjusted Gamma UCL	23.43093

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.4419
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	6.013268
95% Chebyshev (MVUE) UCL	6.674319
97.5% Chebyshev (MVUE) UCL	8.253328
99% Chebyshev (MVUE) UCL	11.35498

95% Non-parametric UCLs	
CLT UCL	28.31663
Adj-CLT UCL (Adjusted for skewness)	38.88393
Mod-t UCL (Adjusted for skewness)	30.50511
Jackknife UCL	28.85683
Standard Bootstrap UCL	28.25907
Bootstrap-t UCL	253.5637
Hall's Bootstrap UCL	254.4965
Percentile Bootstrap UCL	31.585
BCA Bootstrap UCL	42.73833
95% Chebyshev (Mean, Sd) UCL	55.33019
97.5% Chebyshev (Mean, Sd) UCL	74.103
99% Chebyshev (Mean, Sd) UCL	110.9785

Data File C:\Documents and Settings\lin\Desktop\Data Variable: 2-Methylnaphthalene

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	6
Minimum	0.85
Maximum	10
Mean	1.51
Median	0.95
Standard Deviation	2.176378
Variance	4.736621
Coefficient of Variation	1.44131
Skewness	3.68014

Gamma Statistics	
k hat	1.701567
k star (bias corrected)	1.553632
Theta hat	0.887418
Theta star	0.971916
nu hat	102.094
nu star	93.21793
Approx.Chi Square Value (.05)	71.94785
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	70.87055

Log-transformed Statistics	
Minimum of log data	-0.16252
Maximum of log data	2.302585
Mean of log data	0.09035
Standard Deviation of log data	0.589292
Variance of log data	0.347265

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.300671
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	2.185149

Gamma Distribution Test	
A-D Test Statistic	9.509678
A-D 5% Critical Value	0.761192
K-S Test Statistic	0.527244
K-S 5% Critical Value	0.162576
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	1.956404
Adjusted Gamma UCL	1.986143

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.353434
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1.622105
95% Chebyshev (MVUE) UCL	1.936251
97.5% Chebyshev (MVUE) UCL	2.2144
99% Chebyshev (MVUE) UCL	2.76077

95% Non-parametric UCLs	
CLT UCL	2.163583
Adj-CLT UCL (Adjusted for skewness)	2.448854
Mod-t UCL (Adjusted for skewness)	2.229645
Jackknife UCL	2.185149
Standard Bootstrap UCL	2.156422
Bootstrap-t UCL	29.23093
Hall's Bootstrap UCL	12.57741
Percentile Bootstrap UCL	2.271667
BCA Bootstrap UCL	2.415
95% Chebyshev (Mean, Sd) UCL	3.24201
97.5% Chebyshev (Mean, Sd) UCL	3.991453
99% Chebyshev (Mean, Sd) UCL	5.463587

Data File C:\Documents and Settings\lin\Desktop\Data Variable: 4-Methylphenol

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	8
Minimum	1.05
Maximum	1100
Mean	42.32833
Median	1.15
Standard Deviation	200.4028
Variance	40161.3
Coefficient of Variation	4.734485
Skewness	5.423103

Gamma Statistics	
k hat	0.236643
k star (bias corrected)	0.235201
Theta hat	178.8699
Theta star	179.9666
nu hat	14.19859
nu star	14.11206
Approx.Chi Square Value (.05)	6.646996
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	6.352174

Log-transformed Statistics	
Minimum of log data	0.04879
Maximum of log data	7.003065
Mean of log data	0.717321
Standard Deviation of log data	1.614063
Variance of log data	2.6052

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.218621
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	104.4966

Gamma Distribution Test	
A-D Test Statistic	9.134172
A-D 5% Critical Value	0.881569
K-S Test Statistic	0.52734
K-S 5% Critical Value	0.175882
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	89.86617
Adjusted Gamma UCL	94.03711

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.452347
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	20.05198
95% Chebyshev (MVUE) UCL	18.25395
97.5% Chebyshev (MVUE) UCL	23.17152
99% Chebyshev (MVUE) UCL	32.83114

95% Non-parametric UCLs	
CLT UCL	102.5109
Adj-CLT UCL (Adjusted for skewness)	141.2198
Mod-t UCL (Adjusted for skewness)	110.5344
Jackknife UCL	104.4966
Standard Bootstrap UCL	102.2962
Bootstrap-t UCL	1795.451
Hall's Bootstrap UCL	998.1592
Percentile Bootstrap UCL	115.1083
BCA Bootstrap UCL	160.7933
95% Chebyshev (Mean, Sd) UCL	201.8134
97.5% Chebyshev (Mean, Sd) UCL	270.8227
99% Chebyshev (Mean, Sd) UCL	406.3782

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Naphthalene

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	7
Minimum	0.85
Maximum	17
Mean	1.845
Median	0.95
Standard Deviation	3.310077
Variance	10.95661
Coefficient of Variation	1.79408
Skewness	4.078312

Gamma Statistics	
k hat	1.243959
k star (bias corrected)	1.141785
Theta hat	1.483168
Theta star	1.61589
nu hat	74.63754
nu star	68.50712
Approx.Chi Square Value (.05)	50.45234
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	49.55859

Log-transformed Statistics	
Minimum of log data	-0.16252
Maximum of log data	2.833213
Mean of log data	0.159469
Standard Deviation of log data	0.68758
Variance of log data	0.472767

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.325293
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	2.871841

Gamma Distribution Test	
A-D Test Statistic	8.287059
A-D 5% Critical Value	0.769405
K-S Test Statistic	0.486856
K-S 5% Critical Value	0.163853
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	2.505248
Adjusted Gamma UCL	2.550429

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.44465
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1.942203
95% Chebyshev (MVUE) UCL	2.340397
97.5% Chebyshev (MVUE) UCL	2.716345
99% Chebyshev (MVUE) UCL	3.454824

95% Non-parametric UCLs	
CLT UCL	2.839042
Adj-CLT UCL (Adjusted for skewness)	3.319857
Mod-t UCL (Adjusted for skewness)	2.946839
Jackknife UCL	2.871841
Standard Bootstrap UCL	2.833875
Bootstrap-t UCL	11.9821
Hall's Bootstrap UCL	10.92414
Percentile Bootstrap UCL	2.945
BCA Bootstrap UCL	3.55
95% Chebyshev (Mean, Sd) UCL	4.479234
97.5% Chebyshev (Mean, Sd) UCL	5.619069
99% Chebyshev (Mean, Sd) UCL	7.858054

Data File C:\Documents and Settings\lin\Desktop\Data Variable: delta-BHC

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	9
Minimum	0.00445
Maximum	0.021
Mean	0.005643
Median	0.00475
Standard Deviation	0.003358
Variance	1.13E-05
Coefficient of Variation	0.595116
Skewness	4.081729

Gamma Statistics	
k hat	6.521172
k star (bias corrected)	5.891277
Theta hat	0.000865
Theta star	0.000958
nu hat	391.2703
nu star	353.4766
Approx.Chi Square Value (.05)	310.8998
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	308.6027

Log-transformed Statistics	
Minimum of log data	-5.41485
Maximum of log data	-3.86323
Mean of log data	-5.25591
Standard Deviation of log data	0.330772
Variance of log data	0.10941

RECOMMENDATION

Data are Non-parametric (0.05)

Use Student's-t UCL
or Modified-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.336749
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.006685

Gamma Distribution Test	
A-D Test Statistic	8.097059
A-D 5% Critical Value	0.746186
K-S Test Statistic	0.467784
K-S 5% Critical Value	0.160204
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.006416
Adjusted Gamma UCL	0.006464

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.401776
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.00616
95% Chebyshev (MVUE) UCL	0.006976
97.5% Chebyshev (MVUE) UCL	0.007615
99% Chebyshev (MVUE) UCL	0.00887

95% Non-parametric UCLs	
CLT UCL	0.006652
Adj-CLT UCL (Adjusted for skewness)	0.00714
Mod-t UCL (Adjusted for skewness)	0.006761
Jackknife UCL	0.006685
Standard Bootstrap UCL	0.006637
Bootstrap-t UCL	0.01977
Hall's Bootstrap UCL	0.012535
Percentile Bootstrap UCL	0.006737
BCA Bootstrap UCL	0.007267
95% Chebyshev (Mean, Sd) UCL	0.008316
97.5% Chebyshev (Mean, Sd) UCL	0.009473
99% Chebyshev (Mean, Sd) UCL	0.011744

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Endosulfan sulfate

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	6
Minimum	0.009
Maximum	0.078
Mean	0.012933
Median	0.0095
Standard Deviation	0.01341
Variance	0.00018
Coefficient of Variation	1.036891
Skewness	4.475685

Gamma Statistics	
k hat	3.015557
k star (bias corrected)	2.736224
Theta hat	0.004289
Theta star	0.004727
nu hat	180.9334
nu star	164.1734
Approx.Chi Square Value (.05)	135.542
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	134.0437

Log-transformed Statistics	
Minimum of log data	-4.71053
Maximum of log data	-2.55105
Mean of log data	-4.52282
Standard Deviation of log data	0.453334
Variance of log data	0.205511

RECOMMENDATION

Data are Non-parametric (0.05)

Use Student's-t UCL
or Modified-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.300082
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.017093

Gamma Distribution Test	
A-D Test Statistic	8.787815
A-D 5% Critical Value	0.752404
K-S Test Statistic	0.494336
K-S 5% Critical Value	0.161143
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.015665
Adjusted Gamma UCL	0.01584

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.373343
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.014119
95% Chebyshev (MVUE) UCL	0.016472
97.5% Chebyshev (MVUE) UCL	0.018412
99% Chebyshev (MVUE) UCL	0.022222

95% Non-parametric UCLs	
CLT UCL	0.016961
Adj-CLT UCL (Adjusted for skewness)	0.019098
Mod-t UCL (Adjusted for skewness)	0.017427
Jackknife UCL	0.017093
Standard Bootstrap UCL	0.016893
Bootstrap-t UCL	0.112036
Hall's Bootstrap UCL	0.048036
Percentile Bootstrap UCL	0.01745
BCA Bootstrap UCL	0.020683
95% Chebyshev (Mean, Sd) UCL	0.023606
97.5% Chebyshev (Mean, Sd) UCL	0.028224
99% Chebyshev (Mean, Sd) UCL	0.037295

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Antimony

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	3
Minimum	0.6
Maximum	7.5
Mean	1.055
Median	1.05
Standard Deviation	1.237862
Variance	1.532302
Coefficient of Variation	1.173329
Skewness	5.188872

Gamma Statistics	
k hat	2.650243
k star (bias corrected)	2.407441
Theta hat	0.398077
Theta star	0.438225
nu hat	159.0146
nu star	144.4465
Approx.Chi Square Value (.05)	117.6661
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	116.2738

Log-transformed Statistics	
Minimum of log data	-0.51083
Maximum of log data	2.014903
Mean of log data	-0.14683
Standard Deviation of log data	0.49487
Variance of log data	0.244896

RECOMMENDATION

Data are Non-parametric (0.05)

Use Student's-t UCL
or Modified-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.311526
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	1.439005

Gamma Distribution Test	
A-D Test Statistic	4.87327
A-D 5% Critical Value	0.754556
K-S Test Statistic	0.387948
K-S 5% Critical Value	0.161496
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	1.295114
Adjusted Gamma UCL	1.310622

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.592395
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1.165313
95% Chebyshev (MVUE) UCL	1.370626
97.5% Chebyshev (MVUE) UCL	1.543326
99% Chebyshev (MVUE) UCL	1.882561

95% Non-parametric UCLs	
CLT UCL	1.42674
Adj-CLT UCL (Adjusted for skewness)	1.655512
Mod-t UCL (Adjusted for skewness)	1.474689
Jackknife UCL	1.439005
Standard Bootstrap UCL	N/R
Bootstrap-t UCL	N/R
Hall's Bootstrap UCL	N/R
Percentile Bootstrap UCL	N/R
BCA Bootstrap UCL	N/R
95% Chebyshev (Mean, Sd) UCL	2.040118
97.5% Chebyshev (Mean, Sd) UCL	2.46638
99% Chebyshev (Mean, Sd) UCL	3.303688

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Arsenic

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	5
Minimum	0.7
Maximum	3.3
Mean	1.05
Median	1.05
Standard Deviation	0.581318
Variance	0.337931
Coefficient of Variation	0.553637
Skewness	2.933916

Gamma Statistics	
k hat	5.717821
k star (bias corrected)	5.168261
Theta hat	0.183636
Theta star	0.203163
nu hat	343.0692
nu star	310.0956
Approx.Chi Square Value (.05)	270.2928
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	268.1547

Log-transformed Statistics	
Minimum of log data	-0.35667
Maximum of log data	1.193922
Mean of log data	-0.0412
Standard Deviation of log data	0.386398
Variance of log data	0.149303

RECOMMENDATION

Data are Non-parametric (0.05)

Use Student's-t UCL
or Modified-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.566577
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	1.230335

Gamma Distribution Test	
A-D Test Statistic	3.587648
A-D 5% Critical Value	0.746346
K-S Test Statistic	0.344355
K-S 5% Critical Value	0.16026
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	1.204621
Adjusted Gamma UCL	1.214226

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.712135
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1.180933
95% Chebyshev (MVUE) UCL	1.356939
97.5% Chebyshev (MVUE) UCL	1.497853
99% Chebyshev (MVUE) UCL	1.774651

95% Non-parametric UCLs	
CLT UCL	1.224574
Adj-CLT UCL (Adjusted for skewness)	1.285321
Mod-t UCL (Adjusted for skewness)	1.23981
Jackknife UCL	1.230335
Standard Bootstrap UCL	1.216869
Bootstrap-t UCL	1.424821
Hall's Bootstrap UCL	2.105663
Percentile Bootstrap UCL	1.238333
BCA Bootstrap UCL	1.29
95% Chebyshev (Mean, Sd) UCL	1.512626
97.5% Chebyshev (Mean, Sd) UCL	1.712805
99% Chebyshev (Mean, Sd) UCL	2.106017

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Cadmium

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	19
Minimum	0.1
Maximum	102
Mean	9.065833
Median	0.3825
Standard Deviation	24.81768
Variance	615.9171
Coefficient of Variation	2.737495
Skewness	3.48374

Gamma Statistics	
k hat	0.284417
k star (bias corrected)	0.278198
Theta hat	31.87512
Theta star	32.58774
nu hat	17.06503
nu star	16.69186
Approx.Chi Square Value (.05)	8.45118
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	8.113247

Log-transformed Statistics	
Minimum of log data	-2.30259
Maximum of log data	4.624973
Mean of log data	-0.24115
Standard Deviation of log data	2.189963
Variance of log data	4.795937

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.39672
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	16.76469

Gamma Distribution Test	
A-D Test Statistic	3.020919
A-D 5% Critical Value	0.86063
K-S Test Statistic	0.264623
K-S 5% Critical Value	0.174176
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	17.90586
Adjusted Gamma UCL	18.65167

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.846473
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	46.53075
95% Chebyshev (MVUE) UCL	23.23306
97.5% Chebyshev (MVUE) UCL	30.30593
99% Chebyshev (MVUE) UCL	44.19922

95% Non-parametric UCLs	
CLT UCL	16.51878
Adj-CLT UCL (Adjusted for skewness)	19.59818
Mod-t UCL (Adjusted for skewness)	17.24501
Jackknife UCL	16.76469
Standard Bootstrap UCL	16.19434
Bootstrap-t UCL	47.18121
Hall's Bootstrap UCL	53.33555
Percentile Bootstrap UCL	16.938
BCA Bootstrap UCL	21.13433
95% Chebyshev (Mean, Sd) UCL	28.8163
97.5% Chebyshev (Mean, Sd) UCL	37.36234
99% Chebyshev (Mean, Sd) UCL	54.14938

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Calcium

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	27
Minimum	1340
Maximum	15600
Mean	4983
Median	4240
Standard Deviation	3368.042
Variance	11343706
Coefficient of Variation	0.675906
Skewness	1.302267

Gamma Statistics	
k hat	2.476986
k star (bias corrected)	2.25151
Theta hat	2011.719
Theta star	2213.182
nu hat	148.6192
nu star	135.0906
Approx.Chi Square Value (.05)	109.2325
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	107.8929

Log-transformed Statistics	
Minimum of log data	7.200425
Maximum of log data	9.655026
Mean of log data	8.298553
Standard Deviation of log data	0.680868
Variance of log data	0.463581

RECOMMENDATION

Data follow gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.873377
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	6027.823

Gamma Distribution Test	
A-D Test Statistic	0.487286
A-D 5% Critical Value	0.755599
K-S Test Statistic	0.126627
K-S 5% Critical Value	0.161668
Data follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	6162.6
Adjusted Gamma UCL	6239.115

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.949339
Shapiro-Wilk 5% Critical Value	0.927
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	6600.34
95% Chebyshev (MVUE) UCL	7950.004
97.5% Chebyshev (MVUE) UCL	9218.164
99% Chebyshev (MVUE) UCL	11709.22

95% Non-parametric UCLs	
CLT UCL	5994.449
Adj-CLT UCL (Adjusted for skewness)	6150.669
Mod-t UCL (Adjusted for skewness)	6052.19
Jackknife UCL	6027.823
Standard Bootstrap UCL	5994.513
Bootstrap-t UCL	6321.507
Hall's Bootstrap UCL	6300.917
Percentile Bootstrap UCL	5947
BCA Bootstrap UCL	6164
95% Chebyshev (Mean, Sd) UCL	7663.363
97.5% Chebyshev (Mean, Sd) UCL	8823.159
99% Chebyshev (Mean, Sd) UCL	11101.35

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Chromium

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	28
Minimum	0.2
Maximum	28.2
Mean	3.642333
Median	1.75
Standard Deviation	5.661557
Variance	32.05323
Coefficient of Variation	1.554376
Skewness	3.422704

Gamma Statistics	
k hat	0.864201
k star (bias corrected)	0.800003
Theta hat	4.214685
Theta star	4.552901
nu hat	51.85204
nu star	48.00017
Approx.Chi Square Value (.05)	33.09554
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	32.38124

Log-transformed Statistics	
Minimum of log data	-1.60944
Maximum of log data	3.339322
Mean of log data	0.612693
Standard Deviation of log data	1.161961
Variance of log data	1.350154

RECOMMENDATION

Assuming gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.566009
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	5.398643

Gamma Distribution Test	
A-D Test Statistic	0.870018
A-D 5% Critical Value	0.782167
K-S Test Statistic	0.142818
K-S 5% Critical Value	0.165605
Data follow approximate gamma distibution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	5.282664
Adjusted Gamma UCL	5.399195

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.979852
Shapiro-Wilk 5% Critical Value	0.927
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	6.4048
95% Chebyshev (MVUE) UCL	7.337638
97.5% Chebyshev (MVUE) UCL	8.999028
99% Chebyshev (MVUE) UCL	12.26251

95% Non-parametric UCLs	
CLT UCL	5.342543
Adj-CLT UCL (Adjusted for skewness)	6.032726
Mod-t UCL (Adjusted for skewness)	5.506297
Jackknife UCL	5.398643
Standard Bootstrap UCL	5.353468
Bootstrap-t UCL	8.042739
Hall's Bootstrap UCL	13.50193
Percentile Bootstrap UCL	5.404
BCA Bootstrap UCL	6.211
95% Chebyshev (Mean, Sd) UCL	8.147927
97.5% Chebyshev (Mean, Sd) UCL	10.0975
99% Chebyshev (Mean, Sd) UCL	13.92706

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Iron

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	30
Minimum	4.5
Maximum	55700
Mean	3975.067
Median	707
Standard Deviation	10591.73
Variance	1.12E+08
Coefficient of Variation	2.664541
Skewness	4.373735

Gamma Statistics	
k hat	0.388548
k star (bias corrected)	0.371915
Theta hat	10230.57
Theta star	10688.1
nu hat	23.31287
nu star	22.31492
Approx.Chi Square Value (.05)	12.57303
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	12.15102

Log-transformed Statistics	
Minimum of log data	1.504077
Maximum of log data	10.92774
Mean of log data	6.586258
Standard Deviation of log data	1.89644
Variance of log data	3.596485

RECOMMENDATION
Data are lognormal (0.05)

Use 95% Chebyshev (MVUE) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.400231
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	7260.797

Gamma Distribution Test	
A-D Test Statistic	1.987899
A-D 5% Critical Value	0.834032
K-S Test Statistic	0.245351
K-S 5% Critical Value	0.171654
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	7055.047
Adjusted Gamma UCL	7300.068

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.974155
Shapiro-Wilk 5% Critical Value	0.927
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	16034.44
95% Chebyshev (MVUE) UCL	11382.3
97.5% Chebyshev (MVUE) UCL	14669.9
99% Chebyshev (MVUE) UCL	21127.76

95% Non-parametric UCLs	
CLT UCL	7155.845
Adj-CLT UCL (Adjusted for skewness)	8805.824
Mod-t UCL (Adjusted for skewness)	7518.161
Jackknife UCL	7260.797
Standard Bootstrap UCL	7091.459
Bootstrap-t UCL	13096.22
Hall's Bootstrap UCL	16620.16
Percentile Bootstrap UCL	7311.113
BCA Bootstrap UCL	9604.84
95% Chebyshev (Mean, Sd) UCL	12404.2
97.5% Chebyshev (Mean, Sd) UCL	16051.49
99% Chebyshev (Mean, Sd) UCL	23215.9

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Magnesium

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	30
Minimum	222
Maximum	4010
Mean	1127.567
Median	888
Standard Deviation	882.733
Variance	779217.6
Coefficient of Variation	0.782866
Skewness	2.066544

Gamma Statistics	
k hat	2.258669
k star (bias corrected)	2.055025
Theta hat	499.2172
Theta star	548.6877
nu hat	135.5202
nu star	123.3015
Approx.Chi Square Value (.05)	98.65247
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	97.38203

Log-transformed Statistics	
Minimum of log data	5.402677
Maximum of log data	8.296547
Mean of log data	6.790408
Standard Deviation of log data	0.696165
Variance of log data	0.484645

RECOMMENDATION

Data follow gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.781127
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	1401.405

Gamma Distribution Test	
A-D Test Statistic	0.414041
A-D 5% Critical Value	0.756913
K-S Test Statistic	0.10952
K-S 5% Critical Value	0.161884
Data follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	1409.297
Adjusted Gamma UCL	1427.683

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.980588
Shapiro-Wilk 5% Critical Value	0.927
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1487.913
95% Chebyshev (MVUE) UCL	1793.911
97.5% Chebyshev (MVUE) UCL	2084.624
99% Chebyshev (MVUE) UCL	2655.673

95% Non-parametric UCLs	
CLT UCL	1392.658
Adj-CLT UCL (Adjusted for skewness)	1457.631
Mod-t UCL (Adjusted for skewness)	1411.54
Jackknife UCL	1401.405
Standard Bootstrap UCL	1390.499
Bootstrap-t UCL	1497.099
Hall's Bootstrap UCL	1706.135
Percentile Bootstrap UCL	1415.367
BCA Bootstrap UCL	1454.833
95% Chebyshev (Mean, Sd) UCL	1830.065
97.5% Chebyshev (Mean, Sd) UCL	2134.037
99% Chebyshev (Mean, Sd) UCL	2731.131

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Manganese

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	28
Minimum	0.05
Maximum	229
Mean	62.25167
Median	21.95
Standard Deviation	68.70932
Variance	4720.97
Coefficient of Variation	1.103735
Skewness	1.188618

Gamma Statistics	
k hat	0.738167
k star (bias corrected)	0.686573
Theta hat	84.33277
Theta star	90.6702
nu hat	44.29002
nu star	41.19435
Approx.Chi Square Value (.05)	27.48205
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	26.83552

Log-transformed Statistics	
Minimum of log data	-2.99573
Maximum of log data	5.433722
Mean of log data	3.318455
Standard Deviation of log data	1.671893
Variance of log data	2.795227

RECOMMENDATION

Data follow gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.792519
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	83.56644

Gamma Distribution Test	
A-D Test Statistic	0.753334
A-D 5% Critical Value	0.788801
K-S Test Statistic	0.164726
K-S 5% Critical Value	0.166427
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	93.31242
Adjusted Gamma UCL	95.56055

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.845441
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	316.0285
95% Chebyshev (MVUE) UCL	275.3083
97.5% Chebyshev (MVUE) UCL	350.6835
99% Chebyshev (MVUE) UCL	498.7434

95% Non-parametric UCLs	
CLT UCL	82.88561
Adj-CLT UCL (Adjusted for skewness)	85.79443
Mod-t UCL (Adjusted for skewness)	84.02016
Jackknife UCL	83.56644
Standard Bootstrap UCL	82.29814
Bootstrap-t UCL	88.66784
Hall's Bootstrap UCL	84.65326
Percentile Bootstrap UCL	84.40333
BCA Bootstrap UCL	85.54667
95% Chebyshev (Mean, Sd) UCL	116.9321
97.5% Chebyshev (Mean, Sd) UCL	140.5923
99% Chebyshev (Mean, Sd) UCL	187.0683

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Nickel

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	27
Minimum	0.45
Maximum	26.1
Mean	8.255
Median	4.8
Standard Deviation	8.353188
Variance	69.77575
Coefficient of Variation	1.011894
Skewness	0.999799

Gamma Statistics	
k hat	0.971607
k star (bias corrected)	0.896669
Theta hat	8.496233
Theta star	9.2063
nu hat	58.29643
nu star	53.80012
Approx.Chi Square Value (.05)	37.94524
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	37.17686

Log-transformed Statistics	
Minimum of log data	-0.79851
Maximum of log data	3.261935
Mean of log data	1.514708
Standard Deviation of log data	1.198258
Variance of log data	1.435823

RECOMMENDATION

Assuming gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.800129
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	10.8463

Gamma Distribution Test	
A-D Test Statistic	0.786853
A-D 5% Critical Value	0.776878
K-S Test Statistic	0.141374
K-S 5% Critical Value	0.16496
Data follow approximate gamma distibution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	11.70423
Adjusted Gamma UCL	11.94614

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.940367
Shapiro-Wilk 5% Critical Value	0.927
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	16.95034
95% Chebyshev (MVUE) UCL	19.1973
97.5% Chebyshev (MVUE) UCL	23.62235
99% Chebyshev (MVUE) UCL	32.31451

95% Non-parametric UCLs	
CLT UCL	10.76353
Adj-CLT UCL (Adjusted for skewness)	11.06098
Mod-t UCL (Adjusted for skewness)	10.8927
Jackknife UCL	10.8463
Standard Bootstrap UCL	10.71907
Bootstrap-t UCL	11.41703
Hall's Bootstrap UCL	10.86615
Percentile Bootstrap UCL	10.76333
BCA Bootstrap UCL	11.25667
95% Chebyshev (Mean, Sd) UCL	14.90265
97.5% Chebyshev (Mean, Sd) UCL	17.7791
99% Chebyshev (Mean, Sd) UCL	23.42932

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Potassium

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	30
Minimum	199
Maximum	8260
Mean	1246.817
Median	862.75
Standard Deviation	1470.114
Variance	2161235
Coefficient of Variation	1.179094
Skewness	4.014152

Gamma Statistics	
k hat	1.680796
k star (bias corrected)	1.534938
Theta hat	741.8014
Theta star	812.291
nu hat	100.8477
nu star	92.0963
Approx.Chi Square Value (.05)	70.96211
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	69.89257

Log-transformed Statistics	
Minimum of log data	5.293305
Maximum of log data	9.01918
Mean of log data	6.802284
Standard Deviation of log data	0.745011
Variance of log data	0.555041

RECOMMENDATION

Data are lognormal (0.05)

Use H-UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.553584
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	1702.87

Gamma Distribution Test	
A-D Test Statistic	1.096497
A-D 5% Critical Value	0.761381
K-S Test Statistic	0.176216
K-S 5% Critical Value	0.162606
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	1618.148
Adjusted Gamma UCL	1642.91

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.964904
Shapiro-Wilk 5% Critical Value	0.927
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1600.423
95% Chebyshev (MVUE) UCL	1933.642
97.5% Chebyshev (MVUE) UCL	2262.285
99% Chebyshev (MVUE) UCL	2907.839

95% Non-parametric UCLs	
CLT UCL	1688.303
Adj-CLT UCL (Adjusted for skewness)	1898.489
Mod-t UCL (Adjusted for skewness)	1735.655
Jackknife UCL	1702.87
Standard Bootstrap UCL	1685.979
Bootstrap-t UCL	2319.263
Hall's Bootstrap UCL	3417.906
Percentile Bootstrap UCL	1722.933
BCA Bootstrap UCL	2004.3
95% Chebyshev (Mean, Sd) UCL	2416.766
97.5% Chebyshev (Mean, Sd) UCL	2923.004
99% Chebyshev (Mean, Sd) UCL	3917.411

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Sodium

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	29
Minimum	23.1
Maximum	69300
Mean	6406.77
Median	2390
Standard Deviation	12678.15
Variance	1.61E+08
Coefficient of Variation	1.978868
Skewness	4.56552

Gamma Statistics	
k hat	0.786682
k star (bias corrected)	0.730236
Theta hat	8144.042
Theta star	8773.562
nu hat	47.20091
nu star	43.81415
Approx.Chi Square Value (.05)	29.63191
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	28.95867

Log-transformed Statistics	
Minimum of log data	3.139833
Maximum of log data	11.1462
Mean of log data	8.00901
Standard Deviation of log data	1.297121
Variance of log data	1.682523

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.418936
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	10339.74

Gamma Distribution Test	
A-D Test Statistic	2.033805
A-D 5% Critical Value	0.785984
K-S Test Statistic	0.189274
K-S 5% Critical Value	0.16607
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	9473.141
Adjusted Gamma UCL	9693.373

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.84009
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	13755.31
95% Chebyshev (MVUE) UCL	15009.46
97.5% Chebyshev (MVUE) UCL	18627.14
99% Chebyshev (MVUE) UCL	25733.38

95% Non-parametric UCLs	
CLT UCL	10214.12
Adj-CLT UCL (Adjusted for skewness)	12275.72
Mod-t UCL (Adjusted for skewness)	10661.31
Jackknife UCL	10339.74
Standard Bootstrap UCL	10288.87
Bootstrap-t UCL	20760.29
Hall's Bootstrap UCL	25392.32
Percentile Bootstrap UCL	10677.67
BCA Bootstrap UCL	13172.67
95% Chebyshev (Mean, Sd) UCL	16496.33
97.5% Chebyshev (Mean, Sd) UCL	20862.09
99% Chebyshev (Mean, Sd) UCL	29437.78

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Vanadium

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	19
Minimum	0.15
Maximum	5.3
Mean	0.813667
Median	0.47
Standard Deviation	1.027751
Variance	1.056272
Coefficient of Variation	1.263111
Skewness	3.214147

Gamma Statistics	
k hat	1.180962
k star (bias corrected)	1.085088
Theta hat	0.688987
Theta star	0.749863
nu hat	70.8577
nu star	65.10526
Approx.Chi Square Value (.05)	47.53633
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	46.67029

Log-transformed Statistics	
Minimum of log data	-1.89712
Maximum of log data	1.667707
Mean of log data	-0.68597
Standard Deviation of log data	0.944743
Variance of log data	0.892539

RECOMMENDATION

Data are lognormal (0.05)

Use H-UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.633927
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	1.132492

Gamma Distribution Test	
A-D Test Statistic	1.029801
A-D 5% Critical Value	0.770974
K-S Test Statistic	0.171272
K-S 5% Critical Value	0.164095
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	1.114389
Adjusted Gamma UCL	1.135069

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.935515
Shapiro-Wilk 5% Critical Value	0.927
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1.193148
95% Chebyshev (MVUE) UCL	1.429028
97.5% Chebyshev (MVUE) UCL	1.713863
99% Chebyshev (MVUE) UCL	2.273366

95% Non-parametric UCLs	
CLT UCL	1.122308
Adj-CLT UCL (Adjusted for skewness)	1.239964
Mod-t UCL (Adjusted for skewness)	1.150844
Jackknife UCL	1.132492
Standard Bootstrap UCL	1.127626
Bootstrap-t UCL	1.383485
Hall's Bootstrap UCL	2.540233
Percentile Bootstrap UCL	1.139
BCA Bootstrap UCL	1.207667
95% Chebyshev (Mean, Sd) UCL	1.631574
97.5% Chebyshev (Mean, Sd) UCL	1.985483
99% Chebyshev (Mean, Sd) UCL	2.680669

SUBSURFACE SOIL

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Arsenic

Raw Statistics	
Number of Valid Samples	39
Number of Unique Samples	28
Minimum	0.125
Maximum	3.1
Mean	0.586282
Median	0.45
Standard Deviation	0.545032
Variance	0.29706
Coefficient of Variation	0.929642
Skewness	2.777071

Gamma Statistics	
k hat	1.695654
k star (bias corrected)	1.582313
Theta hat	0.345756
Theta star	0.370522
nu hat	132.261
nu star	123.4204
Approx.Chi Square Value (.05)	98.75896
Adjusted Level of Significance	0.0437
Adjusted Chi Square Value	97.88975

Log-transformed Statistics	
Minimum of log data	-2.07944
Maximum of log data	1.131402
Mean of log data	-0.85693
Standard Deviation of log data	0.810692
Variance of log data	0.657222

RECOMMENDATION

Data follow gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.740373
Shapiro-Wilk 5% Critical Value	0.939
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	0.733424

Gamma Distribution Test	
A-D Test Statistic	0.629679
A-D 5% Critical Value	0.76329
K-S Test Statistic	0.130364
K-S 5% Critical Value	0.143598
Data follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	0.732685
Adjusted Gamma UCL	0.739191

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.948498
Shapiro-Wilk 5% Critical Value	0.939
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	0.785001
95% Chebyshev (MVUE) UCL	0.951195
97.5% Chebyshev (MVUE) UCL	1.110435
99% Chebyshev (MVUE) UCL	1.423229

95% Non-parametric UCLs	
CLT UCL	0.729837
Adj-CLT UCL (Adjusted for skewness)	0.771306
Mod-t UCL (Adjusted for skewness)	0.739892
Jackknife UCL	0.733424
Standard Bootstrap UCL	0.731375
Bootstrap-t UCL	0.798929
Hall's Bootstrap UCL	0.934818
Percentile Bootstrap UCL	0.740385
BCA Bootstrap UCL	0.764359
95% Chebyshev (Mean, Sd) UCL	0.966705
97.5% Chebyshev (Mean, Sd) UCL	1.131314
99% Chebyshev (Mean, Sd) UCL	1.454657

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Chromium

Raw Statistics	
Number of Valid Samples	39
Number of Unique Samples	29
Minimum	0.06
Maximum	26.2
Mean	5.778462
Median	4.5
Standard Deviation	4.485355
Variance	20.11841
Coefficient of Variation	0.77622
Skewness	3.141949

Gamma Statistics	
k hat	2.247008
k star (bias corrected)	2.091255
Theta hat	2.571625
Theta star	2.763154
nu hat	175.2666
nu star	163.1179
Approx.Chi Square Value (.05)	134.5826
Adjusted Level of Significance	0.0437
Adjusted Chi Square Value	133.562

Log-transformed Statistics	
Minimum of log data	-2.81341
Maximum of log data	3.265759
Mean of log data	1.515416
Standard Deviation of log data	0.861412
Variance of log data	0.742031

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.661478
Shapiro-Wilk 5% Critical Value	0.939
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	6.989367

Gamma Distribution Test	
A-D Test Statistic	2.354478
A-D 5% Critical Value	0.757981
K-S Test Statistic	0.218915
K-S 5% Critical Value	0.1429
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	7.00366
Adjusted Gamma UCL	7.057176

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.681944
Shapiro-Wilk 5% Critical Value	0.939
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	9.004896
95% Chebyshev (MVUE) UCL	10.92918
97.5% Chebyshev (MVUE) UCL	12.84028
99% Chebyshev (MVUE) UCL	16.59427

95% Non-parametric UCLs	
CLT UCL	6.959847
Adj-CLT UCL (Adjusted for skewness)	7.345958
Mod-t UCL (Adjusted for skewness)	7.049593
Jackknife UCL	6.989367
Standard Bootstrap UCL	6.960729
Bootstrap-t UCL	7.884116
Hall's Bootstrap UCL	12.52439
Percentile Bootstrap UCL	6.907692
BCA Bootstrap UCL	7.476923
95% Chebyshev (Mean, Sd) UCL	8.90916
97.5% Chebyshev (Mean, Sd) UCL	10.26382
99% Chebyshev (Mean, Sd) UCL	12.92478

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Iron

Raw Statistics	
Number of Valid Samples	39
Number of Unique Samples	39
Minimum	0.9
Maximum	7460
Mean	3010.536
Median	2410
Standard Deviation	1515.247
Variance	2295973
Coefficient of Variation	0.503315
Skewness	0.999568

Gamma Statistics	
k hat	1.970461
k star (bias corrected)	1.835981
Theta hat	1527.833
Theta star	1639.742
nu hat	153.696
nu star	143.2065
Approx.Chi Square Value (.05)	116.5467
Adjusted Level of Significance	0.0437
Adjusted Chi Square Value	115.5994

Log-transformed Statistics	
Minimum of log data	-0.10536
Maximum of log data	8.917311
Mean of log data	7.735161
Standard Deviation of log data	1.356722
Variance of log data	1.840695

RECOMMENDATION

Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.922995
Shapiro-Wilk 5% Critical Value	0.939
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	3419.605

Gamma Distribution Test	
A-D Test Statistic	2.414799
A-D 5% Critical Value	0.759525
K-S Test Statistic	0.221383
K-S 5% Critical Value	0.143148
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	3699.191
Adjusted Gamma UCL	3729.504

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.444814
Shapiro-Wilk 5% Critical Value	0.939
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	10655.59
95% Chebyshev (MVUE) UCL	12070.97
97.5% Chebyshev (MVUE) UCL	14913.36
99% Chebyshev (MVUE) UCL	20496.69

95% Non-parametric UCLs	
CLT UCL	3409.633
Adj-CLT UCL (Adjusted for skewness)	3451.129
Mod-t UCL (Adjusted for skewness)	3426.078
Jackknife UCL	3419.605
Standard Bootstrap UCL	3404.065
Bootstrap-t UCL	3457.527
Hall's Bootstrap UCL	3461.868
Percentile Bootstrap UCL	3422.564
BCA Bootstrap UCL	3467.179
95% Chebyshev (Mean, Sd) UCL	4068.152
97.5% Chebyshev (Mean, Sd) UCL	4525.783
99% Chebyshev (Mean, Sd) UCL	5424.71

Data File C:\Documents and Settings\lin\Desktop\Data Variable: Vanadium

Raw Statistics	
Number of Valid Samples	39
Number of Unique Samples	32
Minimum	0.041
Maximum	10.7
Mean	5.501051
Median	4.9
Standard Deviation	2.185783
Variance	4.777648
Coefficient of Variation	0.397339
Skewness	0.397616

Gamma Statistics	
k hat	3.33353
k star (bias corrected)	3.094199
Theta hat	1.650218
Theta star	1.77786
nu hat	260.0153
nu star	241.3475
Approx.Chi Square Value (.05)	206.3747
Adjusted Level of Significance	0.0437
Adjusted Chi Square Value	205.1024

Log-transformed Statistics	
Minimum of log data	-3.19418
Maximum of log data	2.370244
Mean of log data	1.547514
Standard Deviation of log data	0.84948
Variance of log data	0.721616

RECOMMENDATION

Data are normal (0.05)

Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.954088
Shapiro-Wilk 5% Critical Value	0.939
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	6.091144

Gamma Distribution Test	
A-D Test Statistic	1.933068
A-D 5% Critical Value	0.753846
K-S Test Statistic	0.200309
K-S 5% Critical Value	0.142175
Data do not follow gamma distribution at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	6.433275
Adjusted Gamma UCL	6.473181

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.532699
Shapiro-Wilk 5% Critical Value	0.939
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	9.149109
95% Chebyshev (MVUE) UCL	11.10139
97.5% Chebyshev (MVUE) UCL	13.02339
99% Chebyshev (MVUE) UCL	16.79879

95% Non-parametric UCLs	
CLT UCL	6.076759
Adj-CLT UCL (Adjusted for skewness)	6.10057
Mod-t UCL (Adjusted for skewness)	6.094859
Jackknife UCL	6.091144
Standard Bootstrap UCL	6.054868
Bootstrap-t UCL	6.122415
Hall's Bootstrap UCL	6.116882
Percentile Bootstrap UCL	6.072846
BCA Bootstrap UCL	6.066667
95% Chebyshev (Mean, Sd) UCL	7.02669
97.5% Chebyshev (Mean, Sd) UCL	7.686835
99% Chebyshev (Mean, Sd) UCL	8.983561

Data File C:\Documents and Settings\lin\Desktop\Revis Variable: Nickel

Raw Statistics	
Number of Valid Samples	32
Number of Unique Samples	18
Minimum	0
Maximum	1.80E+00
Mean	2.06E-01
Median	1.3745799
Standard Deviation	5.56E-01
Variance	0.308992
Coefficient of Variation	2.695129
Skewness	2.405643

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.401697
Shapiro-Wilk 5% Critical Value	0.93
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	3.73E-01

Gamma Statistics Not Available

Lognormal Statistics Not Available

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

95% Non-parametric UCLs	
CLT UCL	3.68E-01
Adj-CLT UCL (Adjusted for skewness)	0.412533
Mod-t UCL (Adjusted for skewness)	0.379825
Jackknife UCL	3.73E-01
Standard Bootstrap UCL	3.63E-01
Bootstrap-t UCL	0.489484
Hall's Bootstrap UCL	0.326564
Percentile Bootstrap UCL	3.69E-01
BCA Bootstrap UCL	4.06E-01
95% Chebyshev (Mean, Sd) UCL	6.35E-01
97.5% Chebyshev (Mean, Sd) UCL	8.20E-01
99% Chebyshev (Mean, Sd) UCL	1.18E+00

APPENDIX B

ANCILLARY DATA USED IN RISK CALCULATIONS

TABLE B1
Attenuation Factor
Lightman Drum Superfund Site

CAS	Chemical of Potential Concern	Concentration (µg/L)	Infinite source indoor attenuation coefficient (unitless) α
71-43-2	Benzene	10.00	1.03E-03
156-59-2	cis-1,2-Dichloroethene	1400.00	9.18E-04
100-41-4	Ethylbenzene	3100.00	9.25E-04
98-82-8	Isopropylbenzene	54.00	8.39E-04
127-18-4	Tetrachloroethene	4200.00	8.98E-04
79-01-6	Trichloroethene	2100.00	9.56E-04
75-01-4	Vinyl Chloride	6.60	1.14E-03
1330-20-7	Xylenes (total)	90000.00	8.84E-04 *
	Average		**9.20E-04**

* m=xylene used

NA = values not available for calculation

- Depth below grade to bottom of enclosed space floor = 200
- Depth below grade to water table = 400 cm
- Soil type directly above water table = sandy clay
- Average soil/groundwater temperature = 10°C

TABLE B2.RME
Calculation of the Chemical Concentration in Air
Lightman Drum Superfund Site

$C(aMAX) = (C(w)*f*F(w)*t1/V(a)$

$C(a) = [(C(aMAX)/2)*t1 + C(aMAX)*t2]/(t1+t2)$

terms are defined as follows:

C(a) = concentration of chemical contaminant in air (mg/m^3)
C(aMAX) = maximum air concentration in bathroom (mg/m^3)
C(w) = water concentration (mg/l)
f = fraction volatilized (unitless)
F(w) = water flow rate (l/hr)
V(a) = bathroom volume, including the stall (m^3)
C(aMAX) = maximum concentration of chemical contaminant in air (mg/m^3)
t1 = time of shower (hr)
t2 = time after shower (hr)

Parameter Inputs:			
	C(w) =	95% UCL for groundwater	
	f =	Calculated, See Table B3	(Schaum et. al., 1994)
	F(w) =	477.00 l/hr	(USEPA, 1997: Table 17-17; Restrictor showerhead)
	t1 =	0.58 hr	(USEPA, 1997: Table 17-16, mean)
	t2 =	0.08 hr	(USEPA, 1997: Table 15-23; mean)
	V(a) =	13.60 m3	(USEPA, 1997: Vol I)

Exposure Point	Chemical of Potential Concern	Units in Table 3s	Exposure Point Concentration		$C_{(aMAX)}$	$C_{(a)}$
			Value	Units		
	Volatile Organics					
Groundwater	1,1,2-Trichloroethane	µg/L	1.3E-03	mg/L	0.01	0.01
	1,2,3-Trichlorobenzene	µg/L	1.4E-01	mg/L	1.30	0.73
	1,2,4-Trichlorobenzene	µg/L	1.4E-01	mg/L	1.24	0.70
	1,2-Dichlorobenzene	µg/L	2.2E-02	mg/L	0.19	0.11
	1,2-Dichloroethane	µg/L	9.3E-04	mg/L	0.01	0.01
	1,4-Dichlorobenzene	µg/L	3.3E-02	mg/L	0.29	0.17
	Benzene	µg/L	4.2E-02	mg/L	0.44	0.25
	Chlorobenzene	µg/L	2.2E-02	mg/L	0.21	0.12
	Chloroform	µg/L	1.1E-03	mg/L	0.01	0.01
	cis-1,2-Dichloroethene (1)	µg/L	4.6E-01	mg/L	4.72	2.66
	Ethylbenzene	µg/L	8.3E-01	mg/L	7.39	4.16
	Tetrachloroethene	µg/L	1.3E+00	mg/L	12.39	6.97
	Toluene	µg/L	1.5E-01	mg/L	1.42	0.80
	Trichloroethene	µg/L	7.6E-01	mg/L	7.49	4.22
	Vinyl Chloride	µg/L	1.7E-03	mg/L	0.00	0.00
	Xylenes (total)	µg/L	1.2E+01	mg/L	115.79	65.17

Notes:
1. Default volatilization fraction of 0.5 was used

TABLE B3
Particulate Emission Factor
Lightman Drum Superfund Site

PEF = (Q/C) x (3,600 sec/hr)/(0.036(1-V)((μm/μt)^3)F(x))	1.36E+09	m3/kg	Equation from EPA, 2002
where,			
Q/C	49.82	g/m2-s per kg/m3	EPA, 2002
V	0.8	unitless	Based on field observations
μm	2.24	m/s	Value for weather station in Berlin, NJ (5 m.p.h.) annual average from 3 years of data. This station is under 5 miles from the Site
μt	11.32	m/s	Default value from EPA, 2002
x = 0.886*(μt/μm)	4.487	unitless	Calculated value based on equation in Cowherd, 1985
F(x) = function of x	0.0000	unitless	Equation from Cowherd, 1985
F(x), x<0	0.00		
F(x), x>0,X<0.5	1.91		
F(x), x>0.5, <1	-1.39		
F(x), x>1, x<2	-2.93		
F(x), x>2	2.51E-07		
PEF	1.36E+09	m3/kg	

$$PEF = \frac{Q}{C} \times \frac{(3600)}{0.036 \times (1-V) \times \left(U_m / U_T\right)^3 \times F(x)}$$

EPA 2002, Supplemental Guidance for Developing Soil Screening Levels for Superfund, December 2002, OSWER 9355.4-24, Equation 4-5

$$Q/C_{wind} = A \times e^{\left(\frac{(\ln A_{site} - B)^2}{C}\right)}$$

Q/C = A x exp((ln A site - B)^2/C)	49.82
A	14.01
B	19.62
C	225.34
A site Areal extent of the Site in acres	15.00

Values for A,B, and C and equation from Exhibit D-2 (EPA 2002) for Philadelphia in climate zone VIII

TABLE B3
Particulate Emission Factor
Lightman Drum Superfund Site

Site area	15.00	acres
Duration of Constructior	250.00	days

Fugitive Dust from driving on Unpaved Roads

Equation E-18

$$PEF_{sc} = \frac{Q}{C_{sr}} \times \frac{1}{F_D} \times \left(\frac{T \times A_R}{\left(\frac{2.6 \times \left(\frac{s}{12}\right)^{0.8} \left(\frac{W}{3}\right)^{0.4}}{\left(M_{dry}/0.2\right)^{0.3}} \right) \times \left[\frac{365 - p}{365}\right] \times 281.9 \times \sum VKT} \right)$$

PEFsc	3.00E+05	m3/kg	Subchronic particulate emission factor for	Calculated value in Equation E-18
Q/Csr	13.86	g/m2-s per	Inverse of the ratio of the 1-h geometric	Equation E-19
FD	0.19	unitless	Dispersion correction factor	Equation E-16
T	9.00E+06	s	Total time over which construction occurs	5*52 days times 10 hours/day times 3600 sec/hr
AR	1501.93	m2	Surface area of contaminated road	Length x Width x 0.092903 m2/ft2
s	8.50	%	Road surface silt content	Default value
W	8.00	tons	Mean vehicle weight	Assumes twenty, 2-ton cars and ten, 20-ton trucks (see page E-20)
Mdry	0.20	%	Road surface material moisture content	default; USEPA AP-42 gives range between 0.03-13
p	121.67	days	Number of days per year with at least 0.01 inches of precipitation	measurable rain falls a third of the year; office of the New Jersey State Climatologist
VKT	6062.49	km	Sum of fleet vehicle kilometers traveled	Assumes 30 vehicles, 250 days
LR	808.33	ft	Length of road segment	Length of road segment
WR	20.00	ft	Width of road segment	Width of road (default value)

Equation E-19

$$\frac{Q}{C_{sr}} = A \times e^{\left[\frac{[\ln A_s - B]^2}{C}\right]}$$

Q/Csr	13.86	g/m2-s per	Inverse of the ratio of the 1-h geometric	Calculated value in Equation E-19
A	12.94	constant	Constant	Default value
B	5.74	constant	Constant	Default value
C	71.77	constant	Constant	Default value
AS	15.00	acres	Areal extent of site surface contamination	Assumed to be the entire 15 acre site

Equation E-16

$$F_D = 0.1852 + \frac{5.3537}{t_c} - \frac{9.6318}{(t_c)^2}$$

FD	0.19	unitless	Dispersion correction factor	Calculated value in Equation E-16
tc	2500.00	hours	Duration of construction (same as T but	Assumes 100 days * 10 hr/day

TABLE B4
Volatilization Factor
Lightman Drum Superfund Site

Chemical of Potential Concern	D_i Diffusivity in air (cm^2/s)	Dimensionless Henry's Law constant	Diffusivity in water (cm^2/s)	K_d soil-water partition coefficient (cm^3/g)	D_a Apparent Diffusivity (cm^2/s)	Volatilization Factor (mg^3/kg)
Semivolatile Organics						
Phenanthrene	-	-	-	-	NA	NA
Pesticides/PCBs						
Endrin aldehyde	-	-	-	-	NA	NA
Inorganics						
Aluminum	-	-	-	-	NA	NA
Arsenic	-	-	-	29.00	NA	NA
Chromium	-	-	-	19.00	NA	NA
Iron	-	-	-	-	NA	NA
Lead	-	-	-	-	NA	NA
Nickel	-	-	-	-	NA	NA
Vanadium	-	-	-	-	NA	NA

$$VF = \frac{Q/C \times \sqrt{(3.14 \times D_A \times T)} \times 10^{-4}\left(m^2/cm^2\right)}{2 \times \rho_b \times D_A}$$

$$D_A = \frac{\left[\left(\frac{\theta_a^{10/3} D_i H' + \theta_w^{10/3} D_w}{n^2}\right)\right]}{\rho_b K_d + \theta_w + \theta_a H'}$$

ρ_b	dry soil bulk density (g/cm^3)	1.50
ρ_s	soil partical density (g/cm_3)	2.65
n	total soil porosity	0.43
θ_w	water-filled soil porosity	0.15
θ_a	air-filled soil porosity	0.28
Q/C	From PEF calculations	49.82
Q/C_{sc}	From PEF calculations for construction scenario	13.86
T	exposure interval	9.50E+08

Kd for Cr (VI) was used
(-) indicates value not found
NA = Not Available

TABLE B5

Dermal Absorption factor

Lightman Drum Superfund Site

Chemical of Potential Concern	Dermal Absorption Factor unitless
Semivolatile Organics	
Phenanthrene	0.10
Pesticides/PCBs	
Endrin aldehyde	0.14
Inorganics	
Aluminum	-
Arsenic	0.03
Chromium	-
Iron	-
Lead	-
Vanadium	-

Dermal Absorption Factors taken from EPA 2004, 'Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, August 2004, Exhibit 3-4

Table B6

Chemical of Potential Concern	Kp (cm/hr)	Source
Volatile Organics		
1,1,2-Trichloroethane	6.40E-03	Exhibit B-2 Kp predicted
1,2,3-Trichlorobenzene	-	
1,2,4-Trichlorobenzene	6.60E-02	Exhibit B-2 Kp predicted
1,2-Dichlorobenzene	4.10E-02	Exhibit B-2 Kp predicted
1,2-Dichloroethane	4.20E-03	Exhibit B-2 Kp predicted
1,4-Dichlorobenzene	4.20E-02	Exhibit B-2 Kp predicted
Benzene	1.50E-02	Exhibit B-2 Kp predicted
Chlorobenzene	2.80E-02	Exhibit B-2 Kp predicted
Chloroform	6.80E-03	Exhibit B-2 Kp predicted
cis-1,2-Dichloroethene	-	Exhibit B-2 Kp predicted
Ethylbenzene	4.90E-02	Exhibit B-2 Kp predicted
Tetrachloroethene	3.30E-02	Exhibit B-2 Kp predicted
Toluene	3.10E-02	Exhibit B-2 Kp predicted
Trichloroethene	1.20E-02	Exhibit B-2 Kp predicted **
Vinyl Chloride	5.60E-03	Exhibit B-2 Kp predicted
Xylenes (total)	5.30E-02	Exhibit B-2 Kp predicted (1)
Pesticides		
alpha-Chlordane	3.40E-02	Exhibit B-2 Kp predicted
Semivolatile Organics		
2,4-Dimethylphenol	1.10E-02	Exhibit B-2 Kp predicted
4-Methylphenol	-	
Naphthalene	4.70E-02	Exhibit B-2 Kp predicted
Inorganics		
Antimony	1.00E-03	Exhibit B-4 Kp default
Arsenic	1.00E-03	Exhibit B-4 Kp default
Cadmium	1.00E-03	Exhibit B-4 Kp experimental
Chromium	2.00E-03	Exhibit B-4 Kp experimental (2)
Iron	-	
Lead	1.00E-04	Exhibit 3-1
Manganese	1.00E-03	Exhibit B-4 Kp default
Thallium	1.00E-03	Exhibit B-4 Kp default
Vanadium	1.00E-03	Exhibit B-4 Kp default

** - halogenated compound. The Kp correlation used to caluclated Kp will tend to underesti

(1) - Kp reported is m- xylene, the only isomer for which Kp was presented.

(2) - Kp reported is that for Chromium (VI)

(-) Kp not found

APPENDIX C

CHECKLIST FOR ECOLOGICAL ASSESSMENT

CHECKLIST FOR ECOLOGICAL ASSESSMENT/SAMPLING

I. SITE DESCRIPTION

1. Site Name: Lightman Drum

   Location: Route 73 South, Block 4004 Lot 6, Winslow Township

   County: Camden City: Berlin State: New Jersey

2. Latitude: 507837E Longitude: 4397233N
   (UTM 18)

3. What is the approximate area of the site? 15 acres

4. Is this the first site visit? X yes ___ no. If no, attach trip report of previous site visit(s), if available. Date(s) of previous site visit(s): Entire site visit described in this document was conducted over the following dates: November 4-8, 2002 with the exception of November 6, 2002.

5. Please attach to the checklist USGS topographic map(s) of the site, if available.

6. Are aerial or other site photographs available? X yes ____ no. If yes, please attach any available photo(s) to the site map at the conclusion of this section.

7. The land use on the site is:

_____% Urban	The area surrounding the site is:
	_____ mile radius
_____% Rural	_____% Urban
_____% Residential	_____% Rural
35 % Industrial (_X_light ____heavy)	15 % Residential
_____% Agricultural	10 % Industrial (_X_light ____heavy)
(Crops: _____)	60 % Agricultural
_____% Recreational	(*Crops:* unknown winter cover crops)
(Describe: note if it is a park, etc.)	_____% Recreational
_____	*(Describe: note if it is a park, etc.)*
_____	_____
65 % Undisturbed	_____
_____% Other	15 % Undisturbed
	_____% Other

8. Has any movement of soil taken place at the site? _X_ yes ___ no. If yes, please identify the most likely cause of this disturbance:

_____ Agricultural Use	_____ Heavy Equipment	_____Mining
_____ Natural Events	_____ Erosion	X_____ Other

Please describe:

Small randomly positioned soil piles were observed in the wooded portion of the property. These piles were roughly three feet in height, four feet in width, and anywhere from five to ten feet in length. An earth-berm was observed in the northwestern corner of the subject property and appears to be a dike associated with a drainage channel.

9. Do any potentially sensitive environmental areas exist adjacent to or in proximity to the site, e.g., Federal and State parks, National and State monuments, wetlands, prairie potholes? *Remember, flood plains and wetlands are not always obvious; do not answer "no" without confirming information.*

A wetland exists in the northwestern property boundary.

Please provide the source(s) of information used to identify these sensitive areas, and indicate their general location on the site map.

A Golder Associates Inc. Wetland Specialist used the U.S. Army Corps of Engineers 1987 Manual to delineate wetlands for the subject property.

10. What type of facility is located at the site?

_____ Chemical _____ Manufacturing _____ Mixing _____ Waste disposal

X_____ Other (specify) The Property is currently used as a drum brokerage business operating under the name of United Cooperage.

11. What are the suspected contaminants of concern at the site? If known, what are the maximum concentration levels?

12. Check any potential routes of off-site migration of contaminants observed at the site:

_____ Swales _____ Depressions X_____ Drainage ditches

_____ Runoff _____ Windblown particulates X_____ Vehicular traffic

_____ Other (specify) _____

13. If known, what is the approximate depth to the water table? _____

14. Is the direction of surface runoff apparent from site observations? _X_ yes ___ no. If yes, to which of the following does the surface runoff discharge? Indicate all that apply.

X_____ Surface water _____ Groundwater _____ Sewer _____ Collection impoundment

15. Is there a navigable waterbody or tributary to a navigable waterbody? _X_ yes ___ no

A drainage channel onsite was dry on the days of observation. This is further described in section IA. Summary of Observations and Site Setting.

16. Is there a waterbody anywhere on or in the vicinity of the site? If yes, also complete Section III: Aquatic Habitat Checklist – Non-Flowing Systems and/or Section IV: Aquatic Habitat Checklist – Flowing Systems.

_____ yes (approx. distance _____) X_____ no

17. Is there evidence of flooding? _X_ yes __ no *Wetlands and flood plans are not always obvious; do not answer "no" without confirming information*. If yes, complete Section V: Wetland Habitat Checklist.

18. If a field guide was used to aid any of the identifications, please provide a reference. Also, estimate the time spent identifying fauna. (Use blank sheet if additional space is needed for text.)

Over a five day period more than 20 hours of observation for fauna were made.

Field guides used:
1. Gleason, Henry A. and Cronquist, A. 1991. Manual of Vascular Plants of Northeastern United States and Adjacent Canada, Second Edition.
2. Petrides, George A. and Wehr, J. 1998. Eastern Trees, Peterson Field Guide.
3. National Geographic. 2001. Field Guide to the Birds of North America, Third Edition.
4. Schwartz, Vicki and Golden, D. M. 2002. New Jersey Division of Fish and Wildlife. Field Guide to Reptiles and Amphibians of New Jersey.
5. Burt, William H. and Grossenheider, R. P. 1980. Mammals, Peterson Field Guide.
6. Boyd, Howard P. 1991. A Field Guide to the Pine Barrens of New Jersey.

19. Are any threatened and/or endangered species (plant or animal) known to inhabit the area of the site? ___ yes ___ no. *If yes, you are required to verify this information with the U.S. Fish and Wildlife Service.* If species identities are known, please list them next.

The USEPA has assessed, in consultation with the USFWS, the potential presence of Federal and State threatened or endangered species or their habitat in the vicinity of the subject property, pursuant to Section 7 of the Endangered Species Act. Swamp Pink (*Helonias bullata*) was identified as a federally listed threatened plant species that may be located on or adjacent to the subject property and therefore a survey was conducted in order to determine if this plant species is present. A survey was conducted on 7 November 2002 by qualified wetland scientists with botanical training and experience with Helonias bullata. The results of the survey determined that "no evidence of the plant was found during the survey.." (Patricia Ann Quigley, Inc. 2002 Draft Survey for Swamp Pink *Helonias bullata* at the Lightman Drum Superfund Site)

20. Record weather conditions at the time this checklist was prepared:

Date: 05 November 2002

45 Temperature (__C/ X F) NA Normal daily high temperature

3-5 mph Wind (direction/speed) None Precipitation (rain, snow)

Clear skies Cloud cover

IA. SUMMARY OF OBSERVATIONS AND SITE SETTING

The Property is dominated by an approximately 10-acre mixed-deciduous and pine forest that contains less than one acre (0.8 acre) of wetland in its northwest corner. This wetland discharges into Pump Branch Creek to the south of the Property. Surface water at the Property is ephemeral. An approximately 4-acre cleared area, partially enclosed by forest, is currently used for commercial purposes in the eastern part of the Property.

The Property lies in a rural setting surrounded by predominantly agricultural parcels and to a lesser extent, light commercial and residential property (Appendix C). A fallow field and a commercial space used for the storage and sale of recreational vehicles lies directly to the south of the subject property and a railroad track bounds it to the west. Undisturbed wooded parcels exist to the west of the railroad. The parcel north of the Property is presently undeveloped and includes a wooded corridor immediately adjacent to the Property. Route 73 lies to the east of the Property and light commercial, residential, and agricultural parcels are present on the opposite side of Route 73.

Vegetation at the Property includes two separate assemblages: 1. upland oak and pine forest, and 2. palustrine forested and emergent wetland complex. The vast majority of the property is dominated by the following oaks: post (*Quercus stellata*), blackjack (*Q. marilandica*), and bear (*Q. ilcifolia*) which are commingled with pitch pine (*Pinus rigida*).

The herbaceous wetland at the western end of the Property appears to be the result of an impounded culvert that used to convey the intermittent surface water flow under the railroad tracks. The dominant species in the wetland meadow are arrow-leaved tearthumb (*Polygonum saggitatum*), soft rush (*Juncus effusus*), wool grass (*Scirpus cyperinus*), purple loosetrife (*Lythrum salicaria*) and swamp loosestrife (*Decodon verticillatus*). The perimeter of this herbaceous wetland is defined by a narrow buffer of red maple trees. The wetland edge transitions to upland where maples are associated by an understory of sweetbay magnolia (*Magnolia virginiana*) and sweet pepperbush (*Clethra alnifolia*). The wetland appears to be diminishing based on the presence of decaying specimens of perennial herbaceous wetland vegetation, dry soil conditions in the upper 24 inches, and the lack of inundation or saturation by surface water or groundwater recharge.

Wildlife observations are detailed in the following table but also include: unidentified bird feathers from a recent kill; a portion of a turtle carcass, possibly an Eastern box turtle (*Terrapene carolina carolina*) or red-eared slider (*Trachemys scripta elegans*) found on the rail road tracks adjacent to the

subject property; and a live unidentified snake. The unidentified snake was dark in color and appeared to be an less than two centimeters thick and roughly two feet in length. It was observed sunning itself on red maple hummock in the wetland area.

Additional wildlife observations included burrows observed dug into a dike in the wetland area and in dirt mounds throughout the wooded portion of the subject property. These burrows, measuring roughly 10 inches in diameter, are possibly used by Eastern cottontail rabbit (*Sylvilagus floridanus*), red fox (*Vulpes fulva*), gray fox (*Urocyon cinereoargenteus*), groundhog (*Marmota monax*), striped skunk (*Mephitis mephitis*), opossum (*Didelphis marsupialis*) and/or small rodents such as mice, lemming, or voles. Evidence of Eastern gray squirrel (*Sciurus carolinensis*) or red squirrel (*Tamiasciurus hudsonicus*) was made by observations of tree nests and chewed pine cones.

Wildlife Observations Made at the Lightman Drum Facility Site		
Mammals		
Common Name	**Scientific Name**	**Nature of Observation**
Eastern cottontail rabbit	*Sylvilagus floridanus*	Observed twice running through wooded portion of subject property.
Whitetail deer	*Odocoileus virginianus*	Observed feces and tracks.
Birds		
Sparrow species	*Spizella* spp.	Observed on southern property bounds on edge forested vegetation.
Wild turkey	*Meleagris gallopavo*	Single feather found.
Red-tailed hawk	*Buteo jamaicensis*	Audible observation, overhead when walking western portion of subject property.
Northern mocking bird	*Mimus polyglottos*	Observed on overhead power lines along south property boundary.
American robin	*Turdus migratorius*	Observed on edge of forested vegetation, southeastern portion of property.
Black-capped chickadee	*Poecile atricapillus*	Observed on southern property bounds on edge of forested vegetation.
Mourning dove	*Zenaida macroura*	Observed on overhead power lines along south property boundary.
Blue jay	*Cyanocitta cristata*	Observed on southern property bounds on edge of forested vegetation.
American crow	*Corvus brachyrhynchos*	Audible observation, overhead when walking central portion of subject property.

Completed by Golder Associates Inc. Affiliation: Environmental Consultant for the Lightman Drum Company

Additional Preparers _____

Site Manager _____

Date _____

II. TERRESTRIAL HABITAT CHECKLIST

IIA. WOODED

1. Are there any wooded areas at the site? _X_ yes ___ no. If no, go to Section IIB: Shrub/Scrub.

2. What percentage or area of the site is wooded? (_70_% 10.75 acres). Indicate the wooded area on the site map which is attached to a copy of this checklist. Please identify what information was used to determine the wooded area of the site.

3. What is the dominant type of vegetation in the wooded area? (Circle one: Evergreen/Deciduous/**Mixed**). Provide a photograph, if available.

   Dominant plant, if known: ____post oak (*Quercus stellata*), blackjack oak (*Q. marilandica*), bear oak (*Q. ilcifolia*) and pitch pine (*Pinus rigida*)

4. What is the predominant size of the trees at the site? Use diameter at breast height.

   _____ 0-6 in. X_____ 6-12 in. _____ >12 in.

5. Specify type of understory present, if known. Provide a photograph, if available.
   Black huckleberry (*Gaylussacia baccata*) and lowbush blueberry (*Vaccinium angustifolium*)

IIB. SHRUB/SCRUB

1. Is shrub/scrub vegetation present at the site? ___ yes _X_ no. If no, go to Section IIC: Open Field.

2. What percentage of the site is covered by scrub/shrub vegetation? (_____% _____acres). Indicate the areas of shrub/scrub on the site map. Please identify what information was used to determine this area.

3. What is the dominant type of scrub/shrub, if known? Provide a photograph, if available.

4. What is the approximate average height of the scrub/shrub vegetation?

   _____ 0-2 ft. _____ 2-5 ft. _____ > 5 ft.

5. Based on site observations, how dense is the scrub/shrub vegetation?

_____ Dense _____ Patchy _____ Sparse

IIC. OPEN FIELD

1. Are there open (bare, barren) field areas present at the site? ___ yes _X_ no. If yes, please indicate type below:

_____ Prairie/plains _____ Savannah _____ Old field _____Other (specify)_____

2. What percentage of the site is open field? (____% _____acres). Indicate the open fields on the site map.

3. What is/are the dominant plant(s)? Provide a photograph, if available.

4. What is the approximate average height of the dominant plant? _____

5. Describe the vegetation cover: _____ Dense _____ Sparse _____ Patchy

IID. MISCELLANEOUS

1. Are other types of terrestrial habitats present at the site, other than woods, scrub/shrub, and open field? ___ yes _X_ no. If yes, identify and describe them below.

2. Describe the terrestrial miscellaneous habitat(s) and identify these area(s) on the site map.

3. What observations, if any, were made at the site regarding the presence and/or absence of insects, fish, birds, mammals, etc.?

   See section 1A.

4. Review the questions in Section I to determine if any additional habitat checklists should be completed for this site.

III. AQUATIC HABITAT CHECKLIST – NON-FLOWING SYSTEMS

Note: Aquatic systems are often associated with wetland habitats. Please refer to Section V, Wetland Habitat Checklist.

1. What type of open-water, non-flowing system is present at the site?

_____ Natural (pond, lake)
_____ Artificially created (lagoon, reservoir, canal, impoundment)

2. If known, what is the name(s) of the waterbody(ies) on or adjacent to the site?

_____

3. If a waterbody is present, what are its known uses (e.g., recreation, navigation, etc.)?

4. What is the approximate size of the waterbody (ies)? _____ acre(s).

5. Is any aquatic vegetation present? ___ yes ___ no. If yes, please identify the type of vegetation present if known.

_____ Emergent _____ Submergent _____ Floating

6. If known, what is the depth of the water? _____

7. What is the general composition of the substrate? Check all that apply.

_____ Bedrock	_____ Sand (coarse)	_____ Muck (fine/black)
_____ Boulder (>10 in)	_____Silt (fine)	_____ Debris
_____ Cobble (2.5-10 in)	_____ Marl (shells)	_____ Detritus
_____ Gravel (0.1-2.5 in)	_____ Clay (slick)	_____ Concrete

_____ Other (specify) _____

8. What is the source in the waterbody?

_____ River/Stream/Creek _____ Groundwater _____ Other (specify) _____
_____ Industrial discharge _____ Surface runoff

9. Is there a discharge from the site to the waterbody? ___ yes ___ no. If yes, please describe this discharge and its path.

10. Is there a discharge from the waterbody? ___ yes ___ no. If yes, and the information is available, identify from the list below the environment into which the waterbody discharges.

___ River/Stream/Creek	___ onsite	___ offsite	Distance_____
___ Groundwater	___ onsite	___ offsite	
___ Wetland	___ onsite	___ offsite	Distance_____
___ Impoundment	___ onsite	___ offsite	

11. Identify any field measurements and observations of water quality that were made. For those parameters for which data were collected, provide the measurement and the units of measure below:

_____ Area

_____ Depth (average)

_____ Temperature (depth of the water at which the reading was taken) _____

_____ pH

_____ Dissolved oxygen

_____ Salinity

_____ Turbidity (clear, slight turbid, turbid, opaque) (Secchi disk depth_____)

_____ Other (specify) _____

12. Describe observed color and area of coloration.

13. Mark the open-water, non-flowing system on the site map attached to this checklist.

14. What observations, if any, were made at the waterbody regarding the presence and/or absence of benthic macrionverebrates, fish, birds, mammals, etc.?

IV. AQUATIC HABITAT CHECKLIST – FLOWING SYSTEMS

Note: Aquatic systems are often associated with wetland habitats. Please refer to Section V, Wetland Habitat Checklist.

1. What type(s) of flowing water system(s) is (are) present at the site?

___ River ___ Stream ___ Creek

___ Dry wash ___ Arroyo ___ Brook

___ Artificially _X_ Intermittent Stream ___ Channeling created(ditch, etc.) ___ Other (specify)_____

2. If known, what is the name of the waterbody? Pump Branch Creek and its tributary

3. For natural systems, are there any indicators of physical alteration (e.g., channeling, debris, etc.)? _X_ yes ___ no. If yes, please describe indicators that were observed.

Dike and impounded culvert present in NW corner of subject property, impede intermittent flow of PBC and its tributary (at their confluence).

4. What is the general composition of the substrate? Check all that apply.

_____ Bedrock X_____ Sand (coarse) _____ Muck (fine/black)

_____ Boulder (>10 in) _____Silt (fine) _____ Debris

_____ Cobble (2.5-10 in) _____ Marl (shells) X_____ Detritus

_____ Gravel (0.1-2.5 in) _____ Clay (slick) _____ Concrete

_____ Other (specify) _____

5. What is the condition of the bank (e.g., height, slope, extent of vegetative cover)?

Undefined channel banks within the subject property bounds. Incised channel banks (<1 ft in height) upstream and downstream of the subject property.

6. Is the system influenced by tides? ___ yes _X__ no. What information was used to make this determination?

Distance PBC is located inland from nearest coastal waterbody.

7. Is the flow intermittent? _X_ yes ___ no. If yes, please note the information that was used in making this determination.

Dry condition on days of observation.

8. Is there a discharge from the site to the waterbody? ___ yes _X_ no. If yes, please describe the discharge and its path.

9. Is there a discharge from the waterbody? ___ yes _X_ no. If yes, and the information is available, please identify what the waterbody discharges to and whether the discharge is on-site or off-site.

10. Identify any field measurements and observations of water quality that were made. For those parameters for which data were collected, provide the measurement and the units of measure in the approximate space below:

_____ Width (ft.)

_____ Depth (ft.)

_____ Velocity (specify units): _____

_____ Temperature (depth of the water at which the reading was taken) _____

_____ pH

_____ Dissolved oxygen

_____ Salinity

_____ Turbidity (clear, slightly turbid, turbid, opaque) (Secchi disk depth_____)

_____ Other (specify) _____

11. Describe observed color and area of coloration.

No water present.

12. Is any aquatic vegetation present? ___ yes _X_ no. If yes, please identify the type of vegetation present, if known.

_____ Emergent _____ Submergent _____ Floating

13. Mark the flowing water system on the attached site map.

14. What observations were made at the waterbody regarding the presence and/or absence of benthic macroinvertebrates, fish, birds, mammals, etc)?

No aquatic fauna were observed. See section 1A for list of wildlife observations.

V. WETLAND HABITAT CHECKLIST

1. Based on observations and/or available information, are designated or known wetlands definitely present at the site? _X_ yes ___ no

   Please note the sources of observations and information used (e.g., USGS Topographic Maps, National Wetland Inventory, Federal or State Agency, etc.) to make this determination.

   USGS Topographic map identifies PBC and its tributary but does not indicate wetlands on the subject property.

2. Based on the location of the site (e.g., along a waterbody, in a floodplain) and site conditions (e.g., standing water; dark, wet soils; mud cracks; debris line; water marks), are wetland habitat suspected? _X_ yes ___ no. If yes, proceed with the remainder of the wetland habitat identification checklist.

3. What type(s) of vegetation are present in the wetland?

   ____ Submergent _X_ Emergent

   ____ Scrub/Shrub _X_ Wooded

   ____ Other (specify) _____

4. Provide a general description of the vegetation present in and around the wetland (height, color, etc.). Provide a photograph of the known or suspected wetlands, if available.

   Herbaceous species (arrow-leaved tearthumb, soft rush, wool grass, purple loosetrife and swamp loosestrife) comprise a wetland meadow which has a perimeter of red maple trees.

5. Is standing water present? ___ yes _X_ no. If yes, is this water: ___ Fresh ___ Brackish
   What is the approximate area of the water (sq.ft.)? _____
   Please complete questions 4, 11, 12 in Checklist III – Aquatic Habitat – Non-Flowing Systems.

6. Is there evidence of flooding at the site? What observations were noted?

   X_____ Buttressing _____ Water marks _____ Mud cracks

   _____ Debris line X_____ Other (describe below)

   Buttress trunks of red maples (forming hummocks) and ground surface depressions indicating intermittent inundation were observed.

7. If known, what is the source of the water in the wetland?

X_____ Stream/River/Creek/Lake/Pond _____ Groundwater

_____ Flooding _____ Surface runoff

8. Is there a discharge from the site to a known or suspected wetland? ___ yes _X_ no. If yes, please describe.

9. Is there a discharge from the wetland? ___ yes _X_ no. If yes, to what waterbody is discharge released?

_____ Surface Stream/River _____ Groundwater _____ Lake/Pond _____ Marine

10. If a soil sample was collected, describe the appearance of the soil in the wetland area. Circle or write in the best response.

Color (blue/gray, brown, black, mottled) _____0-4" below ground surface (bgs) = 10YR4/4 silt loam (organic), 4-10" bgs 10YR2/1 sandy loam, 10-18" bgs 10YR2/1 coarse/med/fine grain sand with some gravel

Water content (dry, wet, saturated/unsaturated)_____dry_____

11. Mark the observed wetland area(s) on the attached site map.

APPENDIX D

SLERA CALCULATIONS

Table D-1
Ecological Exposure Parameters
Lightman Drum Superfund Site

Species	Exposure Parameter	Reported value	Assessment Value
Meadow Vole (*Microtus pennsylvanicus*)	Home range	0.083 hectare maximum	Area Use Factor = 100%
	Diet	primarily plants (average 91.4%)	100% plants
	Food ingestion rate	0.35 grams/gram-day	0.013 kg/day
	Soil ingestion rate[a]	3.8% of food ingestion rate	4.95×10^{-4} kg/day
	Body weight	37.25 grams	0.03725 kg
American Robin (*Turdus migratorius*)	Home range	0.81 hectare maximum	Area Use Factor = 100%
	Diet	invertebrates and fruits	50% invertebrates 50% plants
	Food ingestion rate	0.89 grams/gram-day	0.0721 kg/day
	Soil ingestion rate[a]	20.1% of food ingestion rate	0.0145 kg/day
	Body weight	81 grams	0.081 kg
Red Fox (*Vulpes vulpes*)	Home range	406.5 hectares	Area Use Factor = 100%
	Diet	small mammals and plants	64% small mammals 17% plants
	Food ingestion rate	0.16 grams/gram-day	0.726 kg/day
	Soil ingestion rate[b]	2.8% of food ingestion rate	0.0203 kg/day
	Body weight	4.535 kg	4.535 kg
Red-Tailed Hawk (*Buteo jamaicensis*)	Home range	842.3 hectares	Area Use Factor = 100%
	Diet	primarily small mammals (average 86.4%)	100% small mammals
	Food ingestion rate	0.1 grams/gram-day	.0975 kg/day
	Soil ingestion rate[a]	6.9 % of food ingestion rate	0.00673 kg/day
	Body weight	1.134 kg	1.134 kg

kg = kilogram
Food ingestion rates were chosen to best match body weights, where possible, and the most conservative value elsewhere.
Reference (except where noted):
U.S. Environmental Protection Agency (EPA). 1993. Wildlife Exposure Factors Handbook, Volume I of II.
EPA, Office of Health and Environmental Assessment, Office of Research and development; Washington,
D.C. EPA/600/R-93/187a. December.
Notes:
a. Data taken from EPA, 2005
b. Data taken from Beyer, 1994

Table D-2
Hazard Quotient Estimation for Meadow Vole (Maximum Exposure)
Lightman Drum Superfund Site

Vole - Max Detection within 2-ft depth on-site
Exposure = Incidental Ingestion of Soil + Ingestion of Plants
Body Weight (BW) = 37.25 g
Plant DryFraction = 0.15 based on the wet weight percentage in EPA 2005.
Dry Food Ingestion Rate (FI) = 0.35[a] x BW x dry fraction (0.15)
Fraction of diet comprised of plants (FD_P)= 1.0[a]
Plant Concentration (C_P) based on equations in EPA, 2005
Soil Concentration (C_S) is the maximum detection within 2 ft depth of on-site samples
Soil Ingestion Rate (IR) = 0.038[b] x FI
Total Exposure = Area Use Factor * (Soil Exposure + Plant Exposure) = Area Use Factor * {[(C_S x IR)/BW] + [(Cp x FI x FD_P)/BW]}
Hazard Quotient = Total Exposure/Toxicity Reference Value (TRV)

BW	3.73E-02	kg
FI	1.96E-03	kg
IR	7.43E-05	kg/day
FD_P	1	unitless
Area Use Factor	1	unitless

Contaminant of Concern	C_S	C_P	Exposure: Soil	Exposure: Plants	Total Exposure	TRV (NOAEL)	TRV (LOAEL)	TRV Source	Hazard Quotient (unitless)	
	mg/kg	mg/kg	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day		NOAEL	LOAEL
VOCs										
Methyl acetate	1.600		3.19E-03	8.40E-02 d	8.72E-02	3700.00e	37000.00e	e	2.4E-05	2.4E-06
SVOCs										
2-Chloronaphthalene	0.028		5.59E-05	1.47E-03 d	1.53E-03	17.72e	177.20e	e	8.6E-05	8.6E-06
4-Methylphenol	0.390	1.17E-03c	7.78E-04	6.14E-05	8.39E-04	207.00e	2070.00e	e	4.1E-06	4.1E-07
Benzaldehyde	0.064		1.28E-04	3.36E-03 d	3.49E-03	3.13e	31.33e	e	0.001	0.000
Benzo(a)Pyrene	0.155	2.07E-02	3.09E-04	1.09E-03	1.39E-03	1	10	f	0.001	0.000
Benzo(b)Fluoranthene	0.275	0.0127875	5.49E-04	6.71E-04	1.22E-03				-	-
bis(2-Ethylhexyl)Phthalate	8.800	1.15E-02c	1.76E-02	6.03E-04	1.82E-02	1.83E+01	1.66E+02	f	0.001	0.000
Carbazole	0.029	8.70E-05c	5.79E-05	4.57E-06	6.24E-05				-	-
Di-n-butylphthalate	0.300	3.42E-04c	5.99E-04	1.80E-05	6.16E-04	550	1666	f	1.1E-06	0.000
Hexachlorobenzene	0.012		2.39E-05	6.30E-04	6.54E-04				-	-
Inorganics										
Aluminum	9455	3.78E+01 g	1.89E+01	1.99E+00	2.08E+01	1.93	17.538	f	10.802	1.189
Antimony	1.800	6.84E-02	3.59E-03	3.59E-03	7.18E-03	0.125	1.136	f	0.057	0.006
Beryllium	1.100	6.27E-01	2.19E-03	3.29E-02	3.51E-02	1.11	11.1	f	0.032	0.003
Cadmium	2.200	9.56E-01	4.39E-03	5.02E-02	5.46E-02	1	16.199	f	0.055	0.003
Chromium	912	3.74E+01	1.82E+00	1.96E+00	3.78E+00	2740	22.07	f	0.001	0.171
Iron	10695	4.28E+01 g	2.13E+01	2.25E+00 d	2.36E+01				-	-
Lead	165	4.65E+00	3.29E-01	2.44E-01	5.73E-01	8	134.35	f	0.072	0.004
Mercury	0.480	4.32E-01 g	9.58E-04	2.27E-02 d	2.36E-02	1	0.269	f	0.024	0.088
Selenium	5.900	3.61E+00	1.18E-02	1.89E-01	2.01E-01	0.2	0.554	f	1.005	0.363
Vanadium	36.700	1.78E-01	7.32E-02	9.34E-03	8.26E-02	0.21	3.274	f	0.393	0.025
Zinc	196	8.99E+01	3.91E-01	4.72E+00	5.11E+00	160	537.4	f	0.032	0.010
Pesticides										
4,4'-DDD	0.006	1.17E-06c	1.20E-05	6.14E-08	1.20E-05				-	-
4,4'-DDE	0.025	7.50E-06c	4.99E-05	3.94E-07	5.03E-05				-	-
4,4'-DDT	0.019	2.19E-06c	3.79E-05	1.15E-07	3.80E-05	0.8	6.72	f	4.8E-05	0.000
beta-BHC	0.018	5.40E-05c	3.59E-05	2.84E-06	3.87E-05	1.2	3.36	g	3.2E-05	0.000
Caprolactam	0.063		1.26E-04	3.31E-03	3.43E-03	18.60e	186.00e	e	1.8E-04	0.000
Endrin	0.011		2.19E-05	5.78E-04	5.99E-04	0.084	0.836	f	0.007	0.001
Dieldrin	0.012	4.92E-03	2.39E-05	2.58E-04	2.82E-04	0.02f	0.336f	f	0.014	0.001
gamma-BHC (Lindane)	0.001	3.00E-06c	2.00E-06	1.58E-07	2.15E-06	13.44	134.4	e	0.000	0.000
gamma-Chlordane	0.120	9.18E-05c	2.39E-04	4.82E-06	2.44E-04	4.20	8.40	f	0.000	0.000

Notes:
a. EPA, 1993
b. EPA, 2005 - based on the 95th percentile

c. Based on Biouptake Factors from Environmental Restoration Division, 1999. Uptake to plant values were adjusted for dry weight by dividing by the dry fraction, 0.15
d. No Uptake Factor available, so a factor of 1.0 was used
e. TRV taken from Hazardous Substances Data Bank, based on LD50
f. TRV taken from Sample et al., 1996
g. Baes et al. 1984

Table D-3
Hazard Quotient Estimation for Robin (Maximum Exposure)
Lightman Drum Superfund Site

Robin - Max Detection within 2-ft depth on-site

Exposure = Incidental Ingestion of Soil + Ingestion of Invertebrates + Ingestion of Plants

Body Weight (BW) = 81ga

Plant DryFraction = 0.15 based on the wet weight percentage in EPA 2005.

Dry Food Ingestion Rate (FI) = 0.89[a] x BW x dry fraction (0.15)

Fraction of diet comprised of plants (FD_P)= 0.5[a]

Fraction of diet comprised of invertebrates (FD_i) = 0.5[a]

Invertebrate concentration (C_i) and plant concentration (C_P) based on equations in EPA, 2005

Soil Concentration (C_S) is the maximum detection within 2 ft depth of on-site samples

Soil Ingestion Rate (IR) = .201[b] x FI

Total Exposure = Area Use Factor x (Soil Exposure + Invertebrate Exposure + Plant Exposure)
= Area Use Factor x {[(CS x IRs)/BW] + [(Ci x FI x FDi)/BW] + [(C_P x FI x FDP)/BW]}

Hazard Quotient = Total Exposure/Toxicity Reference Value (TRV)

BW	8.10E-02	kg
FI	1.08E-02	kg
IR	2.17E-03	kg/day
FD_i	0.5	unitless
FD_P	0.5	unitless
Area Use Factor	1	unitless

Contaminant of Concern	C_S	C_P	C_i	Exposure: Soil	Exposure: Plants	Exposure: Invertebrates	Total Exposure	TRV (NOAEL)	TRV (LOAEL)	TRV Source	Hazard Quotient (unitless)	
	mg/kg	mg/kg	mg/kg	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day		NOAEL	LOAEL
VOCs												
Methyl acetate	1.600			4.29E-02	1.07E-01 d	1.07E-01 d	2.57E-01				-	-
SVOCs												
2-Chloronaphthalene	0.028		3.72E-02	7.51E-04 d	1.87E-03 d	2.49E-03	5.11E-03				-	-
4-Methylphenol	0.390	1.17E-03c	2.93E-03c	1.05E-02	7.81E-05	1.95E-04	1.07E-02				-	-
Benzaldehyde	0.064		8.51E-02	1.72E-03 d	4.27E-03 d	5.68E-03	1.17E-02				-	-
Benzo(a)Pyrene	0.155	2.07E-02	2.06E-01	4.16E-03 d	1.38E-03 d	1.38E-02	1.93E-02				-	-
Benzo(b)Fluoranthene	0.275	1.28E-02c	7.15E-01	7.38E-03	8.54E-04	4.77E-02	5.60E-02				-	-
bis(2-Ethylhexyl)Phthalate	8.800	1.15E-02c	6.60E-02c	2.36E-01	7.67E-04	4.41E-03	2.41E-01	1.10E+00	1.10E+01	e	0.22	0.02
Carbazole	0.029	8.70E-05c	2.18E-04c	7.78E-04	5.81E-06	1.45E-05	7.98E-04				-	-
Di-n-butylphthalate	0.300	3.42E-04c	2.25E-03c	8.05E-03	2.28E-05	1.50E-04	8.22E-03	1.10E-01	1.10E+00	e	0.07	0.01
Hexachlorobenzene	0.012			3.22E-04	8.01E-04	8.01E-04	1.92E-03				-	-
Inorganics												
Aluminum	9455	3.78E+01 g		2.54E+02 d	2.52E+00 d	6.31E+02	8.87E+02	110	1100	e	8.07	0.81
Antimony	1.800	6.84E-02	1.800	4.83E-02 d	4.57E-03 d	1.20E-01	1.73E-01				-	-
Barium	116	1.81E+01	1.06E+01	3.11E+00	1.21E+00	7.05E-01	5.03E+00	20.8	61.7	e	0.24	0.08
Beryllium	1.100	6.27E-01	4.95E-02	2.95E-02	4.19E-02	3.30E-03	7.47E-02				-	-
Cadmium	2.200	9.56E-01	1.55E+01	5.90E-02	6.38E-02	1.03E+00	1.16E+00	1.45	41.7	e	0.80	0.03
Chromium	912	3.74E+01	2.79E+02	2.45E+01	2.50E+00	1.86E+01	4.56E+01	1	20	e	45.60	2.28
Cobalt	2.100	1.58E-02	2.56E-01	5.64E-02	1.05E-03	1.71E-02	7.45E-02		5	f	-	0.01
Copper	150	1.40E+01	7.73E+01	4.03E+00 d	9.37E-01 d	5.16E+00	1.01E+01	47		e	0.22	-
Iron	10695	4.28E+01 g		2.87E+02 d	2.86E+00 d	7.14E+02	1.00E+03				-	-
Lead	165	4.65E+00	4.95E+01	4.43E+00	3.10E-01	3.31E+00	8.04E+00	1.13	11.3	e	7.12	0.71
Mercury	0.480	4.32E-01 g		1.29E-02 d	2.88E-02 d	3.20E-02	7.38E-02	0.45	0.9	e	0.16	0.08
Selenium	5.900	3.61E+00	3.41E+00	1.58E-01	2.41E-01	2.27E-01	6.26E-01	0.5	1	e	1.25	0.63
Vanadium	36.700	1.78E-01	1.54E+00	9.85E-01	1.19E-02	1.03E-01	1.10E+00	11.4 (c)	-	e	0.10	-
Zinc	196	8.99E+01	6.60E-02	5.26E+00	6.00E+00	4.41E-03	1.13E+01	14.5	131	e	0.78	0.09
Pesticides												
4,4'-DDD	0.006	1.17E-06c	9.01E-02	1.61E-04	7.81E-08	6.01E-03	6.17E-03	2.80E-03	2.80E-02	g	2.20	0.22
4,4'-DDE	0.025	7.50E-06c	4.63E-01	6.71E-04	5.01E-07	3.09E-02	3.16E-02				-	-
4,4'-DDT	0.019	2.19E-06c	2.67E-01	5.10E-04	1.46E-07	1.78E-02	1.84E-02	2.80E-03	2.80E-02	e	6.56	0.66
beta-BHC	0.018	5.40E-05c	7.02E-03c	4.83E-04	3.60E-06	4.69E-04	9.55E-04	0.56	2.25	e	0.00	4.2E-04
Caprolactam	0.063			1.69E-03	4.21E-03	4.21E-03	1.01E-02				-	-
Endrin	0.011	9.90E-07c	3.76E-08c	2.95E-04	6.61E-08	2.51E-09	2.95E-04	0.01	0.1	e	0.03	0.00
Dieldrin	0.012	4.92E-03	2.02E-01	3.22E-04	3.28E-04	1.35E-02	1.42E-02	0.077	0.77	e	0.18	0.02
gamma-BHC (Lindane)	0.001	3.00E-06c	3.90E-04c	2.68E-05	2.00E-07	2.60E-05	5.31E-05	2	20	e	0.00	0.00
gamma-Chlordane	0.120	9.18E-05c	2.88E-02c	3.22E-03	6.13E-06	1.92E-03	5.15E-03	2.14	10.7	e	0.00	0.00

Notes:
a. EPA, 1993
b. EPA, 2005 - based on the 95th percentile
c. Based on Biouptake Factors from Environmental Restoration Division, 1999. Uptake to plant values were adjusted for dry weight by dividing by the dry fraction, 0.15
d. No Uptake Factor available, so a factor of 1.0 was used
e. TRV taken from Sample et al., 1996
f. TRV taken from Hazardous Substances Data Bank, based on LD50
g. TRV taken from Environmental Restoration Division, 1999

Table D-4
Hazard Quotient Estimation for Red Fox (Maximum Exposure)
Lightman Drum Superfund Site

Red Fox - Max Detection within 2-ft depth on-site

Exposure = Incidental Ingestion of Soil + Ingestion of Mammals

Body Weight (BW) = 4.535 kga

Plant DryFraction = 0.15 based on the wet weight percentage in EPA 2005.

Dry Food Ingestion Rate (FI) = 0.16[a] x BW x dry fraction (0.15)

Fraction of diet comprised of plants (FD_P)= 0.17[a]

Fraction of diet comprised of mammals (FD_m) = 0.63[a]

Plant concentration (CP) based on equations in EPA, 2005 and small mammal concentration (CM) base on vole concentration equations in EPA, 2005.

Soil Concentration (C_S) is the maximum detection within 2 ft depth of on-site samples

Soil Ingestion Rate (IR) = .028[b] x FI

Total Exposure = Area Use Factor x (Soil Exposure + Plant Exposure + Small Mammal Exposure) = Area Use Factor x $\{[(C_S \times IRs)/BW] + [(C_M \times FI \times FD_m)/BW] + [(CP \times FI \times FD_P)/BW]\}$

Hazard Quotient = Total Exposure/Toxicity Reference Value (TRV)

BW	4.535		kg
FI	0.10884	kg	
IR	0.00304752	kg/day	
FD_P	0.17	unitless	
FD_m	0.64	unitless	
Area Use Factor	1	unitless	

Contaminant of Concern	C_S	C_P	C_i	C_m	Exposure: Soil	Exposure: Plants	Exposure: Small Mammals	Total Exposure	TRV (NOAEL)	TRV (LOAEL)	TRV Source	Hazard Quotient (unitless)	
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day		NOAEL	LOAEL
VOCs													
Methyl acetate	1.600				1.08E-03	6.53E-03 d	2.46E-02 d	3.22E-02				-	-
SVOCs													
2-Chloronaphthalene	0.028				1.88E-05 d	1.14E-04 d	4.30E-04 d	5.63E-04				-	-
4-Methylphenol	0.390	1.17E-03c	2.93E-03c	7.02E-06	2.62E-04	4.77E-06	1.08E-07	2.67E-04				-	-
Benzaldehyde	0.064				4.30E-05 d	2.61E-04 d	9.83E-04 d	1.29E-03				-	-
Benzo(a)Pyrene	0.155	2.07E-02	2.06E-01		1.04E-04 d	8.43E-05 d	2.38E-03 d	2.57E-03	0.29	2.86	e		
Benzo(b)Fluoranthene	0.275	0.0127875	7.15E-01	0h	1.85E-04	5.22E-05	0.00	2.37E-04				-	-
bis(2-Ethylhexyl)Phthalate	8.800	1.15E-02c	6.60E-02c	2.51E-01c	5.91E-03 d	4.69E-05 d	3.85E-03 d	9.81E-03	5.2	52	f	1.89E-03	1.89E-04
Carbazole	0.029	8.70E-05c	2.18E-04c	8.70E-03c	1.95E-05	3.55E-07	1.34E-04	1.53E-04				-	-
Di-n-butylphthalate	0.300	3.42E-04c	2.25E-03c	8.55E-03c	2.02E-04 d	1.40E-06 d	1.31E-04 d	3.34E-04	15.7	524	e	2.13E-05	6.38E-07
Hexachlorobenzene	0.012				8.06E-06 d	4.90E-05 d	1.84E-04 d	2.41E-04				-	-
Inorganics													
Aluminum	9455	3.78E+01 g			6.35E+00 d	1.54E-01 d	1.45E+02 d	1.52E+02	0.551	5.515	f	275.38	27.51
Antimony	1.800	6.84E-02	1.800	9.00E-02	1.21E-03 d	2.79E-04 d	1.38E-03 d	2.87E-03	0.036	0.357	f	7.98E-02	8.04E-03
Copper	150	2.34E+01	1.37E+01	1.59E+01	1.01E-01 d	9.55E-02 d	2.44E-01 d	4.40E-01	8	10.6	f	5.50E-02	4.15E-02
Barium	116	8.33E+00	3.63E+02	2.72E+00	7.80E-02	3.40E-02	4.18E-02	1.54E-01	1.05	10.5	e	1.46E-01	1.46E-02
Beryllium	1.100	6.27E-01	4.95E-02	2.48E-03	7.39E-04	3.68E-04	3.80E-05	1.15E-03	0.35	3.5	f	3.27E-03	3.27E-04
Cadmium	2.200	9.02E-02	6.73E-01	4.13E-01	1.48E-03	3.68E-04	6.34E-03	8.19E-03	0.5094	5.094	e	1.61E-02	1.61E-03
Chromium	912	6.84E+00	1.11E+02	3.45E+01	6.13E-01	2.79E-02	5.30E-01	1.17E+00	0.694	6.94	e	1.69	0.17
Cobalt	2.100	2.61E+00	1.08E+00	3.03E-02	1.41E-03	1.07E-02	4.65E-04	1.25E-02				-	-
Iron	10695	4.28E+01 g			7.19E+00 d	1.75E-01 d	1.64E+02 d	1.72E+02				-	-
Lead	165	4.65E+00	4.95E+01	1.03E+01	1.11E-01	1.90E-02	1.59E-01	2.89E-01	4.225	42.25	e	6.83E-02	6.83E-03
Mercury	0.480	4.32E-01 g			3.23E-04 d	1.76E-03 d	7.37E-03 d	9.46E-03	0.0017	0.017	e	5.56	0.56
Selenium	5.900	3.61E+00	3.41E+00	1.29E+00	3.96E-03	1.47E-02	1.98E-02	3.84E-02	0.0174	0.174	e	2.21E+00	2.21E-01
Vanadium	36.700	1.78E-01	1.54E+00	4.51E-01	2.47E-02	7.26E-04	6.93E-03	3.23E-02	0.103	1.03	e	3.14E-01	3.14E-02
Zinc	196	8.99E+01	6.60E-02	1.14E+02	1.32E-01	3.67E-01	1.75E+00	2.25E+00	16.9	169	e	1.33E-01	1.33E-02
Pesticides													
4,4'-DDD	0.006	1.17E-06c	9.01E-02	2.61E-03c	4.03E-06	4.77E-09	4.01E-05	4.41E-05	0.42	2.11	f	1.05E-04	2.09E-05
4,4'-DDE	0.025	7.50E-06c	4.63E-01	2.32E+01	1.68E-05	3.06E-08	3.57E-01	3.57E-01	0.42	2.11	f	0.85	0.17
4,4'-DDT	0.019	2.19E-06c	2.67E-01	1.25E+00	1.28E-05	8.95E-09	1.92E-02	1.92E-02	0.42	2.11	f	4.57E-02	9.09E-03
beta-BHC	0.018	5.40E-05c	7.02E-03c	7.83E-03c	1.21E-05	2.20E-07	1.20E-04	1.33E-04	0.21	1.06	f	6.31E-04	1.25E-04
Caprolactam	0.063											-	-
Endrin	0.011	9.90E-07c	3.76E-08c		7.39E-06	4.04E-09	1.69E-04	1.76E-04	0.026	0.263	f	0.01	0.00
Dieldrin	0.012	4.92E-03	2.02E-01	2.68E+00	8.06E-06	2.01E-05	4.12E-02	4.12E-02	0.011	0.106	f	3.75	0.39
gamma-BHC (Lindane)	0.001	3.00E-06c	3.90E-04c	1.31E-06c	6.72E-07	1.22E-08	2.00E-08	7.04E-07	4.22	42.2	f	1.67E-07	1.67E-08
gamma-Chlordane	0.120	9.18E-05c	2.88E-02c	3.99E-05c	8.06E-05	3.75E-07	6.13E-07	8.16E-05	1.3	2.6	f	6.28E-05	3.14E-05

Notes:
a. EPA, 1993
b. EPA, 2005 - based on the 95th percentile
c. Based on Biouptake Factors from Environmental Restoration Division, 1999. Uptake to plant values were adjusted for dry weight by dividing by the dry fraction, 0.15
d. No Uptake Factor available, so a factor of 1.0 was used
e. NOAELs are 10% of the LOAELs provided for the red fox in: Efroymson et al., Preliminary Remediation Goals for Ecological Endpoints, ES/ER/TM-162/R2, 1997
f. value taken for the red fox end species from Sample et al., 1996, Toxicological Benchmarks for Wildlife, 1996 Revision, 1996; values for 4,4'-DDD, 4,4'DDE, and 4,4'-DDT are those for DDT and metabolites
g. Baes et al. 1984

Table D-5
Hazard Quotient Estimation for Red-Tailed Hawk (Maximum Exposure)
Lightman Drum Superfund Site

Red-Tailed Hawk - Max Detection within 2-ft depth on-site
Exposure = Ingestion of Soil + Mammals
Body Weight (BW) = 1.134 kga
Plant DryFraction = 0.15 based on the wet weight percentage in EPA 2005.
Dry Food Ingestion Rate (FI) = 0.086[a] x BW x dry fraction (0.15)
Fraction of diet comprised of mammals (FD_m) = 1.0[a]
Plant concentration (CP) based on equations in EPA, 2005 and small mammal concentration (CM) base on vole concentration equations in EPA, 2005.
Soil Concentration (C_S) is the maximum detection within 2 ft depth of on-site samples
Soil Ingestion Rate (IR) = .069[b] x FI
Total Exposure = Area Use Factor x (Soil Exposure + Small Mammal Exposure) = Area Use Factor x [(C_S x IRs)/BW] + [(C_M x FI x FD)/BW]
Hazard Quotient = Total Exposure/Toxicity Reference Value (TRV)

BW	1.134	kg	
FI	0.01701	kg	
IR	0.00117369	kg/day	
FD_m	1	unitless	
Area Use Factor	1	unitless	

Contaminant of Concern	C_S	C_P	C_i	C_m	Exposure: Soil	Exposure: Small Mammals	Total Exposure	TRV (NOAEL)[e]	TRV (LOAEL)	TRV Source	Hazard Quotient (unitless)	
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day	mg/kg/day		NOAEL	LOAEL
VOCs												
Methyl acetate	1.600				1.42E-03	2.06E-02 d	2.21E-02				-	-
SVOCs												
2-Chloronaphthalene	0.028				2.90E-05 d	4.20E-04 d	4.49E-04				-	-
4-Methylphenol	0.390	1.17E-03c	2.93E-03c	7.02E-06c	3.47E-04	9.06E-08	3.47E-04					
Benzaldehyde	0.064				6.62E-05 d	9.60E-04 d	1.03E-03				-	-
Benzo(a)Pyrene	0.155	2.07E-02	2.06E-01		1.60E-04 d	2.33E-03 d	2.49E-03				-	-
Benzo(b)Fluoranthene	0.275	0.0127875	7.15E-01	0.00E+00	2.45E-04	3.55E-03	3.79E-03				-	-
bis(2-Ethylhexyl)Phthalate	8.800	1.15E-02c	6.60E-02c	2.51E-01c	9.11E-03 d	3.76E-03 d	1.29E-02	1.1	11	f,g	1.17E-02	1.17E-03
Carbazole	0.029	8.70E-05c	2.18E-04c	8.70E-03c	2.58E-05	1.12E-04	1.38E-04				-	-
Di-n-butylphthalate	0.300	3.42E-04c	2.25E-03c	8.55E-03c	3.11E-04 d	1.28E-04 d	4.39E-04	0.11	1.1	f,f	3.99E-03	3.99E-04
Hexachlorobenzene	0.012											
Inorganics												
Aluminum	9455	3.78E+01 g			9.79E+00 d	1.42E+02 d	1.52E+02	109.7	1097	f,g	1.38	1.38E-01
Antimony	1.800	6.84E-02	1.800	9.00E-02	1.86E-03	1.35E-03	3.21E-03				-	-
Barium	116	1.81E+01	1.06E+01	1.53E+01	1.20E-01	2.30E-01	3.50E-01	4.17	41.7	e,e	8.39E-02	8.39E-03
Beryllium	1.100	6.27E-01	4.95E-02	2.48E-03	9.79E-04	3.19E-05	1.01E-03				-	-
Cadmium	2.200	9.56E-01	1.55E+01	1.16E-01	2.28E-03	1.74E-03	4.02E-03	2	20	e,e	2.01E-03	2.01E-04
Chromium	912	3.74E+01	2.79E+02	7.11E+00	9.44E-01	1.07E-01	1.05E+00	0.5	5	e,e	2.10	2.10E-01
Cobalt	2.100	1.58E-02	2.56E-01	4.00E-01	2.17E-03	6.00E-03	8.18E-03				-	-
Copper	150	1.40E+01	7.73E+01	8.02E+00	1.55E-01	1.20E-01	2.76E-01	6.17	61.7	e,e	4.47E-02	4.47E-03
Iron	10695	4.28E+01 g			1.11E+01 d	1.60E+02 d	1.71E+02				-	-
Lead	165	4.65E+00	4.95E+01	1.03E+01	1.71E-01	1.55E-01	3.26E-01	1.13	11.3	e,e	2.88E-01	2.88E-02
Mercury	0.480	4.32E-01 g			4.97E-04 d	7.20E-03 d	7.70E-03	0.0064	0.064	e,e	1.20E+00	1.20E-01
Selenium	5.900	3.61E+00	3.41E+00	1.29E+00	6.11E-03	1.93E-02	2.54E-02	0.1	1	e,e	2.54E-01	2.54E-02
Vanadium	36.700	1.78E-01	1.54E+00	4.51E-01	3.80E-02	6.77E-03	4.48E-02	11.4	114	f,f	3.93E-03	3.93E-04
Zinc	196	8.99E+01	6.60E-02	1.14E+02	2.03E-01	1.71E+00	1.91E+00	13.1	131	e,e	1.46E-01	1.46E-02
Pesticides												
4,4'-DDD	0.006	1.17E-06c	9.01E-02	2.61E-03c	6.21E-06	3.92E-05	4.54E-05				-	-
4,4'-DDE	0.025	7.50E-06c	4.63E-01	2.32E+01	2.59E-05	3.49E-01	3.49E-01				-	-
4,4'-DDT	0.019	2.19E-06c	2.67E-01	1.25E+00	1.97E-05	1.87E-02	1.87E-02	0.003	0.028	f,f	6.25	6.70E-01
beta-BHC	0.018	5.40E-05c	7.02E-03c	7.83E-03c	1.86E-05	1.17E-04	1.36E-04	0.56	2.25	f,f	2.43E-04	6.05E-05
Caprolactam	0.063				6.52E-05	9.45E-04	1.01E-03					
Endrin	0.011	9.90E-07c	3.76E-08c	4.79E-03c	1.14E-05	7.18E-05	8.32E-05	0.01	0.1	f,f	0.01	8.32E-04
Dieldrin	0.012	4.92E-03	2.02E-01	2.68E+00	1.24E-05	4.03E-02	4.03E-02	0.077	0.77	f,g	5.23E-01	5.23E-02
gamma-BHC (Lindane)	0.001	3.00E-06c	3.90E-04c	1.31E-06c	1.04E-06	1.96E-08	1.05E-06	2	20	f,g	5.27E-07	5.27E-08
gamma-Chlordane	0.120	9.18E-05c	2.88E-02c	3.99E-05c	1.24E-04	5.99E-07	1.25E-04	2.1	10.7	f,g	5.94E-05	1.17E-05

Notes:
a. EPA, 1993
b. EPA, 2005 - based on the 95th percentile
c. Based on Biouptake Factors from Environmental Restoration Division, 1999. Uptake to plant values were adjusted for dry weight by dividing by the dry fraction, 0.15
d. No Uptake Factor available, so a factor of 1.0 was used
e. NOAELs are 10% of the LOAELs provided for the red-tailed hawk in: Efroymson et al., Preliminary Remediation Goals for Ecological Endpoints, ES/ER/TM-162/R2, 1997
f. value taken for the red-tailed hawk end species from Sample et al., 1996, Toxicological Benchmarks for Wildlife, 1996 Revision, 1996; value for beta BHC is that of mixed isomers of BHC
g. LOAELs are corrected by a factor of ten from the NOAELs provided for the red-tailed hawk end species from Sample et al., 1996, Toxicological Benchmarks for Wildlife, 1996 Revision, 1996

APPENDIX E

DATA SUMMARY TABLES

Appendix E

Data Summary Tables

Table E-1 Monitoring Well Data 2005 & 2006

Table E-2 Unsaturated Soil Data

Table E-3 Surface Water Data

Table E-4 Sediment Data

Table 2.1	Office Supply Well	Identified as OSW and WS-1 on Table E1
Table 2.2	Surface Soils	Samples with a suffix -06 or -24 on Table E2
Table 2.3	Surface Water	Samples on Table E-3
Table 2.4	Sediment	Samples on Table E-4
Table 2.5	Groundwater and Water Vapors from Showering with Groundwater	All samples on Table E1
Table 2.6	On-Site Monitoring Wells	Samples identified as OSW, WS-1, MW-1, MW-2A, MW-2B, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8A , MW-8B, MW-9, MW-10, MW-11, and MW-21 on Table E1
Table 2.7	On-Site Monitoring Wells for Vapor Intrusion	Samples identified as OSW, WS-1, MW-1, MW-2A, MW-2B, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8A , MW-8B, MW-9, MW-10, MW-11, and MW-21 on Table E1
Table 2.8	Subsurface Soils	Samples with a suffix other than -06 or -24 on Table E2

Table E-1 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-1 Date Sampled: 2/3/2005 Lab ID: 566720 % Solids: NA			Sample Point MW-1 Date Sampled: 3/21/2006 Lab ID: 939718 % Solids: NA			Sample Point FMW-1 Date Sampled: 3/21/2006 Lab ID: 939719 % Solids: NA			Sample Point MW-2A Date Sampled: 2/8/2005 Lab ID: 568412 %Solids: NA			Sample Point MW-2A Date Sampled: 3/23/2006 Lab ID: 940807 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/L	10	U	0.84	0.5	U	0.1	0.5	U	0.1	500	U	0.84	25	U	0.1
Chloromethane	µg/L	10	U	1.5	0.5	U	0.1	0.5	U	0.1	500	U	1.5	25	U	0.1
Vinyl Chloride	µg/L	10	U	0.64	0.5	U	0.1	0.5	U	0.1	500	U	0.64	6.6	J	0.1
Bromomethane	µg/L	10	UJ	4.1	0.5	U	0.1	0.5	U	0.1	500	U	4.1	25	U	0.1
Chloroethane	µg/L	10	U	2.1	0.5	U	0.1	0.5	U	0.1	500	U	2.1	25	U	0.1
Trichlorofluoromethane	µg/L	10	U	0.95	0.5	U	0.1	0.5	U	0.1	500	U	0.95	25	U	0.1
1,1-Dichloroethene	µg/L	10	U	0.78	0.5	U	0.1	0.5	U	0.1	500	U	0.78	25	U	0.1
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	10	U	0.97	0.5	U	0.1	0.5	U	0.1	500	U	0.97	25	U	0.1
Acetone	µg/L	10	U	3.1	5	R	2.1	5	R	2.1	340	J	3.1	370	R	2.1
Carbon Disulfide	µg/L	10	U	0.9	0.4	J	0.1	0.5	U	0.1	500	U	0.9	25	U	0.1
Methyl acetate	µg/L	10	U	1.5	0.5	R	0.18	0.5	R	0.18	500	U	1.5	25	R	0.18
Methylene chloride	µg/L	10	U	1	0.5	U	0.1	0.5	U	0.1	500	U	1	25	U	0.1
trans-1,2-Dichloroethene	µg/L	10	U	0.81	0.5	U	0.1	0.5	U	0.1	500	U	0.81	25	U	0.1
tert-Butyl methyl ether	µg/L	10	U	0.71	0.5	U	0.1	0.5	U	0.1	500	U	0.71	25	U	0.1
1,1-Dichloroethane	µg/L	10	U	1	0.5	U	0.1	0.5	U	0.1	500	U	1	25	U	0.1
cis-1,2-Dichloroethene	µg/L	10	U	1.4	0.5	U	0.1	0.5	U	0.1	1400		1.4	270		0.1
2-Butanone	µg/L	10	U	0.96	5	U	1	5	U	1	500	U	0.96	250	U	1
Bromochloromethane	µg/L				0.5	U	0.1	0.5	U	0.1				25	U	0.1
Chloroform	µg/L	10	U	0.83	0.5	U	0.1	0.5	U	0.1	500	U	0.83	25	U	0.1
1,1,1-Trichloroethane	µg/L	10	U	1.1	0.5	U	0.1	0.5	U	0.1	500	U	1.1	25	U	0.1
Cyclohexane	µg/L	10	U	1.1	0.5	U	0.1	0.5	U	0.1	500	U	1.1	25	U	0.1
Carbon tetrachloride	µg/L	10	U	1.2	0.5	U	0.1	0.5	U	0.1	500	U	1.2	25	U	0.1
Benzene	µg/L	10	U	1.3	0.5	U	0.1	0.5	U	0.1	500	U	1.3	10	J	0.1
1,2-Dichloroethane	µg/L	10	U	1.3	0.5	U	0.1	0.5	U	0.1	500	U	1.3	25	U	0.1
Trichloroethene	µg/L	10	U	0.95	0.5	U	0.1	0.5	U	0.1	500		0.95	9.8	J	0.1
Methylcyclohexane	µg/L	10	U	0.96	0.5	U	0.1	0.5	U	0.1	500	U	0.96	25	U	0.1
1,2-Dichloropropane	µg/L	10	U	1.3	0.5	U	0.1	0.5	U	0.1	500	U	1.3	25	U	0.1
Bromodichloromethane	µg/L	10	U	0.98	0.5	U	0.1	0.5	U	0.1	500	U	0.98	25	U	0.1

Table E-1 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-1 Date Sampled: 2/3/2005 Lab ID: 566720 % Solids: NA			Sample Point MW-1 Date Sampled: 3/21/2006 Lab ID: 939718 % Solids: NA			Sample Point FMW-1 Date Sampled: 3/21/2006 Lab ID: 939719 % Solids: NA			Sample Point MW-2A Date Sampled: 2/8/2005 Lab ID: 568412 %Solids: NA			Sample Point MW-2A Date Sampled: 3/23/2006 Lab ID: 940807 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
cis-1,3-Dichloropropene	µg/L	10	U	0.94	0.5	U	0.1	0.5	U	0.1	500	U	0.94	25	U	0.1
4-Methyl-2-pentanone	µg/L	10	U	1.2	5	U	1	5	U	1	500	U	1.2	250	U	1
Toluene	µg/L	10	U	0.8	0.5	U	0.1	0.5	U	0.1	130	J	0.8	340	U	0.1
trans-1,3-Dichloropropene	µg/L	10	U	1.2	0.5	U	0.1	0.5	U	0.1	500	U	1.2	25	U	0.1
1,1,2-Trichloroethane	µg/L	10	U	1.5	0.5	U	0.1	0.5	U	0.1	500	U	1.5	25	U	0.1
Tetrachloroethene	µg/L	10	U	0.97	0.5	U	0.1	0.5	U	0.1	870		0.97	63		0.1
2-Hexanone	µg/L	10	U	1.6	5	U	1	5	U	1	500	U	1.6	250	U	1
Dibromochloromethane	µg/L	10	U	1.4	0.5	U	0.1	0.5	U	0.1	500	U	1.4	25	U	0.1
1,2-Dibromoethane	µg/L	10	U	1.2	0.5	U	0.1	0.5	U	0.1	500	U	1.2	25	U	0.1
Chlorobenzene	µg/L	10	U	0.73	0.5	U	0.1	0.5	U	0.1	500	U	0.73	42	U	0.1
Ethylbenzene	µg/L	10	U	0.84	0.5	U	0.1	0.5	U	0.1	700		0.84	1500		0.1
Xylenes (total)	µg/L	10	U	0.69	0.5	U	0.1	0.5	U	0.1	16000		0.69	33000		0.1
Styrene	µg/L	10	U	1	0.5	U	0.1	0.5	U	0.1	500	U	1	25	U	0.1
Bromoform	µg/L	10	U	1.2	0.5	U	0.1	0.5	U	0.1	500	U	1.2	25	U	0.1
Isopropylbenzene	µg/L	10	U	1.3	0.5	U	0.1	0.5	U	0.1	500	U	1.3	12	J	0.1
1,1,2,2-Tetrachloroethane	µg/L	10	U	0.66	0.5	U	0.1	0.5	U	0.1	500	U	0.66	25	U	0.1
1,3-Dichlorobenzene	µg/L	10	U	0.97	0.5	U	0.1	0.5	U	0.1	500	U	0.97	12	J	0.1
1,4-Dichlorobenzene	µg/L	10	U	1.6	0.5	U	0.1	0.5	U	0.1	500	U	1.6	47		0.1
1,2-Dichlorobenzene	µg/L	10	U	0.87	0.5	U	0.1	0.5	U	0.1	500	U	0.87	29		0.1
1,2-Dibromo-3-chloropropane	µg/L	10	U	0.9	0.5	U	0.17	0.5	U	0.17	500	U	0.9	25	U	0.17
1,2,4-Trichlorobenzene	µg/L	10	U	0.85	0.5	UJ	0.1	0.5	UJ	0.1	500	U	0.85	95		0.1
1,2,3-Trichlorobenzene	µg/L				0.5	UJ	0.1	0.5	UJ	0.1				84		0.1
Total BTEX	µg/L	0.0			0.0			0.0			16830.0			34510.0		

Table checked by: S.A. G. Date: 5/3/2006

Table E-1 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-2B Date Sampled: 2/4/2005 Lab ID: 568407 % Solids: NA			Sample Point MW-2B Date Sampled: 3/20/2006 Lab ID: 939707 % Solids: NA			Sample Point MW-3 Date Sampled: 2/3/2005 Lab ID: 566717 % Solids: NA			Sample Point MW-3 Date Sampled: 3/20/2006 Lab ID: 939709 %Solids: NA			Sample Point MW-4 Date Sampled: 2/3/2005 Lab ID: 566715 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/L	10	U	0.84	0.5	U	0.1	83	U	0.84	0.5	U	0.1	10	U	0.84
Chloromethane	µg/L	10	U	1.5	0.5	U	0.1	83	U	1.5	0.5	U	0.1	10	U	1.5
Vinyl Chloride	µg/L	10	U	0.64	0.5	U	0.1	83	U	0.64	0.5	U	0.1	10	U	0.64
Bromomethane	µg/L	10	U	4.1	0.5	UJ	0.1	83	UJ	4.1	0.5	U	0.1	10	U	4.1
Chloroethane	µg/L	10	U	2.1	0.5	UJ	0.1	83	U	2.1	0.5	U	0.1	10	U	2.1
Trichlorofluoromethane	µg/L	10	U	0.95	0.5	U	0.1	83	UJ	0.95	0.5	U	0.1	10	U	0.95
1,1-Dichloroethene	µg/L	10	U	0.78	0.5	U	0.1	83	U	0.78	0.55		0.1	10	U	0.78
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	10	U	0.97	0.5	U	0.1	83	U	0.97	0.5	U	0.1	10	U	0.97
Acetone	µg/L	10	U	3.1	5	R	2.1	83	U	3.1	5	R	2.1	10	UJ	3.1
Carbon Disulfide	µg/L	10	U	0.9	0.5	U	0.1	83	U	0.9	0.5	U	0.1	10	U	0.9
Methyl acetate	µg/L	10	U	1.5	0.5	R	0.18	83	U	1.5	0.5	U	0.18	10	U	1.5
Methylene chloride	µg/L	10	U	1	0.5	U	0.1	83	U	1	0.5	U	0.1	10	U	1
trans-1,2-Dichloroethene	µg/L	10	U	0.81	0.5	U	0.1	83	U	0.81	0.45	J	0.1	10	U	0.81
tert-Butyl methyl ether	µg/L	10	U	0.71	0.5	U	0.1	83	U	0.71	0.5	U	0.1	10	U	0.71
1,1-Dichloroethane	µg/L	10	U	1	0.5	U	0.1	83	U	1	0.5	U	0.1	10	U	1
cis-1,2-Dichloroethene	µg/L	10	U	1.4	0.5	U	0.1	76	J	1.4	120		0.1	10	U	1.4
2-Butanone	µg/L	10	U	0.96	5	U	1	83	U	0.96	5	R	1	10	U	0.96
Bromochloromethane	µg/L				0.5	U	0.1				0.5	U	0.1			
Chloroform	µg/L	10	U	0.83	0.5	U	0.1	83	U	0.83	0.5	U	0.1	10	U	0.83
1,1,1-Trichloroethane	µg/L	10	U	1.1	0.5	U	0.1	12	J	1.1	3.4		0.1	10	U	1.1
Cyclohexane	µg/L	10	U	1.1	0.5	U	0.1	83	U	1.1	0.5	U	0.1	10	U	1.1
Carbon tetrachloride	µg/L	10	U	1.2	0.5	U	0.1	83	U	1.2	0.5	U	0.1	10	U	1.2
Benzene	µg/L	10	U	1.3	0.5	U	0.1	83	U	1.3	0.5	U	0.1	10	U	1.3
1,2-Dichloroethane	µg/L	10	U	1.3	0.5	U	0.1	83	U	1.3	0.5	U	0.1	10	U	1.3
Trichloroethene	µg/L	1	J	0.95	0.3	J	0.1	940		0.95	110		0.1	10	U	0.95
Methylcyclohexane	µg/L	10	U	0.96	0.5	U	0.1	83	U	0.96	0.5	U	0.1	10	U	0.96
1,2-Dichloropropane	µg/L	10	U	1.3	0.5	U	0.1	83	U	1.3	0.5	U	0.1	10	U	1.3
Bromodichloromethane	µg/L	10	U	0.98	0.5	U	0.1	83	U	0.98	0.5	U	0.1	10	U	0.98

Table E-1 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-2B Date Sampled: 2/4/2005 Lab ID: 568407 % Solids: NA			Sample Point MW-2B Date Sampled: 3/20/2006 Lab ID: 939707 % Solids: NA			Sample Point MW-3 Date Sampled: 2/3/2005 Lab ID: 566717 % Solids: NA			Sample Point MW-3 Date Sampled: 3/20/2006 Lab ID: 939709 %Solids: NA			Sample Point MW-4 Date Sampled: 2/3/2005 Lab ID: 566715 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
cis-1,3-Dichloropropene	µg/L	10	U	0.94	0.5	U	0.1	83	U	0.94	0.5	U	0.1	10	U	0.94
4-Methyl-2-pentanone	µg/L	10	U	1.2	5	U	1	83	U	1.2	5	U	1	10	U	1.2
Toluene	µg/L	10	U	0.8	0.5	U	0.1	83	U	0.8	0.5	U	0.1	10	U	0.8
trans-1,3-Dichloropropene	µg/L	10	U	1.2	0.5	U	0.1	83	U	1.2	0.5	U	0.1	10	U	1.2
1,1,2-Trichloroethane	µg/L	10	U	1.5	0.5	U	0.1	83	U	1.5	0.5	U	0.1	10	U	1.5
Tetrachloroethene	µg/L	10	U	0.97	0.5	U	0.1	460		0.97	180		0.1	10	U	0.97
2-Hexanone	µg/L	10	U	1.6	5	U	1	83	U	1.6	5	U	1	10	U	1.6
Dibromochloromethane	µg/L	10	U	1.4	0.5	U	0.1	83	U	1.4	0.5	U	0.1	10	U	1.4
1,2-Dibromoethane	µg/L	10	U	1.2	0.5	U	0.1	83	U	1.2	0.5	U	0.1	10	U	1.2
Chlorobenzene	µg/L	10	U	0.73	0.5	U	0.1	6	J	0.73	1.4		0.1	10	U	0.73
Ethylbenzene	µg/L	10	U	0.84	0.5	U	0.1	83	U	0.84	0.39	J	0.1	10	U	0.84
Xylenes (total)	µg/L	10	U	0.69	0.5	U	0.1	83	U	0.69	0.47	J	0.1	10	U	0.69
Styrene	µg/L	10	U	1	0.5	U	0.1	83	U	1	0.5	U	0.1	10	U	1
Bromoform	µg/L	10	U	1.2	0.5	U	0.1	83	U	1.2	0.5	U	0.1	10	U	1.2
Isopropylbenzene	µg/L	10	U	1.3	0.5	U	0.1	83	U	1.3	0.5	U	0.1	10	U	1.3
1,1,2,2-Tetrachloroethane	µg/L	10	U	0.66	0.5	U	0.1	83	U	0.66	0.5	U	0.1	10	U	0.66
1,3-Dichlorobenzene	µg/L	10	U	0.97	0.5	U	0.1	83	U	0.97	0.33	J	0.1	10	U	0.97
1,4-Dichlorobenzene	µg/L	10	U	1.6	0.5	U	0.1	83	U	1.6	0.87		0.1	10	U	1.6
1,2-Dichlorobenzene	µg/L	10	U	0.87	0.5	U	0.1	83	U	0.87	0.21	J	0.1	10	U	0.87
1,2-Dibromo-3-chloropropane	µg/L	10	U	0.9	0.5	U	0.17	83	U	0.9	0.5	R	0.17	10	U	0.9
1,2,4-Trichlorobenzene	µg/L	10	U	0.85	0.5	U	0.1	83	U	0.85	3.3		0.1	10	U	0.85
1,2,3-Trichlorobenzene	µg/L				0.5	U	0.1				3.9	J	0.1			
Total BTEX	µg/L	0.0			0.0			0.0			0.9			0.0		

Table checked by: S.A. G. Date: 5/3/2006

Table E-1 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-4 Date Sampled: 3/17/2006 Lab ID: 939703 % Solids: NA			Sample Point MW-5 Date Sampled: 2/8/2005 Lab ID: 568415 % Solids: NA			Sample Point MW-5 Date Sampled: 3/21/2006 Lab ID: 939716 % Solids: NA			Sample Point MW-6 Date Sampled: 2/4/2005 Lab ID: 568403 %Solids: NA			Sample Point MW-6 Date Sampled: 3/21/2006 Lab ID: 939715 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/L	0.5	U	0.1	10	U	0.84	0.5	U	0.1	10	U	0.84	0.5	U	0.1
Chloromethane	µg/L	0.5	U	0.1	10	U	1.5	0.5	U	0.1	10	U	1.5	0.5	U	0.1
Vinyl Chloride	µg/L	0.5	U	0.1	10	U	0.64	0.5	U	0.1	10	U	0.64	0.5	U	0.1
Bromomethane	µg/L	0.5	U	0.1	10	U	4.1	0.5	UJ	0.1	10	UJ	4.1	0.5	UJ	0.1
Chloroethane	µg/L	0.5	U	0.1	10	U	2.1	0.5	UJ	0.1	10	U	2.1	0.5	UJ	0.1
Trichlorofluoromethane	µg/L	0.5	U	0.1	10	U	0.95	0.5	U	0.1	10	U	0.95	0.5	U	0.1
1,1-Dichloroethene	µg/L	0.5	U	0.1	10	U	0.78	0.5	U	0.1	10	U	0.78	0.5	U	0.1
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	0.5	U	0.1	10	U	0.97	0.5	U	0.1	10	U	0.97	0.5	U	0.1
Acetone	µg/L	5	R	2.1	13	U	3.1	5	R	2.1	4	J	3.1	5	R	2.1
Carbon Disulfide	µg/L	0.5	U	0.1	10	U	0.9	0.5	U	0.1	10	U	0.9	0.5	U	0.1
Methyl acetate	µg/L	0.5	R	0.18	10	U	1.5	0.5	R	0.18	10	U	1.5	0.5	R	0.18
Methylene chloride	µg/L	0.5	U	0.1	10	U	1	0.5	U	0.1	10	U	1	0.5	U	0.1
trans-1,2-Dichloroethene	µg/L	0.5	U	0.1	10	U	0.81	0.5	U	0.1	10	U	0.81	0.5	U	0.1
tert-Butyl methyl ether	µg/L	0.5	U	0.1	10	U	0.71	0.5	U	0.1	10	U	0.71	0.5	U	0.1
1,1-Dichloroethane	µg/L	0.5	U	0.1	10	U	1	0.5	U	0.1	10	U	1	0.5	U	0.1
cis-1,2-Dichloroethene	µg/L	0.5	U	0.1	10	U	1.4	0.5	U	0.1	10	U	1.4	0.5	U	0.1
2-Butanone	µg/L	5	U	1	10	U	0.96	5	U	1	10	U	0.96	5	U	1
Bromochloromethane	µg/L	0.5	U	0.1				0.5	U	0.1				0.5	U	0.1
Chloroform	µg/L	0.22	J	0.1	1	J	0.83	0.83	U	0.1	10	U	0.83	0.5	U	0.1
1,1,1-Trichloroethane	µg/L	0.5	U	0.1	10	U	1.1	0.5	U	0.1	10	U	1.1	0.5	U	0.1
Cyclohexane	µg/L	0.5	U	0.1	10	U	1.1	0.5	U	0.1	10	U	1.1	0.5	U	0.1
Carbon tetrachloride	µg/L	0.5	U	0.1	10	U	1.2	0.5	U	0.1	10	U	1.2	0.5	U	0.1
Benzene	µg/L	0.5	U	0.1	10	U	1.3	0.5	U	0.1	10	U	1.3	0.5	U	0.1
1,2-Dichloroethane	µg/L	0.5	U	0.1	10	U	1.3	0.5	U	0.1	10	U	1.3	0.5	U	0.1
Trichloroethene	µg/L	0.5	U	0.1	10	U	0.95	0.11	J	0.1	10	U	0.95	0.18	J	0.1
Methylcyclohexane	µg/L	0.5	U	0.1	10	U	0.96	0.5	U	0.1	10	U	0.96	0.5	U	0.1
1,2-Dichloropropane	µg/L	0.5	U	0.1	10	U	1.3	0.5	U	0.1	10	U	1.3	0.5	U	0.1
Bromodichloromethane	µg/L	0.5	U	0.1	10	U	0.98	0.5	U	0.1	10	U	0.98	0.5	U	0.1

Table E-1 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-4 Date Sampled: 3/17/2006 Lab ID: 939703 % Solids: NA			Sample Point MW-5 Date Sampled: 2/8/2005 Lab ID: 568415 % Solids: NA			Sample Point MW-5 Date Sampled: 3/21/2006 Lab ID: 939716 % Solids: NA			Sample Point MW-6 Date Sampled: 2/4/2005 Lab ID: 568403 %Solids: NA			Sample Point MW-6 Date Sampled: 3/21/2006 Lab ID: 939715 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
cis-1,3-Dichloropropene	µg/L	0.5	UJ	0.1	10	U	0.94	0.5	U	0.1	10	U	0.94	0.5	U	0.1
4-Methyl-2-pentanone	µg/L	5	U	1	10	U	1.2	5	U	1	10	U	1.2	5	U	1
Toluene	µg/L	0.5	U	0.1	10	U	0.8	0.5	U	0.1	10	U	0.8	0.5	U	0.1
trans-1,3-Dichloropropene	µg/L	0.5	UJ	0.1	10	U	1.2	0.5	U	0.1	10	U	1.2	0.5	U	0.1
1,1,2-Trichloroethane	µg/L	0.5	UJ	0.1	10	U	1.5	0.5	U	0.1	10	U	1.5	0.5	U	0.1
Tetrachloroethene	µg/L	0.5	U	0.1	10	U	0.97	0.27	J	0.1	10	U	0.97	0.29	J	0.1
2-Hexanone	µg/L	5	U	1	10	U	1.6	5	U	1	10	U	1.6	5	U	1
Dibromochloromethane	µg/L	0.5	U	0.1	10	U	1.4	0.5	U	0.1	10	U	1.4	0.5	U	0.1
1,2-Dibromoethane	µg/L	0.5	U	0.1	10	U	1.2	0.5	U	0.1	10	U	1.2	0.5	U	0.1
Chlorobenzene	µg/L	0.5	U	0.1	10	U	0.73	0.5	U	0.1	10	U	0.73	0.5	U	0.1
Ethylbenzene	µg/L	0.5	U	0.1	10	U	0.84	0.5	U	0.1	10	U	0.84	0.5	U	0.1
Xylenes (total)	µg/L	0.5	U	0.1	2	J	0.69	0.5	U	0.1	10	U	0.69	0.5	U	0.1
Styrene	µg/L	0.5	U	0.1	10	U	1	0.5	U	0.1	10	U	1	0.5	U	0.1
Bromoform	µg/L	0.5	U	0.1	10	U	1.2	0.5	U	0.1	10	U	1.2	0.5	U	0.1
Isopropylbenzene	µg/L	0.5	U	0.1	10	U	1.3	0.5	U	0.1	10	U	1.3	0.5	U	0.1
1,1,2,2-Tetrachloroethane	µg/L	0.5	U	0.1	10	U	0.66	0.5	U	0.1	10	U	0.66	0.5	U	0.1
1,3-Dichlorobenzene	µg/L	0.5	U	0.1	10	U	0.97	0.5	U	0.1	10	U	0.97	0.5	U	0.1
1,4-Dichlorobenzene	µg/L	0.5	U	0.1	10	U	1.6	0.5	U	0.1	10	U	1.6	0.5	U	0.1
1,2-Dichlorobenzene	µg/L	0.5	U	0.1	10	U	0.87	0.5	U	0.1	10	U	0.87	0.5	U	0.1
1,2-Dibromo-3-chloropropane	µg/L	0.5	U	0.17	10	U	0.9	0.5	U	0.17	10	U	0.9	0.5	U	0.17
1,2,4-Trichlorobenzene	µg/L	0.5	U	0.1	10	U	0.85	0.5	U	0.1	10	U	0.85	0.5	U	0.1
1,2,3-Trichlorobenzene	µg/L	0.5	U	0.1				0.5	U	0.1				0.27	J	0.1
Total BTEX	µg/L	0.0			2.0			0.0			0.0			0.0		

Table checked by: S.A. G. Date: 5/3/2006

Table E-1 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-7 Date Sampled: 2/3/2005 Lab ID: 566719 % Solids: NA			Sample Point MW-7 Date Sampled: 3/20/2006 Lab ID: 939710 % Solids: NA			Sample Point MW-8A Date Sampled: 2/8/2005 Lab ID: 568414 % Solids: NA			Sample Point MW-8A Date Sampled: 3/20/2006 Lab ID: 939713 %Solids: NA			Sample Point MW-8B Date Sampled: 2/8/2005 Lab ID: 568411 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/L	25	U	0.84	0.5	U	0.1	50	U	0.84	0.5	U	0.1	10	U	0.84
Chloromethane	µg/L	25	U	1.5	0.5	U	0.1	50	U	1.5	0.5	U	0.1	10	U	1.5
Vinyl Chloride	µg/L	25	U	0.64	0.5	U	0.1	50	U	0.64	0.5	U	0.1	10	U	0.64
Bromomethane	µg/L	25	UJ	4.1	0.5	UJ	0.1	50	U	4.1	0.5	UJ	0.1	10	U	4.1
Chloroethane	µg/L	25	U	2.1	0.5	UJ	0.1	50	U	2.1	0.5	UJ	0.1	10	U	2.1
Trichlorofluoromethane	µg/L	25	UJ	0.95	0.5	U	0.1	50	U	0.95	0.5	U	0.1	10	U	0.95
1,1-Dichloroethene	µg/L	25	U	0.78	0.5	U	0.1	50	U	0.78	1.9		0.1	10	U	0.78
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	25	U	0.97	0.5	U	0.1	50	U	0.97	0.2	J	0.1	10	U	0.97
Acetone	µg/L	25	U	3.1	5	R	2.1	50	U	3.1	5	R	2.1	10	U	3.1
Carbon Disulfide	µg/L	25	U	0.9	0.5	U	0.1	50	U	0.9	0.5	U	0.1	10	U	0.9
Methyl acetate	µg/L	25	U	1.5	0.5	R	0.18	50	U	1.5	0.5	R	0.18	10	U	1.5
Methylene chloride	µg/L	25	U	1	0.5	U	0.1	50	U	1	0.5	U	0.1	10	U	1
trans-1,2-Dichloroethene	µg/L	25	U	0.81	0.5	U	0.1	50	U	0.81	0.5	U	0.1	10	U	0.81
tert-Butyl methyl ether	µg/L	25	U	0.71	0.5	U	0.1	50	U	0.71	0.5	U	0.1	10	U	0.71
1,1-Dichloroethane	µg/L	25	U	1	0.5	U	0.1	50	U	1	0.16	J	0.1	10	U	1
cis-1,2-Dichloroethene	µg/L	33		1.4	15		0.1	87		1.4	25		0.1	10	U	1.4
2-Butanone	µg/L	25	U	0.96	5	U	1	50	U	0.96	5	U	1	10	U	0.96
Bromochloromethane	µg/L				0.5	U	0.1				0.5	U	0.1			
Chloroform	µg/L	25	U	0.83	0.5	U	0.1	50	U	0.83	1.6		0.1	10	U	0.83
1,1,1-Trichloroethane	µg/L	3	J	1.1	1.4		0.1	19	J	1.1	35	J	0.1	10	U	1.1
Cyclohexane	µg/L	25	U	1.1	0.5	U	0.1	50	U	1.1	0.5	U	0.1	10	U	1.1
Carbon tetrachloride	µg/L	25	U	1.2	0.5	U	0.1	50	U	1.2	0.5	U	0.1	10	U	1.2
Benzene	µg/L	25	U	1.3	0.5	U	0.1	50	U	1.3	1.7		0.1	10	U	1.3
1,2-Dichloroethane	µg/L	25	U	1.3	0.5	U	0.1	50	U	1.3	0.5	U	0.1	10	U	1.3
Trichloroethene	µg/L	14	J	0.95	19		0.1	610		0.95	2100		0.1	4	J	0.95
Methylcyclohexane	µg/L	25	U	0.96	0.5	U	0.1	50	U	0.96	0.5	U	0.1	10	U	0.96
1,2-Dichloropropane	µg/L	25	U	1.3	0.5	U	0.1	50	U	1.3	0.5	U	0.1	10	U	1.3
Bromodichloromethane	µg/L	25	U	0.98	0.5	U	0.1	50	U	0.98	0.5	U	0.1	10	U	0.98

Table E-1 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-7 Date Sampled: 2/3/2005 Lab ID: 566719 % Solids: NA			Sample Point MW-7 Date Sampled: 3/20/2006 Lab ID: 939710 % Solids: NA			Sample Point MW-8A Date Sampled: 2/8/2005 Lab ID: 568414 % Solids: NA			Sample Point MW-8A Date Sampled: 3/20/2006 Lab ID: 939713 %Solids: NA			Sample Point MW-8B Date Sampled: 2/8/2005 Lab ID: 568411 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
cis-1,3-Dichloropropene	µg/L	25	U	0.94	0.5	U	0.1	50	U	0.94	0.5	U	0.1	10	U	0.94
4-Methyl-2-pentanone	µg/L	25	U	1.2	5	U	1	50	U	1.2	5	U	1	10	U	1.2
Toluene	µg/L	25	U	0.8	0.5	U	0.1	50	U	0.8	0.79	U	0.1	10	U	0.8
trans-1,3-Dichloropropene	µg/L	25	U	1.2	0.5	U	0.1	50	U	1.2	0.5	U	0.1	10	U	1.2
1,1,2-Trichloroethane	µg/L	25	U	1.5	0.5	U	0.1	50	U	1.5	2.7		0.1	10	U	1.5
Tetrachloroethene	µg/L	260		0.97	110		0.1	790		0.97	4200		0.1	2	J	0.97
2-Hexanone	µg/L	25	U	1.6	5	U	1	50	U	1.6	5	U	1	10	U	1.6
Dibromochloromethane	µg/L	25	U	1.4	0.5	U	0.1	50	U	1.4	0.5	U	0.1	10	U	1.4
1,2-Dibromoethane	µg/L	25	U	1.2	0.5	U	0.1	50	U	1.2	0.5	U	0.1	10	U	1.2
Chlorobenzene	µg/L	4	J	0.73	0.5	U	0.1	50	U	0.73	4.1		0.1	10	U	0.73
Ethylbenzene	µg/L	25	U	0.84	0.5	U	0.1	50	U	0.84	4.4		0.1	10	U	0.84
Xylenes (total)	µg/L	25	U	0.69	0.5	U	0.1	27	J	0.69	58		0.1	10	U	0.69
Styrene	µg/L	25	U	1	0.5	U	0.1	50	U	1	0.5	U	0.1	10	U	1
Bromoform	µg/L	25	U	1.2	0.5	U	0.1	50	U	1.2	0.5	U	0.1	10	U	1.2
Isopropylbenzene	µg/L	25	U	1.3	0.5	U	0.1	50	U	1.3	0.5	U	0.1	10	U	1.3
1,1,2,2-Tetrachloroethane	µg/L	25	U	0.66	0.5	U	0.1	50	U	0.66	1		0.1	10	U	0.66
1,3-Dichlorobenzene	µg/L	25	U	0.97	0.25	J	0.1	50	U	0.97	8.4		0.1	10	U	0.97
1,4-Dichlorobenzene	µg/L	25	U	1.6	0.55		0.1	50	U	1.6	4.9		0.1	10	U	1.6
1,2-Dichlorobenzene	µg/L	25	U	0.87	0.66		0.1	50	U	0.87	1.6		0.1	10	U	0.87
1,2-Dibromo-3-chloropropane	µg/L	25	U	0.9	0.5	U	0.17	50	U	0.9	0.5	U	0.17	10	U	0.9
1,2,4-Trichlorobenzene	µg/L	25	U	0.85	0.48	J	0.1	50	U	0.85	5.1		0.1	10	U	0.85
1,2,3-Trichlorobenzene	µg/L				7.7		0.1				96	J	0.1			
Total BTEX	µg/L	0.0			0.0			27.0			64.1			0.0		

Table checked by: S.A. G. Date: 5/3/2006

Table E-1 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-8B Date Sampled: 3/20/2006 Lab ID: 939712 % Solids: NA			Sample Point MW-9 Date Sampled: 2/4/2005 Lab ID: 568404 % Solids: NA			Sample Point FMW-9 Date Sampled: 2/4/2005 Lab ID: 568409 % Solids: NA			Sample Point MW-9 Date Sampled: 3/21/2006 Lab ID: 939720 %Solids: NA			Sample Point MW-10 Date Sampled: 2/8/2005 Lab ID: 568416 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/L	0.5	U	0.1	10	U	0.84	10	U	0.84	0.5	U	0.1	10	U	0.84
Chloromethane	µg/L	0.5	U	0.1	10	U	1.5	10	U	1.5	0.5	U	0.1	10	U	1.5
Vinyl Chloride	µg/L	0.5	U	0.1	10	U	0.64	10	U	0.64	0.5	U	0.1	10	U	0.64
Bromomethane	µg/L	0.5	UJ	0.1	10	UJ	4.1	10	U	4.1	0.5	U	0.1	10	U	4.1
Chloroethane	µg/L	0.5	UJ	0.1	10	U	2.1	10	U	2.1	0.5	U	0.1	10	U	2.1
Trichlorofluoromethane	µg/L	0.5	U	0.1	10	U	0.95	10	U	0.95	0.5	U	0.1	10	U	0.95
1,1-Dichloroethene	µg/L	0.5	U	0.1	10	U	0.78	10	U	0.78	0.5	U	0.1	10	U	0.78
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	0.5	U	0.1	10	U	0.97	10	U	0.97	0.5	U	0.1	10	U	0.97
Acetone	µg/L	5	R	2.1	6	J	3.1	10	U	3.1	5	R	2.1	10	U	3.1
Carbon Disulfide	µg/L	0.5	U	0.1	10	U	0.9	10	U	0.9	0.5	U	0.1	10	U	0.9
Methyl acetate	µg/L	0.5	R	0.18	10	U	1.5	10	U	1.5	0.5	R	0.18	10	U	1.5
Methylene chloride	µg/L	0.5	U	0.1	10	U	1	10	U	1	0.5	U	0.1	10	U	1
trans-1,2-Dichloroethene	µg/L	0.5	U	0.1	10	U	0.81	10	U	0.81	0.5	U	0.1	10	U	0.81
tert-Butyl methyl ether	µg/L	0.5	U	0.1	10	U	0.71	10	U	0.71	0.5	U	0.1	10	U	0.71
1,1-Dichloroethane	µg/L	0.5	U	0.1	10	U	1	10	U	1	0.5	U	0.1	10	U	1
cis-1,2-Dichloroethene	µg/L	0.14	J	0.1	10	U	1.4	10	U	1.4	0.5	U	0.1	10	U	1.4
2-Butanone	µg/L	5	U	1	10	U	0.96	10	U	0.96	5	U	1	10	U	0.96
Bromochloromethane	µg/L	0.5	U	0.1							0.5	U	0.1			
Chloroform	µg/L	0.5	U	0.1	10	U	0.83	10	U	0.83	0.5	U	0.1	2	J	0.83
1,1,1-Trichloroethane	µg/L	0.5	U	0.1	10	U	1.1	10	U	1.1	0.5	U	0.1	2	J	1.1
Cyclohexane	µg/L	0.5	U	0.1	10	U	1.1	10	U	1.1	0.5	U	0.1	10	U	1.1
Carbon tetrachloride	µg/L	0.5	U	0.1	10	U	1.2	10	U	1.2	0.5	U	0.1	10	U	1.2
Benzene	µg/L	0.5	U	0.1	10	U	1.3	10	U	1.3	0.5	U	0.1	10	U	1.3
1,2-Dichloroethane	µg/L	0.5	U	0.1	10	U	1.3	10	U	1.3	0.5	U	0.1	10	U	1.3
Trichloroethene	µg/L	0.45	J	0.1	10	U	0.95	10	U	0.95	0.5	U	0.1	34		0.95
Methylcyclohexane	µg/L	0.5	U	0.1	10	U	0.96	10	U	0.96	0.5	U	0.1	10	U	0.96
1,2-Dichloropropane	µg/L	0.5	U	0.1	10	U	1.3	10	U	1.3	0.5	U	0.1	10	U	1.3
Bromodichloromethane	µg/L	0.5	U	0.1	10	U	0.98	10	U	0.98	0.5	U	0.1	10	U	0.98

Table E-1 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-8B Date Sampled: 3/20/2006 Lab ID: 939712 % Solids: NA			Sample Point MW-9 Date Sampled: 2/4/2005 Lab ID: 568404 % Solids: NA			Sample Point FMW-9 Date Sampled: 2/4/2005 Lab ID: 568409 % Solids: NA			Sample Point MW-9 Date Sampled: 3/21/2006 Lab ID: 939720 %Solids: NA			Sample Point MW-10 Date Sampled: 2/8/2005 Lab ID: 568416 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
cis-1,3-Dichloropropene	µg/L	0.5	U	0.1	10	U	0.94	10	U	0.94	0.5	U	0.1	10	U	0.94
4-Methyl-2-pentanone	µg/L	5	U	1	10	U	1.2	10	U	1.2	5	U	1	10	U	1.2
Toluene	µg/L	0.5	U	0.1	10	U	0.8	10	U	0.8	0.5	U	0.1	10	U	0.8
trans-1,3-Dichloropropene	µg/L	0.5	U	0.1	10	U	1.2	10	U	1.2	0.5	U	0.1	10	U	1.2
1,1,2-Trichloroethane	µg/L	0.5	U	0.1	10	U	1.5	10	U	1.5	0.5	U	0.1	10	U	1.5
Tetrachloroethene	µg/L	0.56	U	0.1	10	U	0.97	10	U	0.97	0.5	U	0.1	180		0.97
2-Hexanone	µg/L	5	U	1	10	U	1.6	10	U	1.6	5	U	1	10	U	1.6
Dibromochloromethane	µg/L	0.5	U	0.1	10	U	1.4	10	U	1.4	0.5	U	0.1	10	U	1.4
1,2-Dibromoethane	µg/L	0.5	U	0.1	10	U	1.2	10	U	1.2	0.5	U	0.1	10	U	1.2
Chlorobenzene	µg/L	0.5	U	0.1	10	U	0.73	10	U	0.73	0.5	U	0.1	10	U	0.73
Ethylbenzene	µg/L	0.5	U	0.1	10	U	0.84	10	U	0.84	0.5	U	0.1	10	U	0.84
Xylenes (total)	µg/L	1.4		0.1	10	U	0.69	10	U	0.69	0.5	U	0.1	10	U	0.69
Styrene	µg/L	0.5	U	0.1	10	U	1	10	U	1	0.5	U	0.1	10	U	1
Bromoform	µg/L	0.5	U	0.1	10	U	1.2	10	U	1.2	0.5	U	0.1	10	U	1.2
Isopropylbenzene	µg/L	0.5	U	0.1	10	U	1.3	10	U	1.3	0.5	U	0.1	10	U	1.3
1,1,2,2-Tetrachloroethane	µg/L	0.5	U	0.1	10	U	0.66	10	U	0.66	0.5	U	0.1	10	U	0.66
1,3-Dichlorobenzene	µg/L	0.5	U	0.1	10	U	0.97	10	U	0.97	0.5	U	0.1	10	U	0.97
1,4-Dichlorobenzene	µg/L	0.5	U	0.1	10	U	1.6	10	U	1.6	0.5	U	0.1	10	U	1.6
1,2-Dichlorobenzene	µg/L	0.5	U	0.1	10	U	0.87	10	U	0.87	0.5	U	0.1	10	U	0.87
1,2-Dibromo-3-chloropropane	µg/L	0.5	U	0.17	10	U	0.9	10	U	0.9	0.5	U	0.17	10	U	0.9
1,2,4-Trichlorobenzene	µg/L	0.5	U	0.1	10	U	0.85	10	U	0.85	0.5	UJ	0.1	10	U	0.85
1,2,3-Trichlorobenzene	µg/L	0.5	U	0.1							0.5	UJ	0.1			
Total BTEX	µg/L	1.4			0.0			0.0			0.0			0.0		

Table checked by: S.A. G. Date: 5/3/2006

Table E-1 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-10 Date Sampled: 3/21/2006 Lab ID: 940801 % Solids: NA			Sample Point MW-11 Date Sampled: 2/4/2005 Lab ID: 568408 % Solids: NA			Sample Point MW-11 Date Sampled: 3/20/2006 Lab ID: 939708 % Solids: NA			Sample Point MW-12 Date Sampled: 2/2/2005 Lab ID: 566710 %Solids: NA			Sample Point MW-12 Date Sampled: 3/14/2006 Lab ID: 934212 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/L	0.5	U	0.1	10	U	0.84	0.5	U	0.1	10	U	0.84	0.5	U	0.1
Chloromethane	µg/L	0.5	U	0.1	10	U	1.5	0.5	U	0.1	10	U	1.5	0.5	U	0.1
Vinyl Chloride	µg/L	0.5	U	0.1	10	U	0.64	0.5	U	0.1	10	U	0.64	0.5	U	0.1
Bromomethane	µg/L	0.5	U	0.1	10	U	4.1	0.5	U	0.1	10	U	4.1	0.5	U	0.1
Chloroethane	µg/L	0.5	U	0.1	10	U	2.1	0.5	U	0.1	10	U	2.1	0.5	U	0.1
Trichlorofluoromethane	µg/L	0.5	U	0.1	10	U	0.95	0.5	U	0.1	10	U	0.95	0.5	U	0.1
1,1-Dichloroethene	µg/L	0.5	U	0.1	10	U	0.78	0.5	U	0.1	2	J	0.78	4.3	J	0.1
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	0.5	U	0.1	10	U	0.97	0.5	U	0.1	10	U	0.97	0.5	U	0.1
Acetone	µg/L	5	R	2.1	10	U	3.1	5	R	2.1	10	U	3.1	5	R	2.1
Carbon Disulfide	µg/L	0.5	U	0.1	10	U	0.9	0.5	U	0.1	10	U	0.9	0.5	U	0.1
Methyl acetate	µg/L	0.5	R	0.18	10	U	1.5	0.5	U	0.18	10	U	1.5	0.5	R	0.18
Methylene chloride	µg/L	0.5	U	0.1	10	U	1	0.5	U	0.1	10	U	1	0.13	J	0.1
trans-1,2-Dichloroethene	µg/L	0.5	U	0.1	10	U	0.81	0.5	U	0.1	1	J	0.81	0.26	J	0.1
tert-Butyl methyl ether	µg/L	0.5	U	0.1	10	U	0.71	0.5	U	0.1	10	U	0.71	0.5	U	0.1
1,1-Dichloroethane	µg/L	0.5	U	0.1	10	U	1	0.5	U	0.1	2	J	1	1.5	J	0.1
cis-1,2-Dichloroethene	µg/L	0.5	U	0.1	10	U	1.4	0.5	U	0.1	490		1.4	520		0.1
2-Butanone	µg/L	5	U	1	10	U	0.96	5	R	1	10	U	0.96	5	U	1
Bromochloromethane	µg/L	0.5	U	0.1				0.5	U	0.1				0.5	UJ	0.1
Chloroform	µg/L	2.7		0.1	10	U	0.83	0.5	U	0.1	10	U	0.83	0.54	J	0.1
1,1,1-Trichloroethane	µg/L	1		0.1	10	U	1.1	0.5	U	0.1	3	J	1.1	1.9		0.1
Cyclohexane	µg/L	0.5	U	0.1	10	U	1.1	0.5	U	0.1	10	U	1.1	0.5	UJ	0.1
Carbon tetrachloride	µg/L	0.5	U	0.1	10	U	1.2	0.5	U	0.1	10	U	1.2	0.5	U	0.1
Benzene	µg/L	0.5	U	0.1	10	U	1.3	0.5	U	0.1	110		1.3	140		0.1
1,2-Dichloroethane	µg/L	0.5	U	0.1	10	U	1.3	0.5	U	0.1	2	J	1.3	0.5	U	0.1
Trichloroethene	µg/L	12		0.1	10	U	0.95	0.5	U	0.1	250		0.95	130		0.1
Methylcyclohexane	µg/L	0.5	U	0.1	10	U	0.96	0.5	U	0.1	10	U	0.96	0.5	UJ	0.1
1,2-Dichloropropane	µg/L	0.5	U	0.1	10	U	1.3	0.5	U	0.1	10	U	1.3	0.5	UJ	0.1
Bromodichloromethane	µg/L	0.5	U	0.1	10	U	0.98	0.5	U	0.1	10	U	0.98	0.5	UJ	0.1

Table E-1 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-10 Date Sampled: 3/21/2006 Lab ID: 940801 % Solids: NA			Sample Point MW-11 Date Sampled: 2/4/2005 Lab ID: 568408 % Solids: NA			Sample Point MW-11 Date Sampled: 3/20/2006 Lab ID: 939708 % Solids: NA			Sample Point MW-12 Date Sampled: 2/2/2005 Lab ID: 566710 %Solids: NA			Sample Point MW-12 Date Sampled: 3/14/2006 Lab ID: 934212 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
cis-1,3-Dichloropropene	µg/L	0.5	U	0.1	10	U	0.94	0.5	U	0.1	10	U	0.94	0.5	UJ	0.1
4-Methyl-2-pentanone	µg/L	5	U	1	10	U	1.2	5	U	1	10	U	1.2	5	U	1
Toluene	µg/L	0.5	U	0.1	10	U	0.8	0.5	U	0.1	10	U	0.8	0.5	U	0.1
trans-1,3-Dichloropropene	µg/L	0.5	U	0.1	10	U	1.2	0.5	U	0.1	10	U	1.2	0.5	UJ	0.1
1,1,2-Trichloroethane	µg/L	0.5	U	0.1	10	U	1.5	0.5	U	0.1	2	J	1.5	1.1	J	0.1
Tetrachloroethene	µg/L	41		0.1	10	U	0.97	0.5	U	0.1	7	J	0.97	7.6	J	0.1
2-Hexanone	µg/L	5	U	1	10	U	1.6	5	U	1	10	U	1.6	5	U	1
Dibromochloromethane	µg/L	0.5	U	0.1	10	U	1.4	0.5	U	0.1	10	U	1.4	0.5	U	0.1
1,2-Dibromoethane	µg/L	0.5	U	0.1	10	U	1.2	0.5	U	0.1	10	U	1.2	0.5	U	0.1
Chlorobenzene	µg/L	0.5	U	0.1	10	U	0.73	0.5	U	0.1	10		0.73	7.9	J	0.1
Ethylbenzene	µg/L	0.5	U	0.1	10	U	0.84	0.5	U	0.1	1	J	0.84	0.25	J	0.1
Xylenes (total)	µg/L	0.5	U	0.1	4	J	0.69	0.5	U	0.1	370		0.69	11		0.1
Styrene	µg/L	0.5	U	0.1	10	U	1	0.5	U	0.1	10	U	1	0.5	U	0.1
Bromoform	µg/L	0.5	U	0.1	10	U	1.2	0.5	U	0.1	10	U	1.2	0.5	U	0.1
Isopropylbenzene	µg/L	0.5	U	0.1	10	U	1.3	0.5	U	0.1	10	U	1.3	0.59		0.1
1,1,2,2-Tetrachloroethane	µg/L	0.5	U	0.1	10	U	0.66	0.5	U	0.1	10	U	0.66	0.5	U	0.1
1,3-Dichlorobenzene	µg/L	0.5	U	0.1	10	U	0.97	0.5	U	0.1	10	U	0.97	0.61		0.1
1,4-Dichlorobenzene	µg/L	0.5	U	0.1	10	U	1.6	0.5	U	0.1	3	J	1.6	1.8		0.1
1,2-Dichlorobenzene	µg/L	0.5	U	0.1	10	U	0.87	0.5	U	0.1	1	J	0.87	0.96		0.1
1,2-Dibromo-3-chloropropane	µg/L	0.5	U	0.17	10	U	0.9	0.5	R	0.17	10	U	0.9	0.5	U	0.17
1,2,4-Trichlorobenzene	µg/L	0.5	UJ	0.1	10	U	0.85	0.5	U	0.1	10	U	0.85	3.6		0.1
1,2,3-Trichlorobenzene	µg/L	0.5	UJ	0.1				0.5	UJ	0.1				3.9		0.1
Total BTEX	µg/L	0.0			4.0			0.0			481.0			151.3		

Table checked by: S.A. G. Date: 5/3/2006

Table E-1 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-13 Date Sampled: 2/2/2005 Lab ID: 566708 % Solids: NA			Sample Point MW-13 Date Sampled: 3/14/2006 Lab ID: 934207 % Solids: NA			Sample Point MW-14 Date Sampled: 2/3/2005 Lab ID: 568401 % Solids: NA			Sample Point MW-14 Date Sampled: 3/14/2006 Lab ID: 934206 %Solids: NA			Sample Point MW-15 Date Sampled: 2/1/2005 Lab ID: 566706 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/L	10	U	0.84	0.5	U	0.1	10	U	0.84	0.5	U	0.1	10	U	0.84
Chloromethane	µg/L	10	U	1.5	0.5	U	0.1	10	U	1.5	0.5	U	0.1	10	U	1.5
Vinyl Chloride	µg/L	10	U	0.64	0.5	U	0.1	10	U	0.64	0.5	U	0.1	10	U	0.64
Bromomethane	µg/L	10	U	4.1	0.5	U	0.1	10	UJ	4.1	0.5	U	0.1	10	U	4.1
Chloroethane	µg/L	10	U	2.1	0.5	U	0.1	10	U	2.1	0.5	U	0.1	10	U	2.1
Trichlorofluoromethane	µg/L	10	U	0.95	0.5	U	0.1	10	U	0.95	0.5	U	0.1	10	U	0.95
1,1-Dichloroethene	µg/L	10	U	0.78	0.5	U	0.1	10	U	0.78	0.5	U	0.1	10	U	0.78
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	10	U	0.97	0.5	U	0.1	10	U	0.97	0.5	U	0.1	10	U	0.97
Acetone	µg/L	10	UJ	3.1	5	R	2.1	10	U	3.1	5	R	2.1	10	UJ	3.1
Carbon Disulfide	µg/L	10	U	0.9	0.5	U	0.1	10	U	0.9	0.5	U	0.1	10	U	0.9
Methyl acetate	µg/L	10	U	1.5	0.5	R	0.18	10	U	1.5	0.5	U	0.18	10	U	1.5
Methylene chloride	µg/L	10	U	1	0.5	U	0.1	10	U	1	0.5	U	0.1	10	U	1
trans-1,2-Dichloroethene	µg/L	10	U	0.81	0.5	U	0.1	10	U	0.81	0.5	U	0.1	10	U	0.81
tert-Butyl methyl ether	µg/L	10	U	0.71	0.5	U	0.1	10	U	0.71	0.5	U	0.1	10	U	0.71
1,1-Dichloroethane	µg/L	10	U	1	0.5	UJ	0.1	10	U	1	0.5	U	0.1	10	U	1
cis-1,2-Dichloroethene	µg/L	10	U	1.4	0.5	U	0.1	10	U	1.4	0.5	U	0.1	10	U	1.4
2-Butanone	µg/L	10	U	0.96	5	U	1	10	U	0.96	5	R	1	10	U	0.96
Bromochloromethane	µg/L				0.5	U	0.1				0.5	U	0.1			
Chloroform	µg/L	10	U	0.83	0.51		0.1	10	U	0.83	0.5	U	0.1	10	U	0.83
1,1,1-Trichloroethane	µg/L	10	U	1.1	0.5	U	0.1	10	U	1.1	0.5	U	0.1	10	U	1.1
Cyclohexane	µg/L	10	U	1.1	0.5	UJ	0.1	10	U	1.1	0.5	U	0.1	10	U	1.1
Carbon tetrachloride	µg/L	10	U	1.2	0.5	U	0.1	10	U	1.2	0.5	U	0.1	10	U	1.2
Benzene	µg/L	10	U	1.3	0.5	U	0.1	10	U	1.3	0.5	U	0.1	10	U	1.3
1,2-Dichloroethane	µg/L	10	U	1.3	0.5	U	0.1	10	U	1.3	0.5	U	0.1	10	U	1.3
Trichloroethene	µg/L	10	U	0.95	0.5	U	0.1	10	U	0.95	0.5	U	0.1	2	J	0.95
Methylcyclohexane	µg/L	10	U	0.96	0.5	UJ	0.1	10	U	0.96	0.5	U	0.1	10	U	0.96
1,2-Dichloropropane	µg/L	10	U	1.3	0.5	UJ	0.1	10	U	1.3	0.5	U	0.1	10	U	1.3
Bromodichloromethane	µg/L	10	U	0.98	0.5	UJ	0.1	10	U	0.98	0.5	U	0.1	10	U	0.98

Table E-1 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-13 Date Sampled: 2/2/2005 Lab ID: 566708 % Solids: NA			Sample Point MW-13 Date Sampled: 3/14/2006 Lab ID: 934207 % Solids: NA			Sample Point MW-14 Date Sampled: 2/3/2005 Lab ID: 568401 % Solids: NA			Sample Point MW-14 Date Sampled: 3/14/2006 Lab ID: 934206 %Solids: NA			Sample Point MW-15 Date Sampled: 2/1/2005 Lab ID: 566706 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
cis-1,3-Dichloropropene	µg/L	10	U	0.94	0.5	U	0.1	10	U	0.94	0.5	U	0.1	10	U	0.94
4-Methyl-2-pentanone	µg/L	10	U	1.2	5	U	1	10	U	1.2	5	U	1	10	U	1.2
Toluene	µg/L	10	U	0.8	0.5	U	0.1	10	U	0.8	0.5	U	0.1	10	U	0.8
trans-1,3-Dichloropropene	µg/L	10	U	1.2	0.5	UJ	0.1	10	U	1.2	0.5	U	0.1	10	U	1.2
1,1,2-Trichloroethane	µg/L	10	U	1.5	0.5	UJ	0.1	10	U	1.5	0.5	U	0.1	10	U	1.5
Tetrachloroethene	µg/L	10	U	0.97	0.59		0.1	10	U	0.97	1.4		0.1	3	J	0.97
2-Hexanone	µg/L	10	U	1.6	5	U	1	10	U	1.6	5	U	1	10	U	1.6
Dibromochloromethane	µg/L	10	U	1.4	0.5	U	0.1	10	U	1.4	0.5	U	0.1	10	U	1.4
1,2-Dibromoethane	µg/L	10	U	1.2	0.5	U	0.1	10	U	1.2	0.5	U	0.1	10	U	1.2
Chlorobenzene	µg/L	10	U	0.73	0.5	U	0.1	10	U	0.73	0.5	U	0.1	10	U	0.73
Ethylbenzene	µg/L	10	U	0.84	0.5	U	0.1	10	U	0.84	0.5	U	0.1	10	U	0.84
Xylenes (total)	µg/L	10	U	0.69	0.5	U	0.1	10	U	0.69	0.5	U	0.1	10	U	0.69
Styrene	µg/L	10	U	1	0.5	U	0.1	10	U	1	0.5	U	0.1	10	U	1
Bromoform	µg/L	10	U	1.2	0.5	U	0.1	10	U	1.2	0.5	U	0.1	10	U	1.2
Isopropylbenzene	µg/L	10	U	1.3	0.5	U	0.1	10	U	1.3	0.5	U	0.1	10	U	1.3
1,1,2,2-Tetrachloroethane	µg/L	10	U	0.66	0.5	U	0.1	10	U	0.66	0.5	U	0.1	10	U	0.66
1,3-Dichlorobenzene	µg/L	10	U	0.97	0.5	U	0.1	10	U	0.97	0.5	U	0.1	10	U	0.97
1,4-Dichlorobenzene	µg/L	10	U	1.6	0.5	U	0.1	10	U	1.6	0.5	U	0.1	10	U	1.6
1,2-Dichlorobenzene	µg/L	10	U	0.87	0.5	U	0.1	10	U	0.87	0.5	U	0.1	10	U	0.87
1,2-Dibromo-3-chloropropane	µg/L	10	U	0.9	0.5	U	0.17	10	U	0.9	0.5	R	0.17	10	U	0.9
1,2,4-Trichlorobenzene	µg/L	10	U	0.85	0.5	U	0.1	10	U	0.85	0.5	U	0.1	10	U	0.85
1,2,3-Trichlorobenzene	µg/L				0.5	U	0.1				0.5	U	0.1			
Total BTEX	µg/L	0.0			0.0			0.0			0.0			0.0		

Table checked by: S.A. G. Date: 5/3/2006

Table E-1 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-15 Date Sampled: 3/14/2006 Lab ID: 934208 % Solids: NA			Sample Point MW-16 Date Sampled: 2/1/2005 Lab ID: 566704 % Solids: NA			Sample Point MW-16 Date Sampled: 3/23/2006 Lab ID: 940806 % Solids: NA			Sample Point MW-17 Date Sampled: 2/1/2005 Lab ID: 566703 %Solids: NA			Sample Point MW-17 Date Sampled: 3/13/2006 Lab ID: 934203 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/L	0.5	U	0.1	10	U	0.84	0.5	U	0.1	10	U	0.84	0.5	U	0.1
Chloromethane	µg/L	0.5	U	0.1	10	U	1.5	0.5	U	0.1	10	U	1.5	0.5	U	0.1
Vinyl Chloride	µg/L	0.5	U	0.1	10	U	0.64	0.5	U	0.1	10	U	0.64	0.5	U	0.1
Bromomethane	µg/L	0.5	U	0.1	10	U	4.1	0.5	U	0.1	10	U	4.1	0.5	U	0.1
Chloroethane	µg/L	0.5	U	0.1	10	U	2.1	0.5	U	0.1	10	U	2.1	0.5	U	0.1
Trichlorofluoromethane	µg/L	0.5	U	0.1	10	U	0.95	0.5	U	0.1	10	U	0.95	0.5	U	0.1
1,1-Dichloroethene	µg/L	0.5	U	0.1	10	U	0.78	0.5	U	0.1	10	U	0.78	0.5	U	0.1
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	0.5	U	0.1	10	U	0.97	0.5	U	0.1	10	U	0.97	0.5	U	0.1
Acetone	µg/L	7	R	2.1	10	UJ	3.1	5	R	2.1	10	UJ	3.1	5	R	2.1
Carbon Disulfide	µg/L	0.5	U	0.1	10	U	0.9	0.5	U	0.1	10	U	0.9	0.5	U	0.1
Methyl acetate	µg/L	0.5	U	0.18	10	U	1.5	0.5	R	0.18	10	U	1.5	0.5	U	0.18
Methylene chloride	µg/L	0.5	U	0.1	10	U	1	0.5	U	0.1	10	U	1	0.5	U	0.1
trans-1,2-Dichloroethene	µg/L	0.5	U	0.1	10	U	0.81	0.5	U	0.1	10	U	0.81	0.5	U	0.1
tert-Butyl methyl ether	µg/L	0.5	U	0.1	10	U	0.71	0.5	U	0.1	10	U	0.71	0.5	U	0.1
1,1-Dichloroethane	µg/L	0.5	U	0.1	10	U	1	0.5	U	0.1	10	U	1	0.5	U	0.1
cis-1,2-Dichloroethene	µg/L	0.5	U	0.1	2	J	1.4	0.5	U	0.1	10	U	1.4	0.5	U	0.1
2-Butanone	µg/L	5	R	1	10	U	0.96	5	U	1	10	U	0.96	5	R	1
Bromochloromethane	µg/L	0.5	U	0.1				0.5	U	0.1				0.5	U	0.1
Chloroform	µg/L	0.36	J	0.1	10	U	0.83	0.5	U	0.1	10	U	0.83	0.15	J	0.1
1,1,1-Trichloroethane	µg/L	0.5	U	0.1	10	U	1.1	0.5	U	0.1	10	U	1.1	0.5	U	0.1
Cyclohexane	µg/L	0.5	U	0.1	10	U	1.1	0.5	U	0.1	10	U	1.1	0.5	U	0.1
Carbon tetrachloride	µg/L	0.5	U	0.1	10	U	1.2	0.5	U	0.1	10	U	1.2	0.5	U	0.1
Benzene	µg/L	0.5	U	0.1	10	U	1.3	0.5	U	0.1	10	U	1.3	0.5	U	0.1
1,2-Dichloroethane	µg/L	0.5	U	0.1	10	U	1.3	0.5	U	0.1	10	U	1.3	0.5	U	0.1
Trichloroethene	µg/L	0.5	U	0.1	47		0.95	0.87		0.1	10	U	0.95	0.23	J	0.1
Methylcyclohexane	µg/L	0.5	U	0.1	10	U	0.96	0.5	U	0.1	10	U	0.96	0.5	U	0.1
1,2-Dichloropropane	µg/L	0.5	U	0.1	10	U	1.3	0.5	U	0.1	10	U	1.3	0.5	U	0.1
Bromodichloromethane	µg/L	0.5	U	0.1	10	U	0.98	0.5	U	0.1	10	U	0.98	0.5	U	0.1

Table E-1 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-15 Date Sampled: 3/14/2006 Lab ID: 934208 % Solids: NA			Sample Point MW-16 Date Sampled: 2/1/2005 Lab ID: 566704 % Solids: NA			Sample Point MW-16 Date Sampled: 3/23/2006 Lab ID: 940806 % Solids: NA			Sample Point MW-17 Date Sampled: 2/1/2005 Lab ID: 566703 %Solids: NA			Sample Point MW-17 Date Sampled: 3/13/2006 Lab ID: 934203 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
cis-1,3-Dichloropropene	µg/L	0.5	U	0.1	10	U	0.94	0.5	U	0.1	10	U	0.94	0.5	U	0.1
4-Methyl-2-pentanone	µg/L	5	U	1	10	U	1.2	5	U	1	10	U	1.2	5	U	1
Toluene	µg/L	0.5	U	0.1	10	U	0.8	0.5	U	0.1	10	U	0.8	0.5	U	0.1
trans-1,3-Dichloropropene	µg/L	0.5	U	0.1	10	U	1.2	0.5	U	0.1	10	U	1.2	0.5	U	0.1
1,1,2-Trichloroethane	µg/L	0.5	U	0.1	10	U	1.5	0.5	U	0.1	10	U	1.5	0.5	U	0.1
Tetrachloroethene	µg/L	0.96		0.1	43		0.97	1.7		0.1	10	U	0.97	1.1		0.1
2-Hexanone	µg/L	5	U	1	10	U	1.6	5	U	1	10	U	1.6	5	U	1
Dibromochloromethane	µg/L	0.5	U	0.1	10	U	1.4	0.5	U	0.1	10	U	1.4	0.5	U	0.1
1,2-Dibromoethane	µg/L	0.5	U	0.1	10	U	1.2	0.5	U	0.1	10	U	1.2	0.5	U	0.1
Chlorobenzene	µg/L	0.5	U	0.1	10	U	0.73	0.5	U	0.1	10	U	0.73	0.5	U	0.1
Ethylbenzene	µg/L	0.5	U	0.1	10	U	0.84	0.5	U	0.1	10	U	0.84	0.5	U	0.1
Xylenes (total)	µg/L	0.5	U	0.1	10	U	0.69	0.5	U	0.1	10	U	0.69	0.5	U	0.1
Styrene	µg/L	0.5	U	0.1	10	U	1	0.5	U	0.1	10	U	1	0.5	U	0.1
Bromoform	µg/L	0.5	U	0.1	10	U	1.2	0.5	U	0.1	10	U	1.2	0.5	U	0.1
Isopropylbenzene	µg/L	0.5	U	0.1	10	U	1.3	0.5	U	0.1	10	U	1.3	0.5	U	0.1
1,1,2,2-Tetrachloroethane	µg/L	0.5	U	0.1	10	U	0.66	0.5	U	0.1	10	U	0.66	0.5	U	0.1
1,3-Dichlorobenzene	µg/L	0.5	U	0.1	10	U	0.97	0.5	U	0.1	10	U	0.97	0.5	U	0.1
1,4-Dichlorobenzene	µg/L	0.5	U	0.1	10	U	1.6	0.5	U	0.1	10	U	1.6	0.5	U	0.1
1,2-Dichlorobenzene	µg/L	0.5	U	0.1	10	U	0.87	0.5	U	0.1	10	U	0.87	0.5	U	0.1
1,2-Dibromo-3-chloropropane	µg/L	0.5	R	0.17	10	U	0.9	0.5	U	0.17	10	U	0.9	0.5	R	0.17
1,2,4-Trichlorobenzene	µg/L	0.5	U	0.1	10	U	0.85	0.5	U	0.1	10	U	0.85	0.5	U	0.1
1,2,3-Trichlorobenzene	µg/L	0.5	U	0.1				0.5	U	0.1				0.5	U	0.1
Total BTEX	µg/L	0.0			0.0			0.0			0.0			0.0		

Table checked by: S.A. G. Date: 5/3/2006

Table E-1 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-18 Date Sampled: 1/31/2005 Lab ID: 566701 % Solids: NA			Sample Point MW-18 Date Sampled: 3/16/2006 Lab ID: 934220 % Solids: NA			Sample Point MW-19 Date Sampled: 2/2/2005 Lab ID: 566709 % Solids: NA			Sample Point FMW-19 Date Sampled: 2/2/2005 Lab ID: 566712 %Solids: NA			Sample Point MW-19 Date Sampled: 3/14/2006 Lab ID: 934213 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/L	10	U	0.84	0.5	U	0.1	10	U	0.84	10	U	0.84	13	U	0.1
Chloromethane	µg/L	10	U	1.5	0.5	U	0.1	10	U	1.5	10	U	1.5	13	U	0.1
Vinyl Chloride	µg/L	10	U	0.64	0.5	U	0.1	10	U	0.64	10	U	0.64	13	U	0.1
Bromomethane	µg/L	10	U	4.1	0.5	U	0.1	10	U	4.1	10	U	4.1	13	U	0.1
Chloroethane	µg/L	10	U	2.1	0.5	U	0.1	10	U	2.1	10	U	2.1	13	U	0.1
Trichlorofluoromethane	µg/L	10	U	0.95	0.5	U	0.1	10	U	0.95	10	U	0.95	13	U	0.1
1,1-Dichloroethene	µg/L	10	U	0.78	0.5	U	0.1	10	U	0.78	10	U	0.78	2.7	J	0.1
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	10	U	0.97	0.5	U	0.1	10	U	0.97	10	U	0.97	13	U	0.1
Acetone	µg/L	10	UJ	3.1	5	R	2.1	24	U	3.1	24	U	3.1	130	R	2.1
Carbon Disulfide	µg/L	10	U	0.9	0.5	U	0.1	10	U	0.9	10	U	0.9	13	U	0.1
Methyl acetate	µg/L	10	U	1.5	0.5	R	0.18	10	U	1.5	10	U	1.5	13	R	0.18
Methylene chloride	µg/L	10	U	1	0.1	J	0.1	10	U	1	10	U	1	13	U	0.1
trans-1,2-Dichloroethene	µg/L	10	U	0.81	0.5	U	0.1	2	J	0.81	10	U	0.81	13	U	0.1
tert-Butyl methyl ether	µg/L	10	U	0.71	0.5	U	0.1	10	U	0.71	10	U	0.71	13	U	0.1
1,1-Dichloroethane	µg/L	10	U	1	0.5	UJ	0.1	2	J	1	2	J	1	13	U	0.1
cis-1,2-Dichloroethene	µg/L	4	J	1.4	1.8		0.1	190		1.4	220		1.4	300		0.1
2-Butanone	µg/L	10	U	0.96	5	U	1	10	U	0.96	10	U	0.96	130	U	1
Bromochloromethane	µg/L				0.5	U	0.1							13	U	0.1
Chloroform	µg/L	10	U	0.83	0.5	U	0.1	10	U	0.83	10	U	0.83	13	U	0.1
1,1,1-Trichloroethane	µg/L	10	U	1.1	0.5	U	0.1	10	U	1.1	10	U	1.1	13	U	0.1
Cyclohexane	µg/L	10	U	1.1	0.5	U	0.1	10	U	1.1	10	U	1.1	13	U	0.1
Carbon tetrachloride	µg/L	10	U	1.2	0.5	U	0.1	10	U	1.2	10	U	1.2	13	U	0.1
Benzene	µg/L	10	U	1.3	0.5	U	0.1	2	J	1.3	2	J	1.3	13	U	0.1
1,2-Dichloroethane	µg/L	10	U	1.3	0.5	U	0.1	10	U	1.3	10	U	1.3	13	U	0.1
Trichloroethene	µg/L	3	J	0.95	1.5		0.1	20		0.95	20		0.95	6.9	J	0.1
Methylcyclohexane	µg/L	10	U	0.96	0.5	U	0.1	10	U	0.96	10	U	0.96	13	U	0.1
1,2-Dichloropropane	µg/L	10	U	1.3	0.5	U	0.1	10	U	1.3	10	U	1.3	13	U	0.1
Bromodichloromethane	µg/L	10	U	0.98	0.5	U	0.1	10	U	0.98	10	U	0.98	13	U	0.1

Table E-1 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-18 Date Sampled: 1/31/2005 Lab ID: 566701 % Solids: NA			Sample Point MW-18 Date Sampled: 3/16/2006 Lab ID: 934220 % Solids: NA			Sample Point MW-19 Date Sampled: 2/2/2005 Lab ID: 566709 % Solids: NA			Sample Point FMW-19 Date Sampled: 2/2/2005 Lab ID: 566712 %Solids: NA			Sample Point MW-19 Date Sampled: 3/14/2006 Lab ID: 934213 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
cis-1,3-Dichloropropene	µg/L	10	U	0.94	0.5	U	0.1	10	U	0.94	10	U	0.94	13	U	0.1
4-Methyl-2-pentanone	µg/L	10	U	1.2	5	U	1	10	U	1.2	10	U	1.2	130	U	1
Toluene	µg/L	10	U	0.8	0.5	U	0.1	10	U	0.8	10	U	0.8	13	U	0.1
trans-1,3-Dichloropropene	µg/L	10	U	1.2	0.5	U	0.1	10	U	1.2	10	U	1.2	13	U	0.1
1,1,2-Trichloroethane	µg/L	10	U	1.5	0.5	U	0.1	10	U	1.5	10	U	1.5	13	U	0.1
Tetrachloroethene	µg/L	3	J	0.97	1.1		0.1	21		0.97	21		0.97	11	J	0.1
2-Hexanone	µg/L	10	U	1.6	5	U	1	10	U	1.6	10	U	1.6	130	U	1
Dibromochloromethane	µg/L	10	U	1.4	0.5	U	0.1	10	U	1.4	10	U	1.4	13	U	0.1
1,2-Dibromoethane	µg/L	10	U	1.2	0.5	U	0.1	10	U	1.2	10	U	1.2	13	U	0.1
Chlorobenzene	µg/L	10	U	0.73	0.5	U	0.1	25		0.73	24		0.73	20		0.1
Ethylbenzene	µg/L	10	U	0.84	0.5	U	0.1	10	U	0.84	10	U	0.84	13	U	0.1
Xylenes (total)	µg/L	10	U	0.69	0.5	U	0.1	10	U	0.69	10	U	0.69	13	U	0.1
Styrene	µg/L	10	U	1	0.5	U	0.1	10	U	1	10	U	1	13	U	0.1
Bromoform	µg/L	10	U	1.2	0.5	U	0.1	10	U	1.2	10	U	1.2	13	U	0.1
Isopropylbenzene	µg/L	10	U	1.3	0.5	U	0.1	10	U	1.3	10	U	1.3	13	U	0.1
1,1,2,2-Tetrachloroethane	µg/L	10	U	0.66	0.5	U	0.1	10	U	0.66	10	U	0.66	13	U	0.1
1,3-Dichlorobenzene	µg/L	10	U	0.97	0.5	U	0.1	1	J	0.97	1	J	0.97	13	U	0.1
1,4-Dichlorobenzene	µg/L	10	U	1.6	0.5	U	0.1	7	J	1.6	7	J	1.6	9.4	J	0.1
1,2-Dichlorobenzene	µg/L	10	U	0.87	0.5	U	0.1	1	J	0.87	1	J	0.87	13	U	0.1
1,2-Dibromo-3-chloropropane	µg/L	10	U	0.9	0.5	U	0.17	10	U	0.9	10	U	0.9	13	U	0.17
1,2,4-Trichlorobenzene	µg/L	10	U	0.85	0.5	U	0.1	10	U	0.85	10	U	0.85	13	UJ	0.1
1,2,3-Trichlorobenzene	µg/L				0.5	U	0.1							13	UJ	0.1
Total BTEX	µg/L	0.0			0.0			2.0			2.0			0.0		

Table checked by: S.A. G. Date: 5/3/2006

Table E-1 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-20 Date Sampled: 2/2/2005 Lab ID: 566713 % Solids: NA			Sample Point MW-20 Date Sampled: 3/14/2006 Lab ID: 934210 % Solids: NA			Sample Point FMW-20 Date Sampled: 3/14/2006 Lab ID: 934211 % Solids: NA			Sample Point MW-21 Date Sampled: 2/4/2005 Lab ID: 568406 %Solids: NA			Sample Point MW-21 Date Sampled: 3/20/2006 Lab ID: 939706 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/L	10	U	0.84	0.5	U	0.1	0.5	U	0.1	10	U	0.84	250	U	0.1
Chloromethane	µg/L	10	U	1.5	0.5	U	0.1	0.5	U	0.1	10	U	1.5	250	U	0.1
Vinyl Chloride	µg/L	10	U	0.64	0.5	U	0.1	0.5	U	0.1	10	U	0.64	250	U	0.1
Bromomethane	µg/L	10	U	4.1	0.5	U	0.1	0.5	U	0.1	10	U	4.1	250	U	0.1
Chloroethane	µg/L	10	U	2.1	0.5	U	0.1	0.5	U	0.1	10	U	2.1	250	U	0.1
Trichlorofluoromethane	µg/L	10	U	0.95	0.5	U	0.1	0.5	U	0.1	10	U	0.95	250	U	0.1
1,1-Dichloroethene	µg/L	10	U	0.78	0.67	J	0.1	0.31	J	0.1	10	U	0.78	250	U	0.1
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	10	U	0.97	0.5	U	0.1	0.5	U	0.1	10	U	0.97	250	U	0.1
Acetone	µg/L	10	UJ	3.1	5	R	2.1	5	R	2.1	10	U	3.1	2500	R	2.1
Carbon Disulfide	µg/L	10	U	0.9	0.5	U	0.1	0.5	U	0.1	10	U	0.9	250	U	0.1
Methyl acetate	µg/L	10	U	1.5	0.5	U	0.18	0.5	U	0.18	10	U	1.5	250	U	0.18
Methylene chloride	µg/L	10	U	1	0.5	U	0.1	0.5	U	0.1	10	U	1	390		0.1
trans-1,2-Dichloroethene	µg/L	10	U	0.81	0.2	J	0.1	0.22	J	0.1	10	U	0.81	250	U	0.1
tert-Butyl methyl ether	µg/L	10	U	0.71	0.5	U	0.1	0.5	U	0.1	10	U	0.71	250	U	0.1
1,1-Dichloroethane	µg/L	10	U	1	0.71		0.1	0.76		0.1	10	U	1	250	U	0.1
cis-1,2-Dichloroethene	µg/L	13		1.4	55		0.1	53		0.1	22		1.4	910		0.1
2-Butanone	µg/L	10	U	0.96	5	R	1	5	R	1	10	U	0.96	2500	R	1
Bromochloromethane	µg/L				0.5	U	0.1	0.5	U	0.1				250	U	0.1
Chloroform	µg/L	10	U	0.83	0.11	J	0.1	0.5	U	0.1	10	U	0.83	250	U	0.1
1,1,1-Trichloroethane	µg/L	10	U	1.1	0.5	U	0.1	0.5	U	0.1	10	U	1.1	110	J	0.1
Cyclohexane	µg/L	10	U	1.1	0.5	U	0.1	0.5	U	0.1	10	U	1.1	250	U	0.1
Carbon tetrachloride	µg/L	10	U	1.2	0.5	U	0.1	0.5	U	0.1	10	U	1.2	250	U	0.1
Benzene	µg/L	10	U	1.3	0.5	U	0.1	0.5	U	0.1	10	U	1.3	250	U	0.1
1,2-Dichloroethane	µg/L	10	U	1.3	0.5	U	0.1	0.5	U	0.1	10	U	1.3	250	U	0.1
Trichloroethene	µg/L	15		0.95	18		0.1	20		0.1	22		0.95	1900		0.1
Methylcyclohexane	µg/L	10	U	0.96	0.5	U	0.1	0.5	U	0.1	10	U	0.96	250	U	0.1
1,2-Dichloropropane	µg/L	10	U	1.3	0.5	U	0.1	0.5	U	0.1	10	U	1.3	250	U	0.1
Bromodichloromethane	µg/L	10	U	0.98	0.5	U	0.1	0.5	U	0.1	10	U	0.98	250	U	0.1

Table E-1 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-20 Date Sampled: 2/2/2005 Lab ID: 566713 % Solids: NA			Sample Point MW-20 Date Sampled: 3/14/2006 Lab ID: 934210 % Solids: NA			Sample Point FMW-20 Date Sampled: 3/14/2006 Lab ID: 934211 % Solids: NA			Sample Point MW-21 Date Sampled: 2/4/2005 Lab ID: 568406 %Solids: NA			Sample Point MW-21 Date Sampled: 3/20/2006 Lab ID: 939706 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
cis-1,3-Dichloropropene	µg/L	10	U	0.94	0.5	U	0.1	0.5	U	0.1	10	U	0.94	250	U	0.1
4-Methyl-2-pentanone	µg/L	10	U	1.2	5	U	1	5	U	1	10	U	1.2	2500	U	1
Toluene	µg/L	10	U	0.8	0.5	U	0.1	0.5	U	0.1	5	J	0.8	630		0.1
trans-1,3-Dichloropropene	µg/L	10	U	1.2	0.5	U	0.1	0.5	U	0.1	10	U	1.2	250	U	0.1
1,1,2-Trichloroethane	µg/L	10	U	1.5	0.5	U	0.1	0.5	U	0.1	10	U	1.5	250	U	0.1
Tetrachloroethene	µg/L	5	J	0.97	6.8		0.1	7.4		0.1	31		0.97	3400		0.1
2-Hexanone	µg/L	10	U	1.6	5	U	1	5	U	1	10	U	1.6	2500	U	1
Dibromochloromethane	µg/L	10	U	1.4	0.5	U	0.1	0.5	U	0.1	10	U	1.4	250	U	0.1
1,2-Dibromoethane	µg/L	10	U	1.2	0.5	U	0.1	0.5	U	0.1	10	U	1.2	250	U	0.1
Chlorobenzene	µg/L	10	U	0.73	0.5	U	0.1	0.5	U	0.1	10	U	0.73	86	J	0.1
Ethylbenzene	µg/L	10	U	0.84	0.5	U	0.1	0.5	U	0.1	22		0.84	3100		0.1
Xylenes (total)	µg/L	10	U	0.69	0.5	U	0.1	0.5	U	0.1	74000		0.69	90000		0.1
Styrene	µg/L	10	U	1	0.5	U	0.1	0.5	U	0.1	10	U	1	250	U	0.1
Bromoform	µg/L	10	U	1.2	0.5	U	0.1	0.5	U	0.1	10	U	1.2	250	U	0.1
Isopropylbenzene	µg/L	10	U	1.3	0.5	U	0.1	0.5	U	0.1	10	U	1.3	54	J	0.1
1,1,2,2-Tetrachloroethane	µg/L	10	U	0.66	0.5	U	0.1	0.5	U	0.1	10	U	0.66	250	U	0.1
1,3-Dichlorobenzene	µg/L	10	U	0.97	0.29	J	0.1	0.31	J	0.1	10	U	0.97	250	U	0.1
1,4-Dichlorobenzene	µg/L	10	U	1.6	0.71		0.1	0.73		0.1	10	U	1.6	130	J	0.1
1,2-Dichlorobenzene	µg/L	10	U	0.87	0.5	U	0.1	0.5	U	0.1	10	U	0.87	87	J	0.1
1,2-Dibromo-3-chloropropane	µg/L	10	U	0.9	0.5	R	0.17	0.5	R	0.17	10	U	0.9	250	R	0.17
1,2,4-Trichlorobenzene	µg/L	10	U	0.85	0.5	U	0.1	0.5	U	0.1	10	U	0.85	590		0.1
1,2,3-Trichlorobenzene	µg/L				0.61		0.1	0.65		0.1				280	J	0.1
Total BTEX	µg/L	0.0			0.0			0.0			74027.0			93730.0		

Table checked by: S.A. G. Date: 5/3/2006

Table E-1 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point OSW Date Sampled: 3/21/2006 Lab ID: 939714 % Solids: NA			Sample Point WS-1 Date Sampled: 2/3/2005 Lab ID: 566718 % Solids: NA			Sample Point Date Sampled: Lab ID: % Solids:			Sample Point Date Sampled: Lab ID: %Solids:			Sample Point Date Sampled: Lab ID: %Solids:		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/L	0.5	U	0.1	10	U	0.84									
Chloromethane	µg/L	0.5	U	0.1	10	U	1.5									
Vinyl Chloride	µg/L	0.5		0.1	10	U	0.64									
Bromomethane	µg/L	0.5		0.1	10	UJ	4.1									
Chloroethane	µg/L	0.5		0.1	10	U	2.1									
Trichlorofluoromethane	µg/L	0.5		0.1	10	U	0.95									
1,1-Dichloroethene	µg/L	0.13	J	0.1	10	U	0.78									
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	0.5	U	0.1	10	U	0.97									
Acetone	µg/L	5	R	2.1	10	U	3.1									
Carbon Disulfide	µg/L	0.5		0.1	10	U	0.9									
Methyl acetate	µg/L	0.5	R	0.18	10	U	1.5									
Methylene chloride	µg/L	0.5		0.1	10	U	1									
trans-1,2-Dichloroethene	µg/L	0.5	U	0.1	10	U	0.81									
tert-Butyl methyl ether	µg/L	0.5	U	0.1	10	U	0.71									
1,1-Dichloroethane	µg/L	0.5	U	0.1	10	U	1									
cis-1,2-Dichloroethene	µg/L	0.5	U	0.1	10	U	1.4									
2-Butanone	µg/L	5		1	10	U	0.96									
Bromochloromethane	µg/L	0.5		0.1												
Chloroform	µg/L	0.5		0.1	10	U	0.83									
1,1,1-Trichloroethane	µg/L	0.5	U	0.1	10	U	1.1									
Cyclohexane	µg/L	0.5	U	0.1	10	U	1.1									
Carbon tetrachloride	µg/L	0.5		0.1	10	U	1.2									
Benzene	µg/L	0.5		0.1	10	U	1.3									
1,2-Dichloroethane	µg/L	0.5	U	0.1	10	U	1.3									
Trichloroethene	µg/L	0.5	U	0.1	10	U	0.95									
Methylcyclohexane	µg/L	0.5	U	0.1	10	U	0.96									
1,2-Dichloropropane	µg/L	0.5	U	0.1	10	U	1.3									
Bromodichloromethane	µg/L	0.5		0.1	10	U	0.98									

Table E-1 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point OSW Date Sampled: 3/21/2006 Lab ID: 939714 % Solids: NA			Sample Point WS-1 Date Sampled: 2/3/2005 Lab ID: 566718 % Solids: NA			Sample Point Date Sampled: Lab ID: % Solids:			Sample Point Date Sampled: Lab ID: %Solids:			Sample Point Date Sampled: Lab ID: %Solids:		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
cis-1,3-Dichloropropene	µg/L	0.5	U	0.1	10	U	0.94									
4-Methyl-2-pentanone	µg/L	5		1	10	U	1.2									
Toluene	µg/L	0.5	U	0.1	10	U	0.8									
trans-1,3-Dichloropropene	µg/L	0.5		0.1	10	U	1.2									
1,1,2-Trichloroethane	µg/L	0.5	U	0.1	10	U	1.5									
Tetrachloroethene	µg/L	0.5	U	0.1	10	U	0.97									
2-Hexanone	µg/L	5		1	10	U	1.6									
Dibromochloromethane	µg/L	0.5	U	0.1	10	U	1.4									
1,2-Dibromoethane	µg/L	0.5	U	0.1	10	U	1.2									
Chlorobenzene	µg/L	0.5		0.1	10	U	0.73									
Ethylbenzene	µg/L	0.5	U	0.1	10	U	0.84									
Xylenes (total)	µg/L	0.5		0.1	10	U	0.69									
Styrene	µg/L	0.5	U	0.1	10	U	1									
Bromoform	µg/L	0.5		0.1	10	U	1.2									
Isopropylbenzene	µg/L	0.5	U	0.1	10	U	1.3									
1,1,2,2-Tetrachloroethane	µg/L	0.5	U	0.1	10	U	0.66									
1,3-Dichlorobenzene	µg/L	0.5		0.1	10	U	0.97									
1,4-Dichlorobenzene	µg/L	0.5		0.1	10	U	1.6									
1,2-Dichlorobenzene	µg/L	0.5	U	0.1	10	U	0.87									
1,2-Dibromo-3-chloropropane	µg/L	0.5	U	0.17	10	U	0.9									
1,2,4-Trichlorobenzene	µg/L	0.5		0.1	10	U	0.85									
1,2,3-Trichlorobenzene	µg/L	0.5		0.1												
Total BTEX	µg/L	1.0			0.0			0.0			0.0			0.0		

Table checked by: S.A. G. Date: 5/3/2006

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-1 Date Sampled: 2/3/2005 Lab ID: 566720 % Solids: NA			Sample Point MW-1 Date Sampled: 3/21/2006 Lab ID: 939718 % Solids: NA			Sample Point FMW-1 Date Sampled: 3/21/2006 Lab ID: 939719 % Solids: NA			Sample Point MW-2A Date Sampled: 2/8/2005 Lab ID: 568412 %Solids: NA			Sample Point MW-2A Date Sampled: 3/23/2006 Lab ID: 940807 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/L	10	U	3.3	10	U	3	10	U	3.1	10	U	3.3	10	U	3.1
Phenol	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	440		1.9
bis(2-Chloroethyl)ether	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
2-Chlorophenol	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
2-Methylphenol	µg/L	10	U	2	10	U	1.9	10	U	1.9	3	J	2	29		1.9
2,2'-Oxybis(1-Chloropropane)	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	UJ	2	10	U	1.9
Acetophenone	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
4-Methylphenol	µg/L	10	U	2.5	10	U	2.3	10	U	2.3	47		2.5	1100		2.3
N-Nitroso-di-n-propylamine	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
Hexachloroethane	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
Nitrobenzene	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
Isophorone	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
2-Nitrophenol	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
2,4-Dimethylphenol	µg/L	10	U	2	10	U	1.9	10	U	1.9	14		2	300		1.9
bis(2-Chloroethoxy)Methane	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
2,4-Dichlorophenol	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
Naphthalene	µg/L	10	U	2	10	U	1.9	10	U	1.9	2	J	2	2	J	1.9
4-Chloroaniline	µg/L	10	U	2.3	10	U	2.1	10	U	2.2	10	U	2.3	10	U	2.2
Hexachlorobutadiene	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
4-Chloro-3-Methylphenol	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
2-Methylnaphthalene	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
Hexachlorocyclopentadiene	µg/L	10	U	4.4	10	UJ	4.1	10	UJ	4.2	10	U	4.4	10	UJ	4.2
Caprolactam	µg/L	10	U	2	10	UJ	1.9	10	UJ	1.9	10	U	2	10	UJ	1.9
2,4,6-Trichlorophenol	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
2,4,5-Trichlorophenol	µg/L	25	U	5	25	U	4.7	25	U	4.8	25	U	5	25	U	4.8
1,1'-Biphenyl	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
2-Chloronaphthalene	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
2-Nitroaniline	µg/L	25	U	5	25	U	4.7	25	U	4.8	25	U	5	25	U	4.8
Dimethyl Phthalate	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-1 Date Sampled: 2/3/2005 Lab ID: 566720 % Solids: NA			Sample Point MW-1 Date Sampled: 3/21/2006 Lab ID: 939718 % Solids: NA			Sample Point FMW-1 Date Sampled: 3/21/2006 Lab ID: 939719 % Solids: NA			Sample Point MW-2A Date Sampled: 2/8/2005 Lab ID: 568412 %Solids: NA			Sample Point MW-2A Date Sampled: 3/23/2006 Lab ID: 940807 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
2,6-Dinitrotoluene	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
Acenaphthylene	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
3-Nitroaniline	µg/L	25	U	5	25	U	4.7	25	U	4.8	25	U	5	25	U	4.8
Acenaphthene	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
2,4-Dinitrophenol	µg/L	25	UJ	11	25	UJ	10	25	UJ	10	25	UJ	11	25	UJ	10
4-Nitrophenol	µg/L	25	U	5.7	25	UJ	5.3	25	UJ	5.5	25	U	5.7	25	UJ	5.5
Dibenzofuran	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
2,4-Dinitrotoluene	µg/L	10	U	2	10	UJ	1.9	10	UJ	1.9	10	U	2	10	UJ	1.9
Diethylphthalate	µg/L	10	U	2	10	UJ	1.9	10	UJ	1.9	10	U	2	10	UJ	1.9
Fluorene	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
4-Chlorophenyl-phenylether	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
4-Nitroaniline	µg/L	25	U	5	25	UJ	4.7	25	UJ	4.8	25	U	5	25	UJ	4.8
4,6-Dinitro-2-methylphenol	µg/L	25	U	5	25	U	4.7	25	U	4.8	25	U	5	25	U	4.8
N-Nitrosodiphenylamine	µg/L	10	U	5	10	U	4.7	10	U	4.8	10	U	5	10	U	4.8
4-Bromophenyl-phenylether	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
Hexachlorobenzene	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
Atrazine	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
Pentachlorophenol	µg/L	25	U	2	25	U	1.9	25	U	1.9	25	UJ	2	25	U	1.9
Phenanthrene	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	26		1.9
Anthracene	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
Carbazole	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
Di-n-butylphthalate	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
Fluoranthene	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
Pyrene	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
Butylbenzylphthalate	µg/L	10	U	2	10	U	1.9	10	U	1.9	2	J	2	10	U	1.9
3,3'-Dichlorobenzidine	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
Benzo(a)Anthracene	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
Chrysene	µg/L	10	UJ	2	10	U	1.9	10	U	1.9	10	UJ	2	10	U	1.9
bis(2-Ethylhexyl)Phthalate	µg/L	10	U	3.1	10	U	2.9	10	U	2.9	10	U	3.1	10	U	2.9

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-1 Date Sampled: 2/3/2005 Lab ID: 566720 % Solids: NA			Sample Point MW-1 Date Sampled: 3/21/2006 Lab ID: 939718 % Solids: NA			Sample Point FMW-1 Date Sampled: 3/21/2006 Lab ID: 939719 % Solids: NA			Sample Point MW-2A Date Sampled: 2/8/2005 Lab ID: 568412 %Solids: NA			Sample Point MW-2A Date Sampled: 3/23/2006 Lab ID: 940807 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Di-n-Octyl Phthalate	µg/L	10	U	2	10	UJ	1.9	10	UJ	1.9	10	U	2	10	UJ	1.9
Benzo(b)Fluoranthene	µg/L	10	UJ	2	10	U	1.9	10	U	1.9	10	UJ	2	10	U	1.9
Benzo(k)Fluoranthene	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
Benzo(a)Pyrene	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
Indeno(1,2,3-cd)Pyrene	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
Dibenz(a,h)Anthracene	µg/L	10	U	2	10	U	1.9	10	U	1.9	10	U	2	10	U	1.9
Benzo(g,h,i)Perylene	µg/L	10	U	2	10	UJ	1.9	10	UJ	1.9	10	U	2	10	UJ	1.9
1,4-Dioxane	µg/L				2	U	2	2.1	U	2.1				2	U	2

Table checked by: R. Baig Date: April 24, 2006

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-2B Date Sampled: 2/4/2005 Lab ID: 568407 % Solids: NA			Sample Point MW-2B Date Sampled: 3/20/2006 Lab ID: 939707 % Solids: NA			Sample Point MW-3 Date Sampled: 2/3/2005 Lab ID: 566717 % Solids: NA			Sample Point MW-3 Date Sampled: 3/20/2006 Lab ID: 939709 %Solids: NA			Sample Point MW-4 Date Sampled: 2/3/2005 Lab ID: 566715 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/L	10	U	2.8	10	U	3.1	10	U	2.9	10	U	3.1	10	U	2.9
Phenol	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
bis(2-Chloroethyl)ether	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
2-Chlorophenol	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
2-Methylphenol	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
2,2'-Oxybis(1-Chloropropane)	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Acetophenone	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
4-Methylphenol	µg/L	10	U	2.1	10	U	2.3	10	U	2.2	10	U	2.3	10	U	2.2
N-Nitroso-di-n-propylamine	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Hexachloroethane	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Nitrobenzene	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Isophorone	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
2-Nitrophenol	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
2,4-Dimethylphenol	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
bis(2-Chloroethoxy)Methane	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
2,4-Dichlorophenol	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Naphthalene	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
4-Chloroaniline	µg/L	10	U	2	10	U	2.2	10	U	2	10	U	2.2	10	U	2
Hexachlorobutadiene	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
4-Chloro-3-Methylphenol	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
2-Methylnaphthalene	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Hexachlorocyclopentadiene	µg/L	10	U	3.9	10	UJ	4.2	10	U	4	10	UJ	4.2	10	U	4
Caprolactam	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
2,4,6-Trichlorophenol	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
2,4,5-Trichlorophenol	µg/L	25	U	4.3	25	U	4.8	25	U	4.4	25	U	4.8	25	U	4.4
1,1'-Biphenyl	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
2-Chloronaphthalene	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
2-Nitroaniline	µg/L	25	U	4.3	25	U	4.8	25	U	4.4	25	U	4.8	25	U	4.4
Dimethyl Phthalate	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-2B Date Sampled: 2/4/2005 Lab ID: 568407 % Solids: NA			Sample Point MW-2B Date Sampled: 3/20/2006 Lab ID: 939707 % Solids: NA			Sample Point MW-3 Date Sampled: 2/3/2005 Lab ID: 566717 % Solids: NA			Sample Point MW-3 Date Sampled: 3/20/2006 Lab ID: 939709 %Solids: NA			Sample Point MW-4 Date Sampled: 2/3/2005 Lab ID: 566715 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
2,6-Dinitrotoluene	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Acenaphthylene	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
3-Nitroaniline	µg/L	25	U	4.3	25	U	4.8	25	U	4.4	25	U	4.8	25	U	4.4
Acenaphthene	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
2,4-Dinitrophenol	µg/L	25	UJ	9.4	25	UJ	10	25	UJ	9.6	25	UJ	10	25	UJ	9.6
4-Nitrophenol	µg/L	25	U	5	25	U	5.5	25	U	5.1	25	U	5.5	25	U	5.1
Dibenzofuran	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
2,4-Dinitrotoluene	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Diethylphthalate	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Fluorene	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
4-Chlorophenyl-phenylether	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
4-Nitroaniline	µg/L	25	U	4.3	25	U	4.8	25	U	4.4	25	U	4.8	25	U	4.4
4,6-Dinitro-2-methylphenol	µg/L	25	U	4.3	25	U	4.8	25	U	4.4	25	U	4.8	25	U	4.4
N-Nitrosodiphenylamine	µg/L	10	U	4.3	10	U	4.8	10	U	4.4	10	U	4.8	10	U	4.4
4-Bromophenyl-phenylether	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Hexachlorobenzene	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Atrazine	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Pentachlorophenol	µg/L	25	U	1.7	25	U	1.9	25	U	1.8	25	U	1.9	25	U	1.8
Phenanthrene	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Anthracene	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Carbazole	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Di-n-butylphthalate	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Fluoranthene	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Pyrene	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Butylbenzylphthalate	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
3,3'-Dichlorobenzidine	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Benzo(a)Anthracene	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Chrysene	µg/L	10	UJ	1.7	10	U	1.9	10	UJ	1.8	10	U	1.9	10	UJ	1.8
bis(2-Ethylhexyl)Phthalate	µg/L	10	U	2.7	10	U	2.9	10	U	2.7	10	U	2.9	10	U	2.7

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-2B Date Sampled: 2/4/2005 Lab ID: 568407 % Solids: NA			Sample Point MW-2B Date Sampled: 3/20/2006 Lab ID: 939707 % Solids: NA			Sample Point MW-3 Date Sampled: 2/3/2005 Lab ID: 566717 % Solids: NA			Sample Point MW-3 Date Sampled: 3/20/2006 Lab ID: 939709 %Solids: NA			Sample Point MW-4 Date Sampled: 2/3/2005 Lab ID: 566715 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Di-n-Octyl Phthalate	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Benzo(b)Fluoranthene	µg/L	10	UJ	1.7	10	U	1.9	10	UJ	1.8	10	U	1.9	10	UJ	1.8
Benzo(k)Fluoranthene	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Benzo(a)Pyrene	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Indeno(1,2,3-cd)Pyrene	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Dibenz(a,h)Anthracene	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
Benzo(g,h,i)Perylene	µg/L	10	U	1.7	10	U	1.9	10	U	1.8	10	U	1.9	10	U	1.8
1,4-Dioxane	µg/L				2.1	U	2.1				2	U	2			

Table checked by: R. Baig Date: April 24, 2006

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-4 Date Sampled: 3/17/2006 Lab ID: 939703 % Solids: NA			Sample Point MW-5 Date Sampled: 2/8/2005 Lab ID: 568415 % Solids: NA			Sample Point MW-5 Date Sampled: 3/21/2006 Lab ID: 939716 % Solids: NA			Sample Point MW-6 Date Sampled: 2/4/2005 Lab ID: 568403 %Solids: NA			Sample Point MW-6 Date Sampled: 3/21/2006 Lab ID: 939715 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/L	10	U	3.1	10	U	3.1	10	U	3	10	U	2.8	10	U	3
Phenol	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
bis(2-Chloroethyl)ether	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
2-Chlorophenol	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
2-Methylphenol	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
2,2'-Oxybis(1-Chloropropane)	µg/L	10	U	1.9	10	UJ	1.9	10	U	1.8	10	U	1.7	10	U	1.9
Acetophenone	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
4-Methylphenol	µg/L	10	U	2.3	10	U	2.3	10	U	2.2	10	U	2.1	10	U	2.3
N-Nitroso-di-n-propylamine	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
Hexachloroethane	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
Nitrobenzene	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
Isophorone	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
2-Nitrophenol	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
2,4-Dimethylphenol	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
bis(2-Chloroethoxy)Methane	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
2,4-Dichlorophenol	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
Naphthalene	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
4-Chloroaniline	µg/L	10	U	2.2	10	U	2.2	10	U	2.1	10	U	2	10	U	2.1
Hexachlorobutadiene	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
4-Chloro-3-Methylphenol	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
2-Methylnaphthalene	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
Hexachlorocyclopentadiene	µg/L	10	UJ	4.2	10	U	4.2	10	UJ	4	10	U	3.9	10	UJ	4.1
Caprolactam	µg/L	10	U	1.9	10	U	1.9	10	UJ	1.8	10	U	1.7	10	UJ	1.9
2,4,6-Trichlorophenol	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
2,4,5-Trichlorophenol	µg/L	25	U	4.8	25	U	4.7	25	U	4.5	25	U	4.3	25	U	4.7
1,1'-Biphenyl	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
2-Chloronaphthalene	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
2-Nitroaniline	µg/L	25	U	4.8	25	U	4.7	25	U	4.5	25	U	4.3	25	U	4.7
Dimethyl Phthalate	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-4 Date Sampled: 3/17/2006 Lab ID: 939703 % Solids: NA			Sample Point MW-5 Date Sampled: 2/8/2005 Lab ID: 568415 % Solids: NA			Sample Point MW-5 Date Sampled: 3/21/2006 Lab ID: 939716 % Solids: NA			Sample Point MW-6 Date Sampled: 2/4/2005 Lab ID: 568403 %Solids: NA			Sample Point MW-6 Date Sampled: 3/21/2006 Lab ID: 939715 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
2,6-Dinitrotoluene	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
Acenaphthylene	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
3-Nitroaniline	µg/L	25	U	4.8	25	U	4.7	25	U	4.5	25	U	4.3	25	U	4.7
Acenaphthene	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
2,4-Dinitrophenol	µg/L	25	UJ	10	25	UJ	10	25	UJ	9.9	25	UJ	9.4	25	UJ	10
4-Nitrophenol	µg/L	25	U	5.5	25	U	5.4	25	UJ	5.2	25	U	5	25	UJ	5.3
Dibenzofuran	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
2,4-Dinitrotoluene	µg/L	10	U	1.9	10	U	1.9	10	UJ	1.8	10	U	1.7	10	UJ	1.9
Diethylphthalate	µg/L	10	U	1.9	10	U	1.9	10	UJ	1.8	10	U	1.7	10	UJ	1.9
Fluorene	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
4-Chlorophenyl-phenylether	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
4-Nitroaniline	µg/L	25	U	4.8	25	U	4.7	25	UJ	4.5	25	U	4.3	25	UJ	4.7
4,6-Dinitro-2-methylphenol	µg/L	25	U	4.8	25	U	4.7	25	U	4.5	25	U	4.3	25	U	4.7
N-Nitrosodiphenylamine	µg/L	10	U	4.8	10	U	4.7	10	U	4.5	10	U	4.3	10	U	4.7
4-Bromophenyl-phenylether	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
Hexachlorobenzene	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
Atrazine	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
Pentachlorophenol	µg/L	25	U	1.9	25	UJ	1.9	25	U	1.8	25	UJ	1.7	25	U	1.9
Phenanthrene	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
Anthracene	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
Carbazole	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
Di-n-butylphthalate	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
Fluoranthene	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
Pyrene	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
Butylbenzylphthalate	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
3,3'-Dichlorobenzidine	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
Benzo(a)Anthracene	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
Chrysene	µg/L	10	U	1.9	10	UJ	1.9	10	U	1.8	10	UJ	1.7	10	U	1.9
bis(2-Ethylhexyl)Phthalate	µg/L	10	U	2.9	10	U	2.9	10	U	2.8	10	U	2.7	10	U	2.9

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-4 Date Sampled: 3/17/2006 Lab ID: 939703 % Solids: NA			Sample Point MW-5 Date Sampled: 2/8/2005 Lab ID: 568415 % Solids: NA			Sample Point MW-5 Date Sampled: 3/21/2006 Lab ID: 939716 % Solids: NA			Sample Point MW-6 Date Sampled: 2/4/2005 Lab ID: 568403 %Solids: NA			Sample Point MW-6 Date Sampled: 3/21/2006 Lab ID: 939715 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Di-n-Octyl Phthalate	µg/L	10	U	1.9	10	U	1.9	10	UJ	1.8	10	U	1.7	10	UJ	1.9
Benzo(b)Fluoranthene	µg/L	10	U	1.9	10	UJ	1.9	10	U	1.8	10	UJ	1.7	10	U	1.9
Benzo(k)Fluoranthene	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
Benzo(a)Pyrene	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
Indeno(1,2,3-cd)Pyrene	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
Dibenz(a,h)Anthracene	µg/L	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.7	10	U	1.9
Benzo(g,h,i)Perylene	µg/L	10	U	1.9	10	U	1.9	10	UJ	1.8	10	U	1.7	10	UJ	1.9
1,4-Dioxane	µg/L	2	U	2				2	U	2				2	U	2

Table checked by: R. Baig Date: April 24, 2006

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-7 Date Sampled: 2/3/2005 Lab ID: 566719 % Solids: NA			Sample Point MW-7 Date Sampled: 3/20/2006 Lab ID: 939710 % Solids: NA			Sample Point MW-8A Date Sampled: 2/8/2005 Lab ID: 568414 % Solids: NA			Sample Point MW-8A Date Sampled: 3/20/2006 Lab ID: 939713 %Solids: NA			Sample Point MW-8B Date Sampled: 2/8/2005 Lab ID: 568411 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/L	10	U	2.8	10	U	3.1	10	U	3	10	U	3	10	U	3
Phenol	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
bis(2-Chloroethyl)ether	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
2-Chlorophenol	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
2-Methylphenol	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
2,2'-Oxybis(1-Chloropropane)	µg/L	10	U	1.7	10	U	1.9	10	UJ	1.9	10	U	1.8	10	UJ	1.9
Acetophenone	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
4-Methylphenol	µg/L	10	U	2.1	10	U	2.3	10	U	2.3	10	U	2.2	10	U	2.3
N-Nitroso-di-n-propylamine	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
Hexachloroethane	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
Nitrobenzene	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
Isophorone	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
2-Nitrophenol	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
2,4-Dimethylphenol	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
bis(2-Chloroethoxy)Methane	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
2,4-Dichlorophenol	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
Naphthalene	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
4-Chloroaniline	µg/L	10	U	2	10	U	2.2	10	U	2.2	10	U	2.1	10	U	2.2
Hexachlorobutadiene	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
4-Chloro-3-Methylphenol	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
2-Methylnaphthalene	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
Hexachlorocyclopentadiene	µg/L	10	U	3.9	10	UJ	4.2	10	U	4.2	10	UJ	4	10	U	4.2
Caprolactam	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
2,4,6-Trichlorophenol	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
2,4,5-Trichlorophenol	µg/L	25	U	4.3	25	U	4.8	25	U	4.7	25	U	4.5	25	U	4.7
1,1'-Biphenyl	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
2-Chloronaphthalene	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
2-Nitroaniline	µg/L	25	U	4.3	25	U	4.8	25	U	4.7	25	U	4.5	25	U	4.7
Dimethyl Phthalate	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-7 Date Sampled: 2/3/2005 Lab ID: 566719 % Solids: NA			Sample Point MW-7 Date Sampled: 3/20/2006 Lab ID: 939710 % Solids: NA			Sample Point MW-8A Date Sampled: 2/8/2005 Lab ID: 568414 % Solids: NA			Sample Point MW-8A Date Sampled: 3/20/2006 Lab ID: 939713 %Solids: NA			Sample Point MW-8B Date Sampled: 2/8/2005 Lab ID: 568411 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
2,6-Dinitrotoluene	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
Acenaphthylene	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
3-Nitroaniline	µg/L	25	U	4.3	25	U	4.8	25	U	4.7	25	U	4.5	25	U	4.7
Acenaphthene	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
2,4-Dinitrophenol	µg/L	25	UJ	9.4	25	UJ	10	25	UJ	10	25	UJ	9.9	25	UJ	10
4-Nitrophenol	µg/L	25	U	5	25	U	5.5	25	U	5.4	25	U	5.2	25	U	5.4
Dibenzofuran	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
2,4-Dinitrotoluene	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
Diethylphthalate	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
Fluorene	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
4-Chlorophenyl-phenylether	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
4-Nitroaniline	µg/L	25	U	4.3	25	U	4.8	25	U	4.7	25	U	4.5	25	U	4.7
4,6-Dinitro-2-methylphenol	µg/L	25	U	4.3	25	U	4.8	25	U	4.7	25	U	4.5	25	U	4.7
N-Nitrosodiphenylamine	µg/L	10	U	4.3	10	U	4.8	10	U	4.7	10	U	4.5	10	U	4.7
4-Bromophenyl-phenylether	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
Hexachlorobenzene	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
Atrazine	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
Pentachlorophenol	µg/L	25	U	1.7	25	U	1.9	25	UJ	1.9	25	U	1.8	25	UJ	1.9
Phenanthrene	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
Anthracene	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
Carbazole	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
Di-n-butylphthalate	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
Fluoranthene	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
Pyrene	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
Butylbenzylphthalate	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
3,3'-Dichlorobenzidine	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
Benzo(a)Anthracene	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
Chrysene	µg/L	10	UJ	1.7	10	U	1.9	10	UJ	1.9	10	U	1.8	10	UJ	1.9
bis(2-Ethylhexyl)Phthalate	µg/L	10	U	2.7	10	U	2.9	10	U	2.9	10	U	2.8	10	U	2.9

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-7 Date Sampled: 2/3/2005 Lab ID: 566719 % Solids: NA			Sample Point MW-7 Date Sampled: 3/20/2006 Lab ID: 939710 % Solids: NA			Sample Point MW-8A Date Sampled: 2/8/2005 Lab ID: 568414 % Solids: NA			Sample Point MW-8A Date Sampled: 3/20/2006 Lab ID: 939713 %Solids: NA			Sample Point MW-8B Date Sampled: 2/8/2005 Lab ID: 568411 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Di-n-Octyl Phthalate	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
Benzo(b)Fluoranthene	µg/L	10	UJ	1.7	10	U	1.9	10	UJ	1.9	10	U	1.8	10	UJ	1.9
Benzo(k)Fluoranthene	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
Benzo(a)Pyrene	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
Indeno(1,2,3-cd)Pyrene	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
Dibenz(a,h)Anthracene	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
Benzo(g,h,i)Perylene	µg/L	10	U	1.7	10	U	1.9	10	U	1.9	10	U	1.8	10	U	1.9
1,4-Dioxane	µg/L				2.1	U	2.1				2	U	2			

Table checked by: R. Baig Date: April 24, 2006

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-8B Date Sampled: 3/20/2006 Lab ID: 939712 % Solids: NA			Sample Point MW-9 Date Sampled: 2/4/2005 Lab ID: 568404 % Solids: NA			Sample Point FMW-9 Date Sampled: 2/4/2005 Lab ID: 568409 % Solids: NA			Sample Point MW-9 Date Sampled: 3/21/2006 Lab ID: 939720 %Solids: NA			Sample Point MW-10 Date Sampled: 2/8/2005 Lab ID: 568416 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/L	10	U	3.3	10	U	3	10	U	2.9	10	U	3.3	10	U	3.1
Phenol	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
bis(2-Chloroethyl)ether	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
2-Chlorophenol	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
2-Methylphenol	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
2,2'-Oxybis(1-Chloropropane)	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	UJ	1.9
Acetophenone	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
4-Methylphenol	µg/L	10	U	2.5	10	U	2.2	10	U	2.2	10	U	2.5	10	U	2.3
N-Nitroso-di-n-propylamine	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
Hexachloroethane	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
Nitrobenzene	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
Isophorone	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
2-Nitrophenol	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
2,4-Dimethylphenol	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
bis(2-Chloroethoxy)Methane	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
2,4-Dichlorophenol	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
Naphthalene	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
4-Chloroaniline	µg/L	10	U	2.3	10	U	2.1	10	U	2	10	U	2.3	10	U	2.2
Hexachlorobutadiene	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
4-Chloro-3-Methylphenol	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
2-Methylnaphthalene	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
Hexachlorocyclopentadiene	µg/L	10	UJ	4.4	10	U	4	10	U	4	10	UJ	4.4	10	U	4.2
Caprolactam	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	UJ	2	10	U	1.9
2,4,6-Trichlorophenol	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
2,4,5-Trichlorophenol	µg/L	25	U	5	25	U	4.5	25	U	4.4	25	U	5	25	U	4.8
1,1'-Biphenyl	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
2-Chloronaphthalene	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
2-Nitroaniline	µg/L	25	U	5	25	U	4.5	25	U	4.4	25	U	5	25	U	4.8
Dimethyl Phthalate	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-8B Date Sampled: 3/20/2006 Lab ID: 939712 % Solids: NA			Sample Point MW-9 Date Sampled: 2/4/2005 Lab ID: 568404 % Solids: NA			Sample Point FMW-9 Date Sampled: 2/4/2005 Lab ID: 568409 % Solids: NA			Sample Point MW-9 Date Sampled: 3/21/2006 Lab ID: 939720 %Solids: NA			Sample Point MW-10 Date Sampled: 2/8/2005 Lab ID: 568416 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
2,6-Dinitrotoluene	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
Acenaphthylene	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
3-Nitroaniline	µg/L	25	U	5	25	U	4.5	25	U	4.4	25	U	5	25	U	4.8
Acenaphthene	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
2,4-Dinitrophenol	µg/L	25	UJ	11	25	UJ	9.9	25	UJ	9.6	25	UJ	11	25	UJ	10
4-Nitrophenol	µg/L	25	U	5.7	25	U	5.2	25	U	5.1	25	UJ	5.7	25	U	5.5
Dibenzofuran	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
2,4-Dinitrotoluene	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	UJ	2	10	U	1.9
Diethylphthalate	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
Fluorene	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
4-Chlorophenyl-phenylether	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
4-Nitroaniline	µg/L	25	U	5	25	U	4.5	25	U	4.4	25	UJ	5	25	U	4.8
4,6-Dinitro-2-methylphenol	µg/L	25	U	5	25	U	4.5	25	U	4.4	25	U	5	25	U	4.8
N-Nitrosodiphenylamine	µg/L	10	U	5	10	U	4.5	10	U	4.4	10	U	5	10	U	4.8
4-Bromophenyl-phenylether	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
Hexachlorobenzene	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
Atrazine	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
Pentachlorophenol	µg/L	25	U	2	25	U	1.8	25	U	1.8	25	U	2	25	UJ	1.9
Phenanthrene	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
Anthracene	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
Carbazole	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
Di-n-butylphthalate	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
Fluoranthene	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
Pyrene	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
Butylbenzylphthalate	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
3,3'-Dichlorobenzidine	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
Benzo(a)Anthracene	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
Chrysene	µg/L	10	U	2	10	UJ	1.8	10	UJ	1.8	10	U	2	10	UJ	1.9
bis(2-Ethylhexyl)Phthalate	µg/L	10	U	3.1	10	U	2.8	10	U	2.7	10	U	3.1	10	U	2.9

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-8B Date Sampled: 3/20/2006 Lab ID: 939712 % Solids: NA			Sample Point MW-9 Date Sampled: 2/4/2005 Lab ID: 568404 % Solids: NA			Sample Point FMW-9 Date Sampled: 2/4/2005 Lab ID: 568409 % Solids: NA			Sample Point MW-9 Date Sampled: 3/21/2006 Lab ID: 939720 %Solids: NA			Sample Point MW-10 Date Sampled: 2/8/2005 Lab ID: 568416 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Di-n-Octyl Phthalate	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	UJ	2	10	U	1.9
Benzo(b)Fluoranthene	µg/L	10	U	2	10	UJ	1.8	10	UJ	1.8	10	U	2	10	UJ	1.9
Benzo(k)Fluoranthene	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
Benzo(a)Pyrene	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
Indeno(1,2,3-cd)Pyrene	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
Dibenz(a,h)Anthracene	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9
Benzo(g,h,i)Perylene	µg/L	10	U	2	10	U	1.8	10	U	1.8	10	UJ	2	10	U	1.9
1,4-Dioxane	µg/L	2.2	U	2.2							2	U	2			

Table checked by: R. Baig Date: April 24, 2006

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-10 Date Sampled: 3/21/2006 Lab ID: 940801 % Solids: NA			Sample Point MW-11 Date Sampled: 2/4/2005 Lab ID: 568408 % Solids: NA			Sample Point MW-11 Date Sampled: 3/20/2006 Lab ID: 939708 % Solids: NA			Sample Point MW-12 Date Sampled: 2/2/2005 Lab ID: 566710 %Solids: NA			Sample Point MW-12 Date Sampled: 3/14/2006 Lab ID: 934212 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/L	10	U	3	10	U	3	10	U	3.3	10	UJ	3.1	11	U	3.4
Phenol	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
bis(2-Chloroethyl)ether	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
2-Chlorophenol	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
2-Methylphenol	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
2,2'-Oxybis(1-Chloropropane)	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
Acetophenone	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
4-Methylphenol	µg/L	10	U	2.2	10	U	2.2	10	U	2.5	10	U	2.3	11	U	2.6
N-Nitroso-di-n-propylamine	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
Hexachloroethane	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
Nitrobenzene	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
Isophorone	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
2-Nitrophenol	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
2,4-Dimethylphenol	µg/L	10	U	1.8	10	U	1.8	10	U	2	2	J	1.9	11	U	2.1
bis(2-Chloroethoxy)Methane	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
2,4-Dichlorophenol	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
Naphthalene	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
4-Chloroaniline	µg/L	10	U	2.1	10	U	2.1	10	U	2.3	10	U	2.2	11	UJ	2.4
Hexachlorobutadiene	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
4-Chloro-3-Methylphenol	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
2-Methylnaphthalene	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
Hexachlorocyclopentadiene	µg/L	10	UJ	4	10	U	4	10	UJ	4.4	10	U	4.2	11	UJ	4.7
Caprolactam	µg/L	10	UJ	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
2,4,6-Trichlorophenol	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
2,4,5-Trichlorophenol	µg/L	25	U	4.5	25	U	4.5	25	U	5	25	U	4.7	26	U	5.3
1,1'-Biphenyl	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
2-Chloronaphthalene	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
2-Nitroaniline	µg/L	25	U	4.5	25	U	4.5	25	U	5	25	U	4.7	26	U	5.3
Dimethyl Phthalate	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-10 Date Sampled: 3/21/2006 Lab ID: 940801 % Solids: NA			Sample Point MW-11 Date Sampled: 2/4/2005 Lab ID: 568408 % Solids: NA			Sample Point MW-11 Date Sampled: 3/20/2006 Lab ID: 939708 % Solids: NA			Sample Point MW-12 Date Sampled: 2/2/2005 Lab ID: 566710 %Solids: NA			Sample Point MW-12 Date Sampled: 3/14/2006 Lab ID: 934212 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
2,6-Dinitrotoluene	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
Acenaphthylene	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
3-Nitroaniline	µg/L	25	U	4.5	25	U	4.5	25	U	5	25	U	4.7	26	U	5.3
Acenaphthene	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
2,4-Dinitrophenol	µg/L	25	UJ	9.9	25	UJ	9.9	25	UJ	11	25	UJ	10	26	U	11
4-Nitrophenol	µg/L	25	UJ	5.2	25	U	5.2	25	U	5.7	25	U	5.4	26	U	6
Dibenzofuran	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
2,4-Dinitrotoluene	µg/L	10	UJ	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
Diethylphthalate	µg/L	10	UJ	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
Fluorene	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
4-Chlorophenyl-phenylether	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
4-Nitroaniline	µg/L	25	UJ	4.5	25	U	4.5	25	U	5	25	U	4.7	26	UJ	5.3
4,6-Dinitro-2-methylphenol	µg/L	25	U	4.5	25	U	4.5	25	U	5	25	U	4.7	26	U	5.3
N-Nitrosodiphenylamine	µg/L	10	U	4.5	10	U	4.5	10	U	5	10	U	4.7	11	U	5.3
4-Bromophenyl-phenylether	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
Hexachlorobenzene	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
Atrazine	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	UJ	2.1
Pentachlorophenol	µg/L	25	U	1.8	25	U	1.8	25	U	2	25	U	1.9	26	U	2.1
Phenanthrene	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
Anthracene	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
Carbazole	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	UJ	2.1
Di-n-butylphthalate	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
Fluoranthene	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
Pyrene	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
Butylbenzylphthalate	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
3,3'-Dichlorobenzidine	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
Benzo(a)Anthracene	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
Chrysene	µg/L	10	U	1.8	10	UJ	1.8	10	U	2	10	UJ	1.9	11	U	2.1
bis(2-Ethylhexyl)Phthalate	µg/L	10	U	2.8	10	U	2.8	10	U	3.1	10	U	2.9	11	U	3.2

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)		Sample Point MW-10 Date Sampled: 3/21/2006 Lab ID: 940801 % Solids: NA			Sample Point MW-11 Date Sampled: 2/4/2005 Lab ID: 568408 % Solids: NA			Sample Point MW-11 Date Sampled: 3/20/2006 Lab ID: 939708 % Solids: NA			Sample Point MW-12 Date Sampled: 2/2/2005 Lab ID: 566710 %Solids: NA			Sample Point MW-12 Date Sampled: 3/14/2006 Lab ID: 934212 %Solids: NA		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Di-n-Octyl Phthalate	µg/L	10	UJ	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
Benzo(b)Fluoranthene	µg/L	10	U	1.8	10	UJ	1.8	10	U	2	10	UJ	1.9	11	U	2.1
Benzo(k)Fluoranthene	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
Benzo(a)Pyrene	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
Indeno(1,2,3-cd)Pyrene	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
Dibenz(a,h)Anthracene	µg/L	10	U	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
Benzo(g,h,i)Perylene	µg/L	10	UJ	1.8	10	U	1.8	10	U	2	10	U	1.9	11	U	2.1
1,4-Dioxane	µg/L	2	U	2				2	U	2				2	U	2

Table checked by: R. Baig Date: April 24, 2006

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-13 Date Sampled: 2/2/2005 Lab ID: 566708 % Solids: NA			Sample Point MW-13 Date Sampled: 3/16/2006 Lab ID: 934218 % Solids: NA			Sample Point MW-14 Date Sampled: 2/3/2005 Lab ID: 568401 % Solids: NA			Sample Point MW-14 Date Sampled: 3/17/2006 Lab ID: 934221 %Solids: NA			Sample Point MW-15 Date Sampled: 2/1/2005 Lab ID: 566706 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/L	10	UJ	3	10	UJ	3.3	10	U	3	10	UJ	3.2	10	UJ	3
Phenol	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
bis(2-Chloroethyl)ether	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
2-Chlorophenol	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
2-Methylphenol	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
2,2'-Oxybis(1-Chloropropane)	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Acetophenone	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
4-Methylphenol	µg/L	10	U	2.3	10	U	2.5	10	U	2.2	10	U	2.4	10	U	2.2
N-Nitroso-di-n-propylamine	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Hexachloroethane	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Nitrobenzene	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Isophorone	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
2-Nitrophenol	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
2,4-Dimethylphenol	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
bis(2-Chloroethoxy)Methane	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
2,4-Dichlorophenol	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Naphthalene	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
4-Chloroaniline	µg/L	10	U	2.2	10	U	2.4	10	U	2.1	10	U	2.2	10	U	2.1
Hexachlorobutadiene	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
4-Chloro-3-Methylphenol	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
2-Methylnaphthalene	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Hexachlorocyclopentadiene	µg/L	10	U	4.2	10	UJ	4.6	10	U	4	10	UJ	4.3	10	U	4
Caprolactam	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
2,4,6-Trichlorophenol	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
2,4,5-Trichlorophenol	µg/L	25	U	4.7	26	U	5.1	25	U	4.5	25	U	4.9	25	U	4.5
1,1'-Biphenyl	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
2-Chloronaphthalene	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
2-Nitroaniline	µg/L	25	U	4.7	26	U	5.1	25	U	4.5	25	U	4.9	25	U	4.5
Dimethyl Phthalate	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-13 Date Sampled: 2/2/2005 Lab ID: 566708 % Solids: NA			Sample Point MW-13 Date Sampled: 3/16/2006 Lab ID: 934218 % Solids: NA			Sample Point MW-14 Date Sampled: 2/3/2005 Lab ID: 568401 % Solids: NA			Sample Point MW-14 Date Sampled: 3/17/2006 Lab ID: 934221 %Solids: NA			Sample Point MW-15 Date Sampled: 2/1/2005 Lab ID: 566706 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
2,6-Dinitrotoluene	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Acenaphthylene	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
3-Nitroaniline	µg/L	25	U	4.7	26	U	5.1	25	U	4.5	25	U	4.9	25	U	4.5
Acenaphthene	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
2,4-Dinitrophenol	µg/L	25	UJ	10	26	UJ	11	25	UJ	9.9	25	UJ	11	25	UJ	9.9
4-Nitrophenol	µg/L	25	U	5.4	26	U	5.9	25	U	5.2	25	U	5.6	25	U	5.2
Dibenzofuran	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
2,4-Dinitrotoluene	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Diethylphthalate	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Fluorene	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
4-Chlorophenyl-phenylether	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
4-Nitroaniline	µg/L	25	U	4.7	26	U	5.1	25	U	4.5	25	U	4.9	25	U	4.5
4,6-Dinitro-2-methylphenol	µg/L	25	U	4.7	26	U	5.1	25	U	4.5	25	U	4.9	25	U	4.5
N-Nitrosodiphenylamine	µg/L	10	U	4.7	10	U	5.1	10	U	4.5	10	U	4.9	10	U	4.5
4-Bromophenyl-phenylether	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Hexachlorobenzene	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Atrazine	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Pentachlorophenol	µg/L	25	U	1.9	26	U	2.1	25	U	1.8	25	U	2	25	U	1.8
Phenanthrene	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Anthracene	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Carbazole	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Di-n-butylphthalate	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Fluoranthene	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Pyrene	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Butylbenzylphthalate	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
3,3'-Dichlorobenzidine	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Benzo(a)Anthracene	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Chrysene	µg/L	10	UJ	1.9	10	U	2.1	10	UJ	1.8	10	U	2	10	UJ	1.8
bis(2-Ethylhexyl)Phthalate	µg/L	17		2.9	10	U	3.2	10	U	2.8	10	U	3	10	U	2.8

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-13 Date Sampled: 2/2/2005 Lab ID: 566708 % Solids: NA			Sample Point MW-13 Date Sampled: 3/16/2006 Lab ID: 934218 % Solids: NA			Sample Point MW-14 Date Sampled: 2/3/2005 Lab ID: 568401 % Solids: NA			Sample Point MW-14 Date Sampled: 3/17/2006 Lab ID: 934221 %Solids: NA			Sample Point MW-15 Date Sampled: 2/1/2005 Lab ID: 566706 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Di-n-Octyl Phthalate	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Benzo(b)Fluoranthene	µg/L	10	UJ	1.9	10	U	2.1	10	UJ	1.8	10	U	2	10	UJ	1.8
Benzo(k)Fluoranthene	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Benzo(a)Pyrene	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Indeno(1,2,3-cd)Pyrene	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Dibenz(a,h)Anthracene	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
Benzo(g,h,i)Perylene	µg/L	10	U	1.9	10	U	2.1	10	U	1.8	10	U	2	10	U	1.8
1,4-Dioxane	µg/L										2	U	2			

Table checked by: R. Baig Date: April 24, 2006

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-15 Date Sampled: 3/16/2006 Lab ID: 934217 % Solids: NA			Sample Point MW-16 Date Sampled: 2/1/2005 Lab ID: 566704 % Solids: NA			Sample Point MW-16 Date Sampled: 3/23/2006 Lab ID: 940806 % Solids: NA			Sample Point MW-17 Date Sampled: 2/1/2005 Lab ID: 566703 %Solids: NA			Sample Point MW-17 Date Sampled: 3/16/2006 Lab ID: 934216 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/L	10	UJ	3.3	10	UJ	3	10	U	3	10	UJ	3	10	UJ	3.2
Phenol	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
bis(2-Chloroethyl)ether	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
2-Chlorophenol	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
2-Methylphenol	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
2,2'-Oxybis(1-Chloropropane)	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
Acetophenone	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
4-Methylphenol	µg/L	10	U	2.5	10	U	2.2	10	U	2.2	10	U	2.2	10	U	2.4
N-Nitroso-di-n-propylamine	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
Hexachloroethane	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
Nitrobenzene	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
Isophorone	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
2-Nitrophenol	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
2,4-Dimethylphenol	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
bis(2-Chloroethoxy)Methane	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
2,4-Dichlorophenol	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
Naphthalene	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
4-Chloroaniline	µg/L	10	U	2.4	10	U	2.1	10	U	2.1	10	U	2.1	10	U	2.2
Hexachlorobutadiene	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
4-Chloro-3-Methylphenol	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
2-Methylnaphthalene	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
Hexachlorocyclopentadiene	µg/L	10	UJ	4.6	10	U	4	10	UJ	4	10	U	4	10	UJ	4.3
Caprolactam	µg/L	10	U	2.1	10	U	1.8	10	UJ	1.8	10	U	1.8	10	U	2
2,4,6-Trichlorophenol	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
2,4,5-Trichlorophenol	µg/L	26	U	5.1	25	U	4.5	25	U	4.5	25	U	4.5	25	U	4.9
1,1'-Biphenyl	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
2-Chloronaphthalene	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
2-Nitroaniline	µg/L	26	U	5.1	25	U	4.5	25	U	4.5	25	U	4.5	25	U	4.9
Dimethyl Phthalate	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-15 Date Sampled: 3/16/2006 Lab ID: 934217 % Solids: NA			Sample Point MW-16 Date Sampled: 2/1/2005 Lab ID: 566704 % Solids: NA			Sample Point MW-16 Date Sampled: 3/23/2006 Lab ID: 940806 % Solids: NA			Sample Point MW-17 Date Sampled: 2/1/2005 Lab ID: 566703 %Solids: NA			Sample Point MW-17 Date Sampled: 3/16/2006 Lab ID: 934216 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
2,6-Dinitrotoluene	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
Acenaphthylene	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
3-Nitroaniline	µg/L	26	U	5.1	25	U	4.5	25	U	4.5	25	U	4.5	25	U	4.9
Acenaphthene	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
2,4-Dinitrophenol	µg/L	26	UJ	11	25	UJ	9.9	25	UJ	9.9	25	UJ	9.9	25	UJ	11
4-Nitrophenol	µg/L	26	U	5.9	25	U	5.2	25	UJ	5.2	25	U	5.2	25	U	5.6
Dibenzofuran	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
2,4-Dinitrotoluene	µg/L	10	U	2.1	10	U	1.8	10	UJ	1.8	10	U	1.8	10	U	2
Diethylphthalate	µg/L	10	U	2.1	10	U	1.8	10	UJ	1.8	10	U	1.8	10	U	2
Fluorene	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
4-Chlorophenyl-phenylether	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
4-Nitroaniline	µg/L	26	U	5.1	25	U	4.5	25	UJ	4.5	25	U	4.5	25	U	4.9
4,6-Dinitro-2-methylphenol	µg/L	26	U	5.1	25	U	4.5	25	U	4.5	25	U	4.5	25	U	4.9
N-Nitrosodiphenylamine	µg/L	10	U	5.1	10	U	4.5	10	U	4.5	10	U	4.5	10	U	4.9
4-Bromophenyl-phenylether	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
Hexachlorobenzene	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
Atrazine	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
Pentachlorophenol	µg/L	26	U	2.1	25	U	1.8	25	U	1.8	25	U	1.8	25	U	2
Phenanthrene	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
Anthracene	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
Carbazole	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
Di-n-butylphthalate	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
Fluoranthene	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
Pyrene	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
Butylbenzylphthalate	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
3,3'-Dichlorobenzidine	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
Benzo(a)Anthracene	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
Chrysene	µg/L	10	U	2.1	10	UJ	1.8	10	U	1.8	10	UJ	1.8	10	U	2
bis(2-Ethylhexyl)Phthalate	µg/L	10	U	3.2	10	U	2.8	10	U	2.8	10	U	2.8	10	U	3

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-15 Date Sampled: 3/16/2006 Lab ID: 934217 % Solids: NA			Sample Point MW-16 Date Sampled: 2/1/2005 Lab ID: 566704 % Solids: NA			Sample Point MW-16 Date Sampled: 3/23/2006 Lab ID: 940806 % Solids: NA			Sample Point MW-17 Date Sampled: 2/1/2005 Lab ID: 566703 %Solids: NA			Sample Point MW-17 Date Sampled: 3/16/2006 Lab ID: 934216 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Di-n-Octyl Phthalate	µg/L	10	U	2.1	10	U	1.8	10	UJ	1.8	10	U	1.8	10	U	2
Benzo(b)Fluoranthene	µg/L	10	U	2.1	10	UJ	1.8	10	U	1.8	10	UJ	1.8	10	U	2
Benzo(k)Fluoranthene	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
Benzo(a)Pyrene	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
Indeno(1,2,3-cd)Pyrene	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
Dibenz(a,h)Anthracene	µg/L	10	U	2.1	10	U	1.8	10	U	1.8	10	U	1.8	10	U	2
Benzo(g,h,i)Perylene	µg/L	10	U	2.1	10	U	1.8	10	UJ	1.8	10	U	1.8	10	U	2

Table checked by: R. Baig Date: April 24, 2006

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-18 Date Sampled: 1/31/2005 Lab ID: 566701 % Solids: NA			Sample Point MW-18 Date Sampled: 3/16/2006 Lab ID: 934220 % Solids: NA			Sample Point MW-19 Date Sampled: 2/2/2005 Lab ID: 566709 % Solids: NA			Sample Point FMW-19 Date Sampled: 2/2/2005 Lab ID: 566712 %Solids: NA			Sample Point MW-19 Date Sampled: 3/14/2006 Lab ID: 934213 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/L	10	UJ	3	10	UJ	3.3	10	UJ	3	10	UJ	3	11	U	3.6
Phenol	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
bis(2-Chloroethyl)ether	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
2-Chlorophenol	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
2-Methylphenol	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
2,2'-Oxybis(1-Chloropropane)	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
Acetophenone	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
4-Methylphenol	µg/L	10	U	2.3	10	U	2.5	10	U	2.3	10	U	2.3	11	U	2.7
N-Nitroso-di-n-propylamine	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
Hexachloroethane	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
Nitrobenzene	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
Isophorone	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
2-Nitrophenol	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
2,4-Dimethylphenol	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
bis(2-Chloroethoxy)Methane	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
2,4-Dichlorophenol	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
Naphthalene	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
4-Chloroaniline	µg/L	10	U	2.2	10	U	2.4	10	U	2.2	10	U	2.1	11	UJ	2.6
Hexachlorobutadiene	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
4-Chloro-3-Methylphenol	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
2-Methylnaphthalene	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
Hexachlorocyclopentadiene	µg/L	10	U	4.2	10	UJ	4.6	10	U	4.2	10	U	4.1	11	UJ	4.9
Caprolactam	µg/L	3	J	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
2,4,6-Trichlorophenol	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
2,4,5-Trichlorophenol	µg/L	25	U	4.7	26	U	5.1	25	U	4.7	25	U	4.7	28	U	5.6
1,1'-Biphenyl	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
2-Chloronaphthalene	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
2-Nitroaniline	µg/L	25	U	4.7	26	U	5.1	25	U	4.7	25	U	4.7	28	U	5.6
Dimethyl Phthalate	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-18 Date Sampled: 1/31/2005 Lab ID: 566701 % Solids: NA			Sample Point MW-18 Date Sampled: 3/16/2006 Lab ID: 934220 % Solids: NA			Sample Point MW-19 Date Sampled: 2/2/2005 Lab ID: 566709 % Solids: NA			Sample Point FMW-19 Date Sampled: 2/2/2005 Lab ID: 566712 %Solids: NA			Sample Point MW-19 Date Sampled: 3/14/2006 Lab ID: 934213 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
2,6-Dinitrotoluene	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
Acenaphthylene	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
3-Nitroaniline	µg/L	25	U	4.7	26	U	5.1	25	U	4.7	25	U	4.7	28	U	5.6
Acenaphthene	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
2,4-Dinitrophenol	µg/L	25	UJ	10	26	UJ	11	25	UJ	10	25	UJ	10	28	U	12
4-Nitrophenol	µg/L	25	U	5.4	26	U	5.9	25	U	5.4	25	U	5.3	28	U	6.4
Dibenzofuran	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
2,4-Dinitrotoluene	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
Diethylphthalate	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
Fluorene	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
4-Chlorophenyl-phenylether	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
4-Nitroaniline	µg/L	25	U	4.7	26	U	5.1	25	U	4.7	25	U	4.7	28	UJ	5.6
4,6-Dinitro-2-methylphenol	µg/L	25	U	4.7	26	U	5.1	25	U	4.7	25	U	4.7	28	U	5.6
N-Nitrosodiphenylamine	µg/L	10	U	4.7	10	U	5.1	10	U	4.7	10	U	4.7	11	U	5.6
4-Bromophenyl-phenylether	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
Hexachlorobenzene	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
Atrazine	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	UJ	2.2
Pentachlorophenol	µg/L	25	U	1.9	26	U	2.1	25	U	1.9	25	U	1.9	28	U	2.2
Phenanthrene	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
Anthracene	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
Carbazole	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	UJ	2.2
Di-n-butylphthalate	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
Fluoranthene	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
Pyrene	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
Butylbenzylphthalate	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
3,3'-Dichlorobenzidine	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
Benzo(a)Anthracene	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
Chrysene	µg/L	10	UJ	1.9	10	U	2.1	10	UJ	1.9	10	UJ	1.9	11	U	2.2
bis(2-Ethylhexyl)Phthalate	µg/L	7	J	2.9	10	U	3.2	10	U	2.9	10	U	2.9	11	U	3.4

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-18 Date Sampled: 1/31/2005 Lab ID: 566701 % Solids: NA			Sample Point MW-18 Date Sampled: 3/16/2006 Lab ID: 934220 % Solids: NA			Sample Point MW-19 Date Sampled: 2/2/2005 Lab ID: 566709 % Solids: NA			Sample Point FMW-19 Date Sampled: 2/2/2005 Lab ID: 566712 %Solids: NA			Sample Point MW-19 Date Sampled: 3/14/2006 Lab ID: 934213 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Di-n-Octyl Phthalate	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
Benzo(b)Fluoranthene	µg/L	10	UJ	1.9	10	U	2.1	10	UJ	1.9	10	UJ	1.9	11	U	2.2
Benzo(k)Fluoranthene	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
Benzo(a)Pyrene	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
Indeno(1,2,3-cd)Pyrene	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
Dibenz(a,h)Anthracene	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	U	2.2
Benzo(g,h,i)Perylene	µg/L	10	U	1.9	10	U	2.1	10	U	1.9	10	U	1.9	11	UJ	2.2
1,4-Dioxane	µg/L				2	U	2									

Table checked by: R. Baig Date: April 24, 2006

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-20 Date Sampled: 2/2/2005 Lab ID: 566713 % Solids: NA			Sample Point MW-20 Date Sampled: 3/17/2006 Lab ID: 934222 % Solids: NA			Sample Point FMW-20 Date Sampled: 3/17/2006 Lab ID: 934225 % Solids: NA			Sample Point MW-21 Date Sampled: 2/4/2005 Lab ID: 568406 %Solids: NA			Sample Point MW-21 Date Sampled: 3/20/2006 Lab ID: 939706 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/L	10	UJ	3	10	UJ	3.3	11	UJ	3.4	10	U	2.9	10	U	3.2
Phenol	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
bis(2-Chloroethyl)ether	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
2-Chlorophenol	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
2-Methylphenol	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	5	J	1.8	10	U	2
2,2'-Oxybis(1-Chloropropane)	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
Acetophenone	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
4-Methylphenol	µg/L	10	U	2.3	10	U	2.5	11	U	2.6	77		2.2	16		2.4
N-Nitroso-di-n-propylamine	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
Hexachloroethane	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
Nitrobenzene	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
Isophorone	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
2-Nitrophenol	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
2,4-Dimethylphenol	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	15		1.8	5	J	2
bis(2-Chloroethoxy)Methane	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
2,4-Dichlorophenol	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
Naphthalene	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	17		1.8	10		2
4-Chloroaniline	µg/L	10	U	2.1	10	U	2.4	11	U	2.4	10	U	2	10	U	2.2
Hexachlorobutadiene	µg/L	10	U	1.9	10	UJ	2.1	11	U	2.1	10	U	1.8	10	U	2
4-Chloro-3-Methylphenol	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
2-Methylnaphthalene	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10		1.8	9	J	2
Hexachlorocyclopentadiene	µg/L	10	U	4.1	10	U	4.6	11	UJ	4.7	10	U	4	10	UJ	4.3
Caprolactam	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
2,4,6-Trichlorophenol	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
2,4,5-Trichlorophenol	µg/L	25	U	4.7	26	U	5.1	26	U	5.3	25	U	4.4	25	U	4.9
1,1'-Biphenyl	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
2-Chloronaphthalene	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
2-Nitroaniline	µg/L	25	U	4.7	26	U	5.1	26	U	5.3	25	U	4.4	25	U	4.9
Dimethyl Phthalate	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-20 Date Sampled: 2/2/2005 Lab ID: 566713 % Solids: NA			Sample Point MW-20 Date Sampled: 3/17/2006 Lab ID: 934222 % Solids: NA			Sample Point FMW-20 Date Sampled: 3/17/2006 Lab ID: 934225 % Solids: NA			Sample Point MW-21 Date Sampled: 2/4/2005 Lab ID: 568406 %Solids: NA			Sample Point MW-21 Date Sampled: 3/20/2006 Lab ID: 939706 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
2,6-Dinitrotoluene	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
Acenaphthylene	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
3-Nitroaniline	µg/L	25	U	4.7	26	U	5.1	26	U	5.3	25	U	4.4	25	U	4.9
Acenaphthene	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
2,4-Dinitrophenol	µg/L	25	UJ	10	26	UJ	11	26	UJ	11	25	UJ	9.6	25	UJ	11
4-Nitrophenol	µg/L	25	U	5.3	26	U	5.9	26	U	6	25	U	5.1	25	U	5.6
Dibenzofuran	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
2,4-Dinitrotoluene	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
Diethylphthalate	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
Fluorene	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
4-Chlorophenyl-phenylether	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
4-Nitroaniline	µg/L	25	U	4.7	26	U	5.1	26	U	5.3	25	U	4.4	25	U	4.9
4,6-Dinitro-2-methylphenol	µg/L	25	U	4.7	26	U	5.1	26	U	5.3	25	U	4.4	25	U	4.9
N-Nitrosodiphenylamine	µg/L	10	U	4.7	10	U	5.1	11	U	5.3	10	U	4.4	10	U	4.9
4-Bromophenyl-phenylether	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
Hexachlorobenzene	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
Atrazine	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
Pentachlorophenol	µg/L	25	U	1.9	26	U	2.1	26	U	2.1	25	U	1.8	25	U	2
Phenanthrene	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
Anthracene	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
Carbazole	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
Di-n-butylphthalate	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	4	J	1.8	4	J	2
Fluoranthene	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
Pyrene	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
Butylbenzylphthalate	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10		1.8	9	J	2
3,3'-Dichlorobenzidine	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
Benzo(a)Anthracene	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
Chrysene	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	UJ	1.8	10	U	2
bis(2-Ethylhexyl)Phthalate	µg/L	10	U	2.9	10	U	3.2	11	U	3.2	3	J	2.7	10	U	3

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-20 Date Sampled: 2/2/2005 Lab ID: 566713 % Solids: NA			Sample Point MW-20 Date Sampled: 3/17/2006 Lab ID: 934222 % Solids: NA			Sample Point FMW-20 Date Sampled: 3/17/2006 Lab ID: 934225 % Solids: NA			Sample Point MW-21 Date Sampled: 2/4/2005 Lab ID: 568406 %Solids: NA			Sample Point MW-21 Date Sampled: 3/20/2006 Lab ID: 939706 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Di-n-Octyl Phthalate	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
Benzo(b)Fluoranthene	µg/L	10	UJ	1.9	10	U	2.1	11	U	2.1	10	UJ	1.8	10	U	2
Benzo(k)Fluoranthene	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
Benzo(a)Pyrene	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
Indeno(1,2,3-cd)Pyrene	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
Dibenz(a,h)Anthracene	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
Benzo(g,h,i)Perylene	µg/L	10	U	1.9	10	U	2.1	11	U	2.1	10	U	1.8	10	U	2
1,4-Dioxane	µg/L													2.1	U	2.1

Table checked by: R. Baig Date: April 24, 2006

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point OSW Date Sampled: 3/21/2006 Lab ID: 939714 % Solids: NA			Sample Point WS-1 Date Sampled: 2/3/2005 Lab ID: 566718 % Solids: NA			Sample Point Date Sampled: Lab ID: % Solids:			Sample Point Date Sampled: Lab ID: %Solids:			Sample Point Date Sampled: Lab ID: %Solids:		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/L	10		3.3	10	U	3.3									
Phenol	µg/L	10	U	2	10	U	2									
bis(2-Chloroethyl)ether	µg/L	10	U	2	10	U	2									
2-Chlorophenol	µg/L	10		2	10	U	2									
2-Methylphenol	µg/L	10		2	10	U	2									
2,2'-Oxybis(1-Chloropropane)	µg/L	10		2	10	U	2									
Acetophenone	µg/L	10		2	10	U	2									
4-Methylphenol	µg/L	10		2.5	10	U	2.5									
N-Nitroso-di-n-propylamine	µg/L	10	U	2	10	U	2									
Hexachloroethane	µg/L	10	U	2	10	U	2									
Nitrobenzene	µg/L	10	U	2	10	U	2									
Isophorone	µg/L	10	U	2	10	U	2									
2-Nitrophenol	µg/L	10		2	10	U	2									
2,4-Dimethylphenol	µg/L	10		2	10	U	2									
bis(2-Chloroethoxy)Methane	µg/L	10	U	2	10	U	2									
2,4-Dichlorophenol	µg/L	10		2	10	U	2									
Naphthalene	µg/L	10	U	2	10	U	2									
4-Chloroaniline	µg/L	10		2.3	10	U	2.3									
Hexachlorobutadiene	µg/L	10	U	2	10	U	2									
4-Chloro-3-Methylphenol	µg/L	10		2	10	U	2									
2-Methylnaphthalene	µg/L	10		2	10	U	2									
Hexachlorocyclopentadiene	µg/L	10		4.4	10	U	4.4									
Caprolactam	µg/L	10		2	10	U	2									
2,4,6-Trichlorophenol	µg/L	10		2	10	U	2									
2,4,5-Trichlorophenol	µg/L	25		5	25	U	5									
1,1'-Biphenyl	µg/L	10		2	10	U	2									
2-Chloronaphthalene	µg/L	10		2	10	U	2									
2-Nitroaniline	µg/L	25		5	25	U	5									
Dimethyl Phthalate	µg/L	10	U	2	10	U	2									

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point OSW Date Sampled: 3/21/2006 Lab ID: 939714 % Solids: NA			Sample Point WS-1 Date Sampled: 2/3/2005 Lab ID: 566718 % Solids: NA			Sample Point Date Sampled: Lab ID: % Solids:			Sample Point Date Sampled: Lab ID: %Solids:			Sample Point Date Sampled: Lab ID: %Solids:		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
2,6-Dinitrotoluene	µg/L	10		2	10	U	2									
Acenaphthylene	µg/L	10		2	10	U	2									
3-Nitroaniline	µg/L	25		5	25	U	5									
Acenaphthene	µg/L	10		2	10	U	2									
2,4-Dinitrophenol	µg/L	25		11	25	UJ	11									
4-Nitrophenol	µg/L	25		5.7	25	U	5.7									
Dibenzofuran	µg/L	10	U	2	10	U	2									
2,4-Dinitrotoluene	µg/L	10		2	10	U	2									
Diethylphthalate	µg/L	10		2	10	U	2									
Fluorene	µg/L	10	U	2	10	U	2									
4-Chlorophenyl-phenylether	µg/L	10		2	10	U	2									
4-Nitroaniline	µg/L	25		5	25	U	5									
4,6-Dinitro-2-methylphenol	µg/L	25		5	25	U	5									
N-Nitrosodiphenylamine	µg/L	10	U	5	10	U	5									
4-Bromophenyl-phenylether	µg/L	10		2	10	U	2									
Hexachlorobenzene	µg/L	10	U	2	10	U	2									
Atrazine	µg/L	10		2	10	U	2									
Pentachlorophenol	µg/L	25	U	2	25	U	2									
Phenanthrene	µg/L	10	U	2	10	U	2									
Anthracene	µg/L	10		2	10	U	2									
Carbazole	µg/L	10	U	2	10	U	2									
Di-n-butylphthalate	µg/L	10	U	2	10	U	2									
Fluoranthene	µg/L	10	U	2	10	U	2									
Pyrene	µg/L	10	U	2	10	U	2									
Butylbenzylphthalate	µg/L	10	U	2	10	U	2									
3,3'-Dichlorobenzidine	µg/L	10		2	10	U	2									
Benzo(a)Anthracene	µg/L	10		2	10	U	2									
Chrysene	µg/L	10	U	2	10	UJ	2									
bis(2-Ethylhexyl)Phthalate	µg/L	10	U	3.1	10	U	3.1									

Table E-1 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

		Sample Point: OSW Date Sampled: 3/21/2006 Lab ID: 939714 % Solids: NA			Sample Point: WS-1 Date Sampled: 2/3/2005 Lab ID: 566718 % Solids: NA			Sample Point Date Sampled: Lab ID: % Solids:			Sample Point Date Sampled: Lab ID: %Solids:			Sample Point Date Sampled: Lab ID: %Solids:		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Di-n-Octyl Phthalate	µg/L	10		2	10	U	2									
Benzo(b)Fluoranthene	µg/L	10		2	10	UJ	2									
Benzo(k)Fluoranthene	µg/L	10	U	2	10	U	2									
Benzo(a)Pyrene	µg/L	10		2	10	U	2									
Indeno(1,2,3-cd)Pyrene	µg/L	10	U	2	10	U	2									
Dibenz(a,h)Anthracene	µg/L	10	U	2	10	U	2									
Benzo(g,h,i)Perylene	µg/L	10		2	10	U	2									
1,4-Dioxane	µg/L	2.1	U	2.1												

Table checked by: R. Baig Date: April 24, 2006

Table E-1 (c)

Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-1 Date Sampled: 2/3/2005 Lab ID: 566720 % Solids: NA			Sample Point MW-1 Date Sampled: 3/21/2006 Lab ID: 939718 % Solids: NA			Sample Point FMW-1 Date Sampled: 3/21/2006 Lab ID: 939719 % Solids: NA			Sample Point MW-2A Date Sampled: 2/8/2005 Lab ID: 568412 %Solids: NA			Sample Point MW-2A Date Sampled: 3/23/2006 Lab ID: 940807 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/L	0.05	U	0.01	0.05	U	0.0098	0.05	U	0.0095	0.05	U	0.01	0.05	U	0.0098
beta-BHC	µg/L	0.05	U	0.01	0.05	U	0.0098	0.05	U	0.0095	0.05	U	0.01	0.05	U	0.0098
delta-BHC	µg/L	0.05	U	0.01	0.05	U	0.0098	0.05	U	0.0095	0.05	U	0.01	0.014	J	0.0098
gamma-BHC (Lindane)	µg/L	0.05	U	0.01	0.05	U	0.0098	0.05	U	0.0095	0.05	U	0.01	0.05	U	0.0098
Heptachlor	µg/L	0.05	U	0.01	0.05	U	0.0098	0.05	U	0.0095	0.05	U	0.01	0.05	U	0.0098
Aldrin	µg/L	0.05	U	0.01	0.05	U	0.0098	0.05	U	0.0095	0.05	U	0.01	0.05	U	0.0098
Heptachlor epoxide	µg/L	0.05	U	0.01	0.05	U	0.0098	0.05	U	0.0095	0.05	U	0.01	0.05	U	0.0098
Endosulfan I	µg/L	0.05	U	0.01	0.05	U	0.0098	0.05	U	0.0095	0.05	U	0.01	0.05	U	0.0098
Dieldrin	µg/L	0.1	U	0.02	0.1	U	0.02	0.1	U	0.019	0.1	U	0.02	0.1	U	0.02
4,4'-DDE	µg/L	0.1	U	0.02	0.1	U	0.02	0.1	U	0.019	0.1	U	0.02	0.1	U	0.02
Endrin	µg/L	0.1	U	0.02	0.1	U	0.02	0.1	U	0.019	0.1	U	0.02	0.1	U	0.02
Endosulfan II	µg/L	0.1	U	0.02	0.1	U	0.02	0.1	U	0.019	0.1	U	0.02	0.1	U	0.02
4,4'-DDD	µg/L	0.1	U	0.02	0.1	U	0.02	0.1	U	0.019	0.1	U	0.02	0.1	U	0.02
Endosulfan sulfate	µg/L	0.1	U	0.02	0.1	U	0.02	0.1	U	0.019	0.039	J	0.02	0.1	U	0.02
4,4'-DDT	µg/L	0.1	U	0.02	0.1	U	0.02	0.1	U	0.019	0.1	U	0.02	0.1	U	0.02
Methoxychlor	µg/L	0.5	U	0.1	0.5	UJ	0.098	0.5	UJ	0.095	0.5	U	0.1	0.5	U	0.098
Endrin ketone	µg/L	0.1	U	0.02	0.1	U	0.02	0.1	U	0.019	0.1	U	0.02	0.1	U	0.02
Endrin aldehyde	µg/L	0.1	U	0.02	0.1	U	0.02	0.1	U	0.019	0.1	U	0.02	0.1	U	0.02
alpha-Chlordane	µg/L	0.05	U	0.01	0.05	U	0.0098	0.05	U	0.0095	0.05	U	0.01	0.05	U	0.0098
gamma-Chlordane	µg/L	0.05	U	0.01	0.05	U	0.0098	0.05	U	0.0095	0.05	U	0.01	0.05	U	0.0098
Toxaphene	µg/L	5	U	1.1	5	U	1	5	U	1	5	U	1.1	5	U	1
Aroclor-1016	µg/L	1	U	0.33	1	U	0.32	1	U	0.31	1	U	0.33	1	U	0.32
Aroclor-1221	µg/L	2	U	0.4	2	U	0.39	2	U	0.38	2	U	0.4	2	U	0.39
Aroclor-1232	µg/L	1	U	0.37	1	U	0.36	1	U	0.36	1	U	0.37	1	U	0.36
Aroclor-1242	µg/L	1	U	0.25	1	U	0.24	1	U	0.24	1	U	0.25	1	U	0.24
Aroclor-1248	µg/L	1	U	0.27	1	U	0.27	1	U	0.26	1	U	0.27	1	U	0.27
Aroclor-1254	µg/L	1	U	0.36	1	U	0.35	1	U	0.34	1	U	0.36	1	U	0.35
Aroclor-1260	µg/L	1	U	0.3	1	U	0.29	1	U	0.28	1	U	0.3	1	U	0.29

Table checked by: R. Baig Date: 4/24/2006

Table E-1 (c)

Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-2B Date Sampled: 2/4/2005 Lab ID: 568407 % Solids: NA			Sample Point MW-2B Date Sampled: 3/20/2006 Lab ID: 939707 % Solids: NA			Sample Point MW-3 Date Sampled: 2/3/2005 Lab ID: 566717 % Solids: NA			Sample Point MW-3 Date Sampled: 3/20/2006 Lab ID: 939709 %Solids: NA			Sample Point MW-4 Date Sampled: 2/3/2005 Lab ID: 566715 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/L	0.05	U	0.0093	0.05	U	0.0098	0.05	U	0.0093	0.05	U	0.0098	0.05	U	0.0091
beta-BHC	µg/L	0.05	U	0.0093	0.05	U	0.0098	0.05	U	0.0093	0.05	U	0.0098	0.05	U	0.0091
delta-BHC	µg/L	0.05	U	0.0093	0.05	U	0.0098	0.05	U	0.0093	0.05	U	0.0098	0.05	U	0.0091
gamma-BHC (Lindane)	µg/L	0.05	U	0.0093	0.05	U	0.0098	0.05	U	0.0093	0.05	U	0.0098	0.05	U	0.0091
Heptachlor	µg/L	0.05	U	0.0093	0.05	U	0.0098	0.05	U	0.0093	0.05	U	0.0098	0.05	U	0.0091
Aldrin	µg/L	0.05	U	0.0093	0.05	U	0.0098	0.05	U	0.0093	0.05	U	0.0098	0.05	U	0.0091
Heptachlor epoxide	µg/L	0.05	U	0.0093	0.05	U	0.0098	0.05	U	0.0093	0.05	U	0.0098	0.05	U	0.0091
Endosulfan I	µg/L	0.05	U	0.0093	0.05	U	0.0098	0.05	U	0.0093	0.05	U	0.0098	0.05	U	0.0091
Dieldrin	µg/L	0.1	U	0.019	0.1	U	0.02	0.1	U	0.019	0.1	U	0.02	0.1	U	0.018
4,4'-DDE	µg/L	0.1	U	0.019	0.1	U	0.02	0.1	U	0.019	0.1	U	0.02	0.1	U	0.018
Endrin	µg/L	0.1	U	0.019	0.1	U	0.02	0.1	U	0.019	0.1	U	0.02	0.1	U	0.018
Endosulfan II	µg/L	0.1	U	0.019	0.1	U	0.02	0.1	U	0.019	0.1	U	0.02	0.1	U	0.018
4,4'-DDD	µg/L	0.1	U	0.019	0.1	U	0.02	0.1	U	0.019	0.1	U	0.02	0.1	U	0.018
Endosulfan sulfate	µg/L	0.1	U	0.019	0.1	U	0.02	0.1	U	0.019	0.1	U	0.02	0.1	U	0.018
4,4'-DDT	µg/L	0.1	U	0.019	0.1	U	0.02	0.1	U	0.019	0.1	U	0.02	0.1	U	0.018
Methoxychlor	µg/L	0.5	U	0.093	0.5	U	0.098	0.5	U	0.093	0.5	U	0.098	0.5	U	0.091
Endrin ketone	µg/L	0.1	U	0.019	0.1	U	0.02	0.1	U	0.019	0.1	U	0.02	0.1	U	0.018
Endrin aldehyde	µg/L	0.1	U	0.019	0.1	U	0.02	0.1	U	0.019	0.1	U	0.02	0.1	U	0.018
alpha-Chlordane	µg/L	0.05	U	0.0093	0.05	U	0.0098	0.05	U	0.0093	0.05	U	0.0098	0.05	U	0.0091
gamma-Chlordane	µg/L	0.05	U	0.0093	0.05	U	0.0098	0.05	U	0.0093	0.05	U	0.0098	0.05	U	0.0091
Toxaphene	µg/L	5	U	1	5	U	1	5	U	1	5	U	1	5	U	0.97
Aroclor-1016	µg/L	1	U	0.31	1	U	0.32	1	U	0.31	1	U	0.32	1	U	0.3
Aroclor-1221	µg/L	2	U	0.37	2	U	0.39	2	U	0.37	2	U	0.39	2	U	0.36
Aroclor-1232	µg/L	1	U	0.35	1	U	0.36	1	U	0.35	1	U	0.36	1	U	0.34
Aroclor-1242	µg/L	1	U	0.23	1	U	0.24	1	U	0.23	1	U	0.24	1	U	0.23
Aroclor-1248	µg/L	1	U	0.25	1	U	0.27	1	U	0.25	1	U	0.27	1	U	0.25
Aroclor-1254	µg/L	1	U	0.34	1	U	0.35	1	U	0.34	1	U	0.35	1	U	0.33
Aroclor-1260	µg/L	1	U	0.28	1	U	0.29	1	U	0.28	1	U	0.29	1	U	0.27

Table checked by: R. Baig Date: 4/24/2006

Table E-1 (c)
Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-4 Date Sampled: 3/17/2006 Lab ID: 939703 % Solids: NA			Sample Point MW-5 Date Sampled: 2/8/2005 Lab ID: 568415 % Solids: NA			Sample Point MW-5 Date Sampled: 3/21/2006 Lab ID: 939716 % Solids: NA			Sample Point MW-6 Date Sampled: 2/4/2005 Lab ID: 568403 %Solids: NA			Sample Point MW-6 Date Sampled: 3/21/2006 Lab ID: 939715 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/L	0.05	U	0.01	0.05	U	0.0093	0.05	U	0.0093	0.05	U	0.0093	0.05	U	0.0093
beta-BHC	µg/L	0.05	U	0.01	0.05	U	0.0093	0.05	U	0.0093	0.05	U	0.0093	0.05	U	0.0093
delta-BHC	µg/L	0.05	U	0.01	0.05	U	0.0093	0.05	U	0.0093	0.05	U	0.0093	0.05	U	0.0093
gamma-BHC (Lindane)	µg/L	0.05	U	0.01	0.05	U	0.0093	0.05	U	0.0093	0.05	U	0.0093	0.05	U	0.0093
Heptachlor	µg/L	0.05	U	0.01	0.05	U	0.0093	0.05	U	0.0093	0.05	U	0.0093	0.05	U	0.0093
Aldrin	µg/L	0.05	U	0.01	0.05	U	0.0093	0.05	U	0.0093	0.05	U	0.0093	0.05	U	0.0093
Heptachlor epoxide	µg/L	0.05	U	0.01	0.05	U	0.0093	0.05	U	0.0093	0.05	U	0.0093	0.05	U	0.0093
Endosulfan I	µg/L	0.05	U	0.01	0.05	U	0.0093	0.05	U	0.0093	0.05	U	0.0093	0.05	U	0.0093
Dieldrin	µg/L	0.1	U	0.02	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019
4,4'-DDE	µg/L	0.1	U	0.02	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019
Endrin	µg/L	0.1	U	0.02	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019
Endosulfan II	µg/L	0.1	U	0.02	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019
4,4'-DDD	µg/L	0.1	U	0.02	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019
Endosulfan sulfate	µg/L	0.1	U	0.02	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019
4,4'-DDT	µg/L	0.1	U	0.02	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019
Methoxychlor	µg/L	0.5	U	0.1	0.5	U	0.093	0.5	UJ	0.093	0.5	U	0.093	0.5	UJ	0.093
Endrin ketone	µg/L	0.1	U	0.02	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019
Endrin aldehyde	µg/L	0.1	U	0.02	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019
alpha-Chlordane	µg/L	0.05	U	0.01	0.05	U	0.0093	0.05	U	0.0093	0.05	U	0.0093	0.05	U	0.0093
gamma-Chlordane	µg/L	0.05	U	0.01	0.05	U	0.0093	0.05	U	0.0093	0.05	U	0.0093	0.05	U	0.0093
Toxaphene	µg/L	5	U	1.1	5	U	1	5	U	1	5	U	1	5	U	1
Aroclor-1016	µg/L	1	U	0.33	1	U	0.31	1	U	0.31	1	U	0.31	1	U	0.31
Aroclor-1221	µg/L	2	U	0.4	2	U	0.37	2	U	0.37	2	U	0.37	2	U	0.37
Aroclor-1232	µg/L	1	U	0.37	1	U	0.35	1	U	0.35	1	U	0.35	1	U	0.35
Aroclor-1242	µg/L	1	U	0.25	1	U	0.23	1	U	0.23	1	U	0.23	1	U	0.23
Aroclor-1248	µg/L	1	U	0.27	1	U	0.25	1	U	0.25	1	U	0.25	1	U	0.25
Aroclor-1254	µg/L	1	U	0.36	1	U	0.34	1	U	0.34	1	U	0.34	1	U	0.34
Aroclor-1260	µg/L	1	U	0.3	1	U	0.28	1	U	0.28	1	U	0.28	1	U	0.28

Table checked by: R. Baig Date: 4/24/2006

Table E-1 (c)

Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-7 Date Sampled: 2/3/2005 Lab ID: 566719 % Solids: NA			Sample Point MW-7 Date Sampled: 3/20/2006 Lab ID: 939710 % Solids: NA			Sample Point MW-8A Date Sampled: 2/8/2005 Lab ID: 568414 % Solids: NA			Sample Point MW-8A Date Sampled: 3/20/2006 Lab ID: 939713 %Solids: NA			Sample Point MW-8B Date Sampled: 2/8/2005 Lab ID: 568411 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/L	0.05	U	0.0091	0.053	U	0.011	0.05	U	0.0089	0.05	U	0.0095	0.05	U	0.0095
beta-BHC	µg/L	0.05	U	0.0091	0.053	U	0.011	0.05	U	0.0089	0.05	U	0.0095	0.05	U	0.0095
delta-BHC	µg/L	0.05	U	0.0091	0.053	U	0.011	0.05	U	0.0089	0.021	J	0.0095	0.05	U	0.0095
gamma-BHC (Lindane)	µg/L	0.05	U	0.0091	0.053	U	0.011	0.05	U	0.0089	0.05	U	0.0095	0.05	U	0.0095
Heptachlor	µg/L	0.05	U	0.0091	0.053	U	0.011	0.05	U	0.0089	0.05	U	0.0095	0.05	U	0.0095
Aldrin	µg/L	0.05	U	0.0091	0.053	U	0.011	0.05	U	0.0089	0.05	U	0.0095	0.05	U	0.0095
Heptachlor epoxide	µg/L	0.05	U	0.0091	0.053	U	0.011	0.05	U	0.0089	0.5	J	0.0095	0.05	U	0.0095
Endosulfan I	µg/L	0.05	U	0.0091	0.053	U	0.011	0.05	U	0.0089	0.037	J	0.0095	0.05	U	0.0095
Dieldrin	µg/L	0.1	U	0.018	0.11	U	0.021	0.1	U	0.018	0.1	U	0.019	0.1	U	0.019
4,4'-DDE	µg/L	0.1	U	0.018	0.11	U	0.021	0.1	U	0.018	0.1	U	0.019	0.1	U	0.019
Endrin	µg/L	0.1	U	0.018	0.11	U	0.021	0.1	U	0.018	0.1	U	0.019	0.1	U	0.019
Endosulfan II	µg/L	0.1	U	0.018	0.11	U	0.021	0.1	U	0.018	0.1	U	0.019	0.1	U	0.019
4,4'-DDD	µg/L	0.1	U	0.018	0.11	U	0.021	0.1	U	0.018	0.1	U	0.019	0.1	U	0.019
Endosulfan sulfate	µg/L	0.1	U	0.018	0.11	U	0.021	0.1	U	0.018	0.1	U	0.019	0.1	U	0.019
4,4'-DDT	µg/L	0.1	U	0.018	0.11	U	0.021	0.1	U	0.018	0.1	U	0.019	0.1	U	0.019
Methoxychlor	µg/L	0.5	U	0.091	0.53	U	0.11	0.5	U	0.089	0.5	U	0.095	0.5	U	0.095
Endrin ketone	µg/L	0.1	U	0.018	0.11	U	0.021	0.1	U	0.018	0.1	U	0.019	0.1	U	0.019
Endrin aldehyde	µg/L	0.1	U	0.018	0.11	U	0.021	0.1	U	0.018	0.1	U	0.019	0.1	U	0.019
alpha-Chlordane	µg/L	0.05	U	0.0091	0.053	U	0.011	0.1	U	0.0089	0.05	U	0.0095	0.05	U	0.0095
gamma-Chlordane	µg/L	0.05	U	0.0091	0.053	U	0.011	0.05	U	0.0089	0.05	U	0.0095	0.05	U	0.0095
Toxaphene	µg/L	5	U	0.97	5.3	U	1.1	5	U	0.95	5	U	1	5	U	1
Aroclor-1016	µg/L	1	U	0.3	1.1	U	0.35	1	U	0.29	1	U	0.31	1	U	0.31
Aroclor-1221	µg/L	2	U	0.36	2.1	U	0.42	2	U	0.36	2	U	0.38	2	U	0.38
Aroclor-1232	µg/L	1	U	0.34	1.1	U	0.39	1	U	0.33	1	U	0.36	1	U	0.36
Aroclor-1242	µg/L	1	U	0.23	1.1	U	0.26	1	U	0.22	1	U	0.24	1	U	0.24
Aroclor-1248	µg/L	1	U	0.25	1.1	U	0.29	1	U	0.24	1	U	0.26	1	U	0.26
Aroclor-1254	µg/L	1	U	0.33	1.1	U	0.38	1	U	0.32	1	U	0.34	1	U	0.34
Aroclor-1260	µg/L	1	U	0.27	1.1	U	0.31	1	U	0.27	1	U	0.28	1	U	0.28

Table checked by: R. Baig Date: 4/24/2006

Table E-1 (c)
Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-8B Date Sampled: 3/20/2006 Lab ID: 939712 % Solids: NA			Sample Point MW-9 Date Sampled: 2/4/2005 Lab ID: 568404 % Solids: NA			Sample Point FMW-9 Date Sampled: 2/4/2005 Lab ID: 568409 % Solids: NA			Sample Point MW-9 Date Sampled: 3/21/2006 Lab ID: 939720 %Solids: NA			Sample Point MW-10 Date Sampled: 2/8/2005 Lab ID: 568416 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/L	0.051	U	0.01	0.05	U	0.0093	0.05	U	0.0095	0.05	U	0.01	0.05	U	0.0091
beta-BHC	µg/L	0.051	U	0.01	0.05	U	0.0093	0.05	U	0.0095	0.05	U	0.01	0.05	U	0.0091
delta-BHC	µg/L	0.051	U	0.01	0.05	U	0.0093	0.05	U	0.0095	0.05	U	0.01	0.05	U	0.0091
gamma-BHC (Lindane)	µg/L	0.051	U	0.01	0.05	U	0.0093	0.05	U	0.0095	0.05	U	0.01	0.05	U	0.0091
Heptachlor	µg/L	0.051	U	0.01	0.05	U	0.0093	0.05	U	0.0095	0.05	U	0.01	0.05	U	0.0091
Aldrin	µg/L	0.051	U	0.01	0.05	U	0.0093	0.05	U	0.0095	0.05	U	0.01	0.05	U	0.0091
Heptachlor epoxide	µg/L	0.051	U	0.01	0.05	U	0.0093	0.05	U	0.0095	0.05	U	0.01	0.05	U	0.0091
Endosulfan I	µg/L	0.051	U	0.01	0.05	U	0.0093	0.05	U	0.0095	0.05	U	0.01	0.05	U	0.0091
Dieldrin	µg/L	0.1	U	0.021	0.1	U	0.019	0.1	U	0.019	0.031	J	0.02	0.1	U	0.018
4,4'-DDE	µg/L	0.1	U	0.021	0.1	U	0.019	0.1	U	0.019	0.1	U	0.02	0.1	U	0.018
Endrin	µg/L	0.1	U	0.021	0.1	U	0.019	0.1	U	0.019	0.1	U	0.02	0.1	U	0.018
Endosulfan II	µg/L	0.1	U	0.021	0.1	U	0.019	0.1	U	0.019	0.1	U	0.02	0.1	U	0.018
4,4'-DDD	µg/L	0.1	U	0.021	0.1	U	0.019	0.1	U	0.019	0.1	U	0.02	0.1	U	0.018
Endosulfan sulfate	µg/L	0.1	U	0.021	0.1	U	0.019	0.1	U	0.019	0.1	U	0.02	0.1	U	0.018
4,4'-DDT	µg/L	0.1	U	0.021	0.1	U	0.019	0.1	U	0.019	0.1	U	0.02	0.1	U	0.018
Methoxychlor	µg/L	0.51	U	0.1	0.5	U	0.093	0.5	U	0.095	0.5	UJ	0.1	0.5	U	0.091
Endrin ketone	µg/L	0.1	U	0.021	0.1	U	0.019	0.1	U	0.019	0.1	U	0.02	0.1	U	0.018
Endrin aldehyde	µg/L	0.1	U	0.021	0.1	U	0.019	0.1	U	0.019	0.1	U	0.02	0.1	U	0.018
alpha-Chlordane	µg/L	0.051	U	0.01	0.05	U	0.0093	0.05	U	0.0095	0.05	U	0.01	0.05	U	0.0091
gamma-Chlordane	µg/L	0.051	U	0.01	0.05	U	0.0093	0.05	U	0.0095	0.05	U	0.01	0.05	U	0.0091
Toxaphene	µg/L	5.1	U	1.1	5	U	1	5	U	1	5	U	1.1	5	U	0.97
Aroclor-1016	µg/L	1	U	0.34	1	U	0.31	1	U	0.31	1	U	0.33	1	U	0.3
Aroclor-1221	µg/L	2.1	U	0.41	2	U	0.37	2	U	0.38	2	U	0.4	2	U	0.36
Aroclor-1232	µg/L	1	U	0.38	1	U	0.35	1	U	0.36	1	U	0.37	1	U	0.34
Aroclor-1242	µg/L	1	U	0.25	1	U	0.23	1	U	0.24	1	U	0.25	1	U	0.23
Aroclor-1248	µg/L	1	U	0.28	1	U	0.25	1	U	0.26	1	U	0.27	1	U	0.25
Aroclor-1254	µg/L	1	U	0.37	1	U	0.34	1	U	0.34	1	U	0.36	1	U	0.33
Aroclor-1260	µg/L	1	U	0.31	1	U	0.28	1	U	0.28	1	U	0.3	1	U	0.27

Table checked by: R. Baig Date: 4/24/2006

Table E-1 (c)

Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-10 Date Sampled: 3/21/2006 Lab ID: 940801 % Solids: NA			Sample Point MW-11 Date Sampled: 2/4/2005 Lab ID: 568408 % Solids: NA			Sample Point MW-11 Date Sampled: 3/20/2006 Lab ID: 939708 % Solids: NA			Sample Point MW-12 Date Sampled: 2/2/2005 Lab ID: 566710 %Solids: NA			Sample Point MW-12 Date Sampled: 3/14/2006 Lab ID: 934212 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/L	0.05	U	0.0091	0.05	U	0.0093	0.051	U	0.01	0.05	U	0.0093	0.054	U	0.011
beta-BHC	µg/L	0.05	U	0.0091	0.05	U	0.0093	0.051	U	0.01	0.05	U	0.0093	0.054	U	0.011
delta-BHC	µg/L	0.05	U	0.0091	0.05	U	0.0093	0.051	U	0.01	0.05	U	0.0093	0.054	U	0.011
gamma-BHC (Lindane)	µg/L	0.05	U	0.0091	0.05	U	0.0093	0.051	U	0.01	0.05	U	0.0093	0.054	U	0.011
Heptachlor	µg/L	0.05	U	0.0091	0.05	U	0.0093	0.051	U	0.01	0.05	U	0.0093	0.054	U	0.011
Aldrin	µg/L	0.05	U	0.0091	0.05	U	0.0093	0.051	U	0.01	0.05	U	0.0093	0.054	U	0.011
Heptachlor epoxide	µg/L	0.05	U	0.0091	0.05	U	0.0093	0.051	U	0.01	0.05	U	0.0093	0.095	J	0.011
Endosulfan I	µg/L	0.05	U	0.0091	0.05	U	0.0093	0.051	U	0.01	0.05	U	0.0093	0.054	U	0.011
Dieldrin	µg/L	0.1	U	0.018	0.1	U	0.019	0.1	U	0.021	0.1	U	0.019	0.11	U	0.022
4,4'-DDE	µg/L	0.1	U	0.018	0.1	U	0.019	0.1	U	0.021	0.1	U	0.019	0.11	U	0.022
Endrin	µg/L	0.1	U	0.018	0.1	U	0.019	0.1	U	0.021	0.1	U	0.019	0.11	U	0.022
Endosulfan II	µg/L	0.1	U	0.018	0.1	U	0.019	0.1	U	0.021	0.1	U	0.019	0.11	U	0.022
4,4'-DDD	µg/L	0.1	U	0.018	0.1	U	0.019	0.1	U	0.021	0.1	U	0.019	0.11	U	0.022
Endosulfan sulfate	µg/L	0.1	U	0.018	0.1	U	0.019	0.1	U	0.021	0.1	U	0.019	0.11	U	0.022
4,4'-DDT	µg/L	0.1	U	0.018	0.1	U	0.019	0.1	U	0.021	0.1	U	0.019	0.11	U	0.022
Methoxychlor	µg/L	0.5	U	0.091	0.5	U	0.093	0.51	U	0.1	0.5	U	0.093	0.54	U	0.11
Endrin ketone	µg/L	0.1	U	0.018	0.1	U	0.019	0.1	U	0.021	0.1	U	0.019	0.11	U	0.022
Endrin aldehyde	µg/L	0.1	U	0.018	0.1	U	0.019	0.1	U	0.021	0.1	U	0.019	0.11	U	0.022
alpha-Chlordane	µg/L	0.05	U	0.0091	0.05	U	0.0093	0.051	U	0.01	0.05	U	0.0093	0.054	U	0.011
gamma-Chlordane	µg/L	0.05	U	0.0091	0.05	U	0.0093	0.051	U	0.01	0.05	U	0.0093	0.054	U	0.011
Toxaphene	µg/L	5	U	0.97	5	U	1	5.1	U	1.1	5	U	1	5.4	U	1.2
Aroclor-1016	µg/L	1	U	0.3	1	U	0.31	1	U	0.34	1	U	0.31	1.1	U	0.35
Aroclor-1221	µg/L	2	U	0.36	2	U	0.37	2.1	U	0.41	2	U	0.37	2.2	U	0.43
Aroclor-1232	µg/L	1	U	0.34	1	U	0.35	1	U	0.38	1	U	0.35	1.1	U	0.4
Aroclor-1242	µg/L	1	U	0.23	1	U	0.23	1	U	0.25	1	U	0.23	1.1	U	0.27
Aroclor-1248	µg/L	1	U	0.25	1	U	0.25	1	U	0.28	1	U	0.25	1.1	U	0.29
Aroclor-1254	µg/L	1	U	0.33	1	U	0.34	1	U	0.37	1	U	0.34	1.1	U	0.39
Aroclor-1260	µg/L	1	U	0.27	1	U	0.28	1	U	0.31	1	U	0.28	1.1	U	0.32

Table checked by: R. Baig Date: 4/24/2006

Table E-1 (c)

Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-13 Date Sampled: 2/2/2005 Lab ID: 566708 % Solids: NA			Sample Point MW-13 Date Sampled: 3/16/2006 Lab ID: 934218 % Solids: NA			Sample Point MW-14 Date Sampled: 2/3/2005 Lab ID: 568401 % Solids: NA			Sample Point MW-14 Date Sampled: 3/17/2006 Lab ID: 934221 %Solids: NA			Sample Point MW-15 Date Sampled: 2/1/2005 Lab ID: 566706 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/L	0.05	U	0.0089	0.05	U	0.01	0.05	U	0.0091	0.05	U	0.01	0.05	U	0.0093
beta-BHC	µg/L	0.05	U	0.0089	0.05	U	0.01	0.05	U	0.0091	0.05	U	0.01	0.05	U	0.0093
delta-BHC	µg/L	0.05	U	0.0089	0.05	U	0.01	0.05	U	0.0091	0.05	U	0.01	0.05	U	0.0093
gamma-BHC (Lindane)	µg/L	0.05	U	0.0089	0.05	U	0.01	0.05	U	0.0091	0.05	U	0.01	0.05	U	0.0093
Heptachlor	µg/L	0.05	U	0.0089	0.05	U	0.01	0.05	U	0.0091	0.05	U	0.01	0.05	U	0.0093
Aldrin	µg/L	0.05	U	0.0089	0.05	U	0.01	0.05	U	0.0091	0.05	U	0.01	0.05	U	0.0093
Heptachlor epoxide	µg/L	0.05	U	0.0089	0.05	U	0.01	0.05	U	0.0091	0.05	U	0.01	0.05	U	0.0093
Endosulfan I	µg/L	0.05	U	0.0089	0.05	U	0.01	0.05	U	0.0091	0.05	U	0.01	0.05	U	0.0093
Dieldrin	µg/L	0.1	U	0.018	0.1	U	0.02	0.1	U	0.018	0.1	U	0.02	0.1	U	0.019
4,4'-DDE	µg/L	0.1	U	0.018	0.1	U	0.02	0.1	U	0.018	0.1	U	0.02	0.1	U	0.019
Endrin	µg/L	0.1	U	0.018	0.1	U	0.02	0.1	U	0.018	0.1	U	0.02	0.1	U	0.019
Endosulfan II	µg/L	0.1	U	0.018	0.1	U	0.02	0.1	U	0.018	0.1	U	0.02	0.1	U	0.019
4,4'-DDD	µg/L	0.1	U	0.018	0.1	U	0.02	0.1	U	0.018	0.1	U	0.02	0.1	U	0.019
Endosulfan sulfate	µg/L	0.1	U	0.018	0.1	U	0.02	0.1	U	0.018	0.1	U	0.02	0.1	U	0.019
4,4'-DDT	µg/L	0.1	U	0.018	0.1	U	0.02	0.1	U	0.018	0.1	U	0.02	0.1	U	0.019
Methoxychlor	µg/L	0.5	U	0.089	0.5	U	0.1	0.5	U	0.091	0.5	U	0.1	0.5	U	0.093
Endrin ketone	µg/L	0.1	U	0.018	0.1	U	0.02	0.1	U	0.018	0.1	U	0.02	0.1	U	0.019
Endrin aldehyde	µg/L	0.1	U	0.018	0.1	U	0.02	0.1	U	0.018	0.1	U	0.02	0.1	U	0.019
alpha-Chlordane	µg/L	0.05	U	0.0089	0.05	U	0.01	0.05	U	0.0091	0.05	U	0.01	0.05	U	0.0093
gamma-Chlordane	µg/L	0.05	U	0.0089	0.05	U	0.01	0.05	U	0.0091	0.05	U	0.01	0.05	U	0.0093
Toxaphene	µg/L	5	U	0.95	5	U	1.1	5	U	0.97	5	U	1.1	5	U	0.99
Aroclor-1016	µg/L	1	U	0.29	1	U	0.33	1	U	0.3	1	U	0.33	1	U	0.3
Aroclor-1221	µg/L	2	U	0.36	2	U	0.4	2	U	0.36	2	U	0.4	2	U	0.37
Aroclor-1232	µg/L	1	U	0.33	1	U	0.37	1	U	0.34	1	U	0.37	1	U	0.35
Aroclor-1242	µg/L	1	U	0.22	1	U	0.25	1	U	0.23	1	U	0.25	1	U	0.23
Aroclor-1248	µg/L	1	U	0.24	1	U	0.27	1	U	0.25	1	U	0.27	1	U	0.25
Aroclor-1254	µg/L	1	U	0.32	1	U	0.36	1	U	0.33	1	U	0.36	1	U	0.34
Aroclor-1260	µg/L	1	U	0.27	1	U	0.3	1	U	0.27	1	U	0.3	1	U	0.28

Table checked by: R. Baig Date: 4/24/2006

Table E-1 (c)

Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-15 Date Sampled: 3/16/2006 Lab ID: 934217 % Solids: NA			Sample Point MW-16 Date Sampled: 2/1/2005 Lab ID: 566704 % Solids: NA			Sample Point MW-16 Date Sampled: 3/23/2006 Lab ID: 940806 % Solids: NA			Sample Point MW-17 Date Sampled: 2/1/2005 Lab ID: 566703 %Solids: NA			Sample Point MW-17 Date Sampled: 3/16/2006 Lab ID: 934216 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/L	0.051	U	0.01	0.05	U	0.0091	0.05	U	0.0091	0.05	U	0.0091	0.05	U	0.0091
beta-BHC	µg/L	0.051	U	0.01	0.05	U	0.0091	0.05	U	0.0091	0.05	U	0.0091	0.05	U	0.0091
delta-BHC	µg/L	0.051	U	0.01	0.05	U	0.0091	0.05	U	0.0091	0.05	U	0.0091	0.05	U	0.0091
gamma-BHC (Lindane)	µg/L	0.051	U	0.01	0.05	U	0.0091	0.05	U	0.0091	0.05	U	0.0091	0.05	U	0.0091
Heptachlor	µg/L	0.051	U	0.01	0.05	U	0.0091	0.05	U	0.0091	0.05	U	0.0091	0.05	U	0.0091
Aldrin	µg/L	0.051	U	0.01	0.05	U	0.0091	0.05	U	0.0091	0.05	U	0.0091	0.05	U	0.0091
Heptachlor epoxide	µg/L	0.051	U	0.01	0.05	U	0.0091	0.05	U	0.0091	0.05	U	0.0091	0.05	U	0.0091
Endosulfan I	µg/L	0.051	U	0.01	0.05	U	0.0091	0.05	U	0.0091	0.05	U	0.0091	0.05	U	0.0091
Dieldrin	µg/L	0.1	U	0.021	0.1	U	0.018	0.1	U	0.018	0.1	U	0.018	0.1	U	0.018
4,4'-DDE	µg/L	0.1	U	0.021	0.1	U	0.018	0.1	U	0.018	0.1	U	0.018	0.1	U	0.018
Endrin	µg/L	0.1	U	0.021	0.1	U	0.018	0.1	U	0.018	0.1	U	0.018	0.1	U	0.018
Endosulfan II	µg/L	0.1	U	0.021	0.1	U	0.018	0.1	U	0.018	0.1	U	0.018	0.1	U	0.018
4,4'-DDD	µg/L	0.1	U	0.021	0.1	U	0.018	0.1	U	0.018	0.1	U	0.018	0.1	U	0.018
Endosulfan sulfate	µg/L	0.1	U	0.021	0.1	U	0.018	0.1	U	0.018	0.1	U	0.018	0.1	U	0.018
4,4'-DDT	µg/L	0.1	U	0.021	0.1	U	0.018	0.1	U	0.018	0.1	U	0.018	0.1	U	0.018
Methoxychlor	µg/L	0.51	U	0.1	0.5	U	0.091	0.5	U	0.091	0.5	U	0.091	0.5	U	0.091
Endrin ketone	µg/L	0.1	U	0.021	0.1	U	0.018	0.1	U	0.018	0.1	U	0.018	0.1	U	0.018
Endrin aldehyde	µg/L	0.1	U	0.021	0.1	U	0.018	0.1	U	0.018	0.1	U	0.018	0.1	U	0.018
alpha-Chlordane	µg/L	0.051	U	0.01	0.05	U	0.0091	0.05	U	0.0091	0.05	U	0.0091	0.05	U	0.0091
gamma-Chlordane	µg/L	0.051	U	0.01	0.05	U	0.0091	0.05	U	0.0091	0.05	U	0.0091	0.05	U	0.0091
Toxaphene	µg/L	5.1	U	1.1	5	U	0.97	5	U	0.97	5	U	0.97	5	U	0.97
Aroclor-1016	µg/L	1	U	0.34	1	U	0.3	1	U	0.3	1	U	0.3	1	U	0.3
Aroclor-1221	µg/L	2.1	U	0.41	2	U	0.36	2	U	0.36	2	U	0.36	2	U	0.36
Aroclor-1232	µg/L	1	U	0.38	1	U	0.34	1	U	0.34	1	U	0.34	1	U	0.34
Aroclor-1242	µg/L	1	U	0.25	1	U	0.23	1	U	0.23	1	U	0.23	1	U	0.23
Aroclor-1248	µg/L	1	U	0.28	1	U	0.25	1	U	0.25	1	U	0.25	1	U	0.25
Aroclor-1254	µg/L	1	U	0.37	1	U	0.33	1	U	0.33	1	U	0.33	1	U	0.33
Aroclor-1260	µg/L	1	U	0.31	1	U	0.27	1	U	0.27	1	U	0.27	1	U	0.27

Table checked by: R. Baig Date: 4/24/2006

Table E-1 (c)

Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-18 Date Sampled: 1/31/2005 Lab ID: 566701 % Solids: NA			Sample Point MW-18 Date Sampled: 3/16/2006 Lab ID: 934220 % Solids: NA			Sample Point MW-19 Date Sampled: 2/2/2005 Lab ID: 566709 % Solids: NA			Sample Point FMW-19 Date Sampled: 2/2/2005 Lab ID: 566712 %Solids: NA			Sample Point MW-19 Date Sampled: 3/14/2006 Lab ID: 934213 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/L	0.05	U	0.0093	0.05	U	0.0095	0.05	U	0.0093	0.05	U	0.0094	0.053	U	0.011
beta-BHC	µg/L	0.05	U	0.0093	0.05	U	0.0095	0.05	U	0.0093	0.05	U	0.0094	0.053	U	0.011
delta-BHC	µg/L	0.05	U	0.0093	0.05	U	0.0095	0.05	U	0.0093	0.05	U	0.0094	0.053	U	0.011
gamma-BHC (Lindane)	µg/L	0.05	U	0.0093	0.05	U	0.0095	0.05	U	0.0093	0.05	U	0.0094	0.053	U	0.011
Heptachlor	µg/L	0.05	U	0.0093	0.05	U	0.0095	0.05	U	0.0093	0.05	U	0.0094	0.053	U	0.011
Aldrin	µg/L	0.05	U	0.0093	0.05	U	0.0095	0.05	U	0.0093	0.05	U	0.0094	0.053	U	0.011
Heptachlor epoxide	µg/L	0.05	U	0.0093	0.05	U	0.0095	0.05	U	0.0093	0.05	U	0.0094	0.053	U	0.011
Endosulfan I	µg/L	0.05	U	0.0093	0.05	U	0.0095	0.05	U	0.0093	0.05	U	0.0094	0.053	U	0.011
Dieldrin	µg/L	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.11	U	0.021
4,4'-DDE	µg/L	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.11	U	0.021
Endrin	µg/L	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.11	U	0.021
Endosulfan II	µg/L	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.11	U	0.021
4,4'-DDD	µg/L	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.11	U	0.021
Endosulfan sulfate	µg/L	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.11	U	0.021
4,4'-DDT	µg/L	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.11	U	0.021
Methoxychlor	µg/L	0.5	U	0.093	0.5	U	0.095	0.5	U	0.093	0.5	U	0.094	0.53	U	0.11
Endrin ketone	µg/L	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.11	U	0.021
Endrin aldehyde	µg/L	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.1	U	0.019	0.11	U	0.021
alpha-Chlordane	µg/L	0.05	U	0.0093	0.05	U	0.0095	0.05	U	0.0093	0.05	U	0.0094	0.015	J	0.011
gamma-Chlordane	µg/L	0.05	U	0.0093	0.05	U	0.0095	0.05	U	0.0093	0.05	U	0.0094	0.053	U	0.011
Toxaphene	µg/L	5	U	1	5	U	1	5	U	1	5	U	1	5.3	U	1.1
Aroclor-1016	µg/L	1	U	0.31	1	U	0.31	1	U	0.31	1	U	0.31	1.1	U	0.35
Aroclor-1221	µg/L	2	U	0.37	2	U	0.38	2	U	0.37	2	U	0.38	2.1	U	0.42
Aroclor-1232	µg/L	1	U	0.35	1	U	0.36	1	U	0.35	1	U	0.35	1.1	U	0.39
Aroclor-1242	µg/L	1	U	0.23	1	U	0.24	1	U	0.23	1	U	0.23	1.1	U	0.26
Aroclor-1248	µg/L	1	U	0.25	1	U	0.26	1	U	0.25	1	U	0.26	1.1	U	0.29
Aroclor-1254	µg/L	1	U	0.34	1	U	0.34	1	U	0.34	1	U	0.34	1.1	U	0.38
Aroclor-1260	µg/L	1	U	0.28	1	U	0.28	1	U	0.28	1	U	0.28	1.1	U	0.31

Table checked by: R. Baig Date: 4/24/2006

Table E-1 (c)

Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-20 Date Sampled: 2/2/2005 Lab ID: 566713 % Solids: NA			Sample Point MW-20 Date Sampled: 3/17/2006 Lab ID: 934222 % Solids: NA			Sample Point FMW-20 Date Sampled: 3/17/2006 Lab ID: 934225 % Solids: NA			Sample Point MW-21 Date Sampled: 2/4/2005 Lab ID: 568406 %Solids: NA			Sample Point MW-21 Date Sampled: 3/20/2006 Lab ID: 939706 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/L	0.05	U	0.0092	0.05	U	0.01	0.053	U	0.011	0.05	U	0.0095	0.05	U	0.0098
beta-BHC	µg/L	0.05	U	0.0092	0.05	U	0.01	0.053	U	0.011	0.22	JN	0.0095	0.05	U	0.0098
delta-BHC	µg/L	0.05	U	0.0092	0.05	U	0.01	0.053	U	0.011	0.05	U	0.0095	0.05	U	0.0098
gamma-BHC (Lindane)	µg/L	0.05	U	0.0092	0.05	U	0.01	0.053	U	0.011	0.05	U	0.0095	0.022	J	0.0098
Heptachlor	µg/L	0.05	U	0.0092	0.05	U	0.01	0.053	U	0.011	0.05	U	0.0095	0.05	U	0.0098
Aldrin	µg/L	0.05	U	0.0092	0.05	U	0.01	0.053	U	0.011	0.05	U	0.0095	0.05	U	0.0098
Heptachlor epoxide	µg/L	0.05	U	0.0092	0.05	U	0.01	0.053	U	0.011	0.05	U	0.0095	0.05	U	0.0098
Endosulfan I	µg/L	0.05	U	0.0092	0.05	U	0.01	0.053	U	0.011	0.05	U	0.0095	0.05	U	0.0098
Dieldrin	µg/L	0.1	U	0.018	0.1	U	0.02	0.11	U	0.021	0.1	U	0.019	0.1	U	0.02
4,4'-DDE	µg/L	0.1	U	0.018	0.1	U	0.02	0.11	U	0.021	0.1	U	0.019	0.064	J	0.02
Endrin	µg/L	0.1	U	0.018	0.1	U	0.02	0.11	U	0.021	0.1	U	0.019	0.1	U	0.02
Endosulfan II	µg/L	0.1	U	0.018	0.1	U	0.02	0.11	U	0.021	0.1	U	0.019	0.046	J	0.02
4,4'-DDD	µg/L	0.1	U	0.018	0.1	U	0.02	0.11	U	0.021	0.1	U	0.019	0.1	U	0.02
Endosulfan sulfate	µg/L	0.1	U	0.018	0.1	U	0.02	0.11	U	0.021	0.078	J	0.019	0.1	U	0.02
4,4'-DDT	µg/L	0.1	U	0.018	0.1	U	0.02	0.11	U	0.021	0.1	U	0.019	0.1	U	0.02
Methoxychlor	µg/L	0.5	U	0.092	0.5	U	0.1	0.53	U	0.11	0.5	U	0.095	0.5	U	0.098
Endrin ketone	µg/L	0.1	U	0.018	0.1	U	0.02	0.11	U	0.021	0.1	U	0.019	0.1	U	0.02
Endrin aldehyde	µg/L	0.1	U	0.018	0.1	U	0.02	0.11	U	0.021	0.1	U	0.019	0.1	U	0.02
alpha-Chlordane	µg/L	0.05	U	0.0092	0.05	U	0.01	0.053	U	0.011	0.05	U	0.0095	0.05	U	0.0098
gamma-Chlordane	µg/L	0.05	U	0.0092	0.05	U	0.01	0.053	U	0.011	0.05	U	0.0095	0.05	U	0.0098
Toxaphene	µg/L	5	U	0.98	5	U	1.1	5.3	U	1.1	5	U	1	5	U	1
Aroclor-1016	µg/L	1	U	0.3	1	U	0.33	1.1	U	0.35	1	U	0.31	1	U	0.32
Aroclor-1221	µg/L	2	U	0.37	2	U	0.4	2.1	U	0.42	2	U	0.38	2	U	0.39
Aroclor-1232	µg/L	1	U	0.34	1	U	0.37	1.1	U	0.39	1	U	0.36	1	U	0.36
Aroclor-1242	µg/L	1	U	0.23	1	U	0.25	1.1	U	0.26	1	U	0.24	1	U	0.24
Aroclor-1248	µg/L	1	U	0.25	1	U	0.27	1.1	U	0.29	1	U	0.26	1	U	0.27
Aroclor-1254	µg/L	1	U	0.33	1	U	0.36	1.1	U	0.38	1	U	0.34	1	U	0.35
Aroclor-1260	µg/L	1	U	0.27	1	U	0.3	1.1	U	0.31	1	U	0.28	1	U	0.29

Table checked by: R. Baig Date: 4/24/2006

Table E-1 (c)

Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

		Sample Point: OSW Date Sampled: 3/21/2006 Lab ID: 939714 % Solids: NA			Sample Point: WS-1 Date Sampled: 2/3/2005 Lab ID: 566718 % Solids: NA			Sample Point Date Sampled: Lab ID: % Solids:			Sample Point Date Sampled: Lab ID: %Solids:			Sample Point Date Sampled: Lab ID: %Solids:		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/L	0.05		0.0095	0.05	U	0.01									
beta-BHC	µg/L	0.05		0.0095	0.05	U	0.01									
delta-BHC	µg/L	0.05		0.0095	0.05	U	0.01									
gamma-BHC (Lindane)	µg/L	0.05		0.0095	0.05	U	0.01									
Heptachlor	µg/L	0.05		0.0095	0.05	U	0.01									
Aldrin	µg/L	0.05		0.0095	0.05	U	0.01									
Heptachlor epoxide	µg/L	0.05		0.0095	0.05	U	0.01									
Endosulfan I	µg/L	0.05		0.0095	0.05	U	0.01									
Dieldrin	µg/L	0.1		0.019	0.1	U	0.02									
4,4'-DDE	µg/L	0.1		0.019	0.1	U	0.02									
Endrin	µg/L	0.1		0.019	0.1	U	0.02									
Endosulfan II	µg/L	0.1		0.019	0.1	U	0.02									
4,4'-DDD	µg/L	0.1		0.019	0.1	U	0.02									
Endosulfan sulfate	µg/L	0.1		0.019	0.1	U	0.02									
4,4'-DDT	µg/L	0.1		0.019	0.1	U	0.02									
Methoxychlor	µg/L	0.5		0.095	0.5	U	0.1									
Endrin ketone	µg/L	0.1		0.019	0.1	U	0.02									
Endrin aldehyde	µg/L	0.1		0.019	0.1	U	0.02									
alpha-Chlordane	µg/L	0.05		0.0095	0.05	U	0.01									
gamma-Chlordane	µg/L	0.05		0.0095	0.05	U	0.01									
Toxaphene	µg/L	5		1	5	U	1.1									
Aroclor-1016	µg/L	1		0.31	1	U	0.33									
Aroclor-1221	µg/L	2		0.38	2	U	0.4									
Aroclor-1232	µg/L	1		0.36	1	U	0.37									
Aroclor-1242	µg/L	1		0.24	1	U	0.25									
Aroclor-1248	µg/L	1		0.26	1	U	0.27									
Aroclor-1254	µg/L	1		0.34	1	U	0.36									
Aroclor-1260	µg/L	1		0.28	1	U	0.3									

Table checked by: R. Baig Date: 4/24/2006

Table E-1 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-1 Date Sampled: 2/3/2005 Lab ID: 566720 % Solids: NA			Sample Point MW-1 Date Sampled: 3/21/2006 Lab ID: 939718 % Solids: NA			Sample Point FMW-1 Date Sampled: 3/21/2006 Lab ID: 939719 % Solids: NA			Sample Point MW-2A Date Sampled: 2/8/2005 Lab ID: 568412 %Solids: NA			Sample Point MW-2A Date Sampled: 3/23/2006 Lab ID: 940807 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	µg/L	172	B	13.5	86.9	J	8.8	71.6	J	8.8	200		13.5	200	U	8.8
Antimony	µg/L	60		2.1	60	U	1.2	60	U	1.2	60		2.1	60	UJ	1.2
Arsenic	µg/L	10		2.1	10	U	1.4	10	U	1.4	2.7	B	2.1	3.3	J	1.4
Barium	µg/L	2	B	0.1	2.3	J	0.1	3.1	J	0.1	34.4	B	0.1	200	U	0.1
Beryllium	µg/L	5		0.1	5	U	0.1	5	U	0.1	5		0.1	5	U	0.1
Cadmium	µg/L	5		0.3	5	U	0.2	5	U	0.2	1.8	B	0.3	5	U	0.2
Calcium	µg/L	9870		17	1370	J	6.5	1340	J	6.5	6460		17	4380	J	6.5
Chromium	µg/L	2.3	B	0.6	0.7	J	0.4	0.74	J	0.4	1.5	B	0.6	10	U	0.4
Cobalt	µg/L	50		0.6	50	U	0.5	50	U	0.5	8.3	B	0.6	50	U	0.5
Copper	µg/L	25		0.4	1	J	0.3	1.1	J	0.3	25		0.4	10.5	J	0.3
Iron	µg/L	932		11.2	342		9	270		9	12700		11.2	55700		9
Lead	µg/L	3		1.3	3	U	1	3	U	1	3		1.3	3	U	1
Magnesium	µg/L	1960	B	7.3	298	J	2.5	294	J	2.5	494	B	7.3	815	J	2.5
Manganese	µg/L	5.3	B	0.2	15	U	0.1	15	U	0.1	203		0.2	7.7	J	0.1
Mercury	µg/L	0.2		0.1	0.2	U	0.1	0.2	U	0.1	0.2		0.1	0.2	U	0.1
Nickel	µg/L	1.2	B	0.8	40	U	0.9	40	U	0.9	4.2	B	0.8	4.9	J	0.9
Potassium	µg/L	934	B	5.3	406	J	10	412	J	10	467	B	5.3	8260		10
Selenium	µg/L	5		2.7	5	UJ	3.3	5	UJ	3.3	5		2.7	5	U	3.3
Silver	µg/L	10		0.8	10	U	0.5	10	U	0.5	10		0.8	0.61	J	0.5
Sodium	µg/L	69300		124	23100		46.2	23200		46.2	1620	B	124	11800		46.2
Thallium	µg/L	10		3	10	UJ	3.9	10	UJ	3.9	10		3	10	UJ	3.9
Vanadium	µg/L	1.7	B	0.5	0.55	J	0.3	0.61	J	0.3	0.96	B	0.5	0.5	J	0.3
Zinc	µg/L	26.3		1.2	20	U	0.3	20	U	0.3	107		1.2	20	U	0.3
Cyanide	µg/L				10	U	1.8	10	U	1.8				10	U	1.8

Table checked by: R. Baig Date: 4/24/2006

Table E-1 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-2B Date Sampled: 2/4/2005 Lab ID: 568407 % Solids: NA			Sample Point MW-2B Date Sampled: 3/20/2006 Lab ID: 939707 % Solids: NA			Sample Point MW-3 Date Sampled: 2/3/2005 Lab ID: 566717 % Solids: NA			Sample Point MW-3 Date Sampled: 3/20/2006 Lab ID: 939709 %Solids: NA			Sample Point MW-4 Date Sampled: 2/3/2005 Lab ID: 566715 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	µg/L	580		13.5	267	J	8.8	29.2	B	13.5	58.5	J	8.8	200		13.5
Antimony	µg/L	60		2.1	60	U	1.2	60		2.1	60	U	1.2	60		2.1
Arsenic	µg/L	10		2.1	10	U	1.4	10		2.1	10	U	1.4	10		2.1
Barium	µg/L	29.4	B	0.1	34	J	0.1	53.4	B	0.1	64.4	J	0.1	34.6	B	0.1
Beryllium	µg/L	5		0.1	5	U	0.1	5		0.1	5	U	0.1	5		0.1
Cadmium	µg/L	5		0.3	5	U	0.2	95.8		0.3	102		0.2	5		0.3
Calcium	µg/L	7830		17	5360		6.5	4310	B	17	2970	J	6.5	4170	B	17
Chromium	µg/L	3.6	B	0.6	1.9	J	0.4	1.4	B	0.6	0.68	J	0.4	0.62	B	0.6
Cobalt	µg/L	0.77	B	0.6	0.82	J	0.5	3.7	B	0.6	3.6	J	0.5	1.7	B	0.6
Copper	µg/L	1	B	0.4	4	J	0.3	2	B	0.4	3.1	J	0.3	25		0.4
Iron	µg/L	1390		11.2	1640		9	2920		11.2	371		9	141		11.2
Lead	µg/L	1.5	B	1.3	1.3	J	1	3		1.3	3	U	1	3		1.3
Magnesium	µg/L	1230	B	7.3	1020	J	2.5	674	B	7.3	544	J	2.5	4010	B	7.3
Manganese	µg/L	24.5		0.2	19.4		0.1	78.4		0.2	43.6		0.1	8.7	B	0.2
Mercury	µg/L	0.2		0.1	0.2	U	0.1	0.2		0.1	0.2	U	0.1	0.2		0.1
Nickel	µg/L	1.8	B	0.8	1.3	J	0.9	12.1	B	0.8	12.6	J	0.9	1.4	B	0.8
Potassium	µg/L	1480	B	5.3	1720	J	10	669	B	5.3	537	J	10	800	B	5.3
Selenium	µg/L	5		2.7	5	UJ	3.3	5		2.7	5	UJ	3.3	5		2.7
Silver	µg/L	10		0.8	10	U	0.5	10		0.8	10	U	0.5	10		0.8
Sodium	µg/L	6910		124	7020		46.2	1670	B	124	1140	J	46.2	1360	B	124
Thallium	µg/L	10		3	10	UJ	3.9	10		3	10	UJ	3.9	10		3
Vanadium	µg/L	1.4	B	0.5	1.1	J	0.3	50		0.5	50	U	0.3	50		0.5
Zinc	µg/L	8.2	B	1.2	20	U	0.3	91.3		1.2	98.9		0.3	7.3	B	1.2
Cyanide	µg/L				10	U	1.8				10	U	1.8			

Table checked by: R. Baig Date: 4/24/2006

Table E-1 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-4 Date Sampled: 3/17/2006 Lab ID: 939703 % Solids: NA			Sample Point MW-5 Date Sampled: 2/8/2005 Lab ID: 568415 % Solids: NA			Sample Point MW-5 Date Sampled: 3/21/2006 Lab ID: 939716 % Solids: NA			Sample Point MW-6 Date Sampled: 2/4/2005 Lab ID: 568403 %Solids: NA			Sample Point MW-6 Date Sampled: 3/21/2006 Lab ID: 939715 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	µg/L	188	J	8.8	37	B	13.5	67.4	J	8.8	27.6	B	13.5	105	J	8.8
Antimony	µg/L	60	U	1.2	60		2.1	60	U	1.2	60		2.1	60	U	1.2
Arsenic	µg/L	10	U	1.4	10		2.1	10	U	1.4	10		2.1	1.7	J	1.4
Barium	µg/L	40.5	J	0.1	20.5	B	0.1	36.7	J	0.1	37.1	B	0.1	50.7	J	0.1
Beryllium	µg/L	0.21	J	0.1	5		0.1	5	U	0.1	5		0.1	5	U	0.1
Cadmium	µg/L	5	U	0.2	0.33	B	0.3	5	U	0.2	0.67	B	0.3	0.51	J	0.2
Calcium	µg/L	3910	J	6.5	4350	B	17	4740	J	6.5	1860	B	17	1760	J	6.5
Chromium	µg/L	2.2	J	0.4	1.6	B	0.6	0.74	J	0.4	1.3	B	0.6	1.4	J	0.4
Cobalt	µg/L	2.1	J	0.5	1.4	B	0.6	2.2	J	0.5	1.8	B	0.6	2.5	J	0.5
Copper	µg/L	25	U	0.3	5.4	B	0.4	3.4	J	0.3	3	B	0.4	1.9	J	0.3
Iron	µg/L	1370		9	57.3	B	11.2	100	U	9	147		11.2	478		9
Lead	µg/L	3	U	1	3		1.3	2.5	J	1	3		1.3	1.3	J	1
Magnesium	µg/L	3670	J	2.5	851	B	7.3	950	J	2.5	408	B	7.3	471	J	2.5
Manganese	µg/L	7.7	J	0.1	15.3		0.2	16.1		0.1	15.8		0.2	18.8		0.1
Mercury	µg/L	0.2	U	0.1	0.2		0.1	0.2	U	0.1	0.2		0.1	0.2	U	0.1
Nickel	µg/L	2.1	J	0.9	2	B	0.8	1.1	J	0.9	1.8	B	0.8	2.4	J	0.9
Potassium	µg/L	907	J	10	631	B	5.3	876	J	10	1460	B	5.3	1860	J	10
Selenium	µg/L	5	UJ	3.3	5		2.7	5	UJ	3.3	5		2.7	5	UJ	3.3
Silver	µg/L	10	U	0.5	10		0.8	10	U	0.5	10		0.8	10	U	0.5
Sodium	µg/L	5000	U	46.2	4150	B	124	4800	J	46.2	2180	B	124	2240	J	46.2
Thallium	µg/L	10	UJ	3.9	10		3	10	UJ	3.9	10		3	10	UJ	3.9
Vanadium	µg/L	0.44	J	0.3	50		0.5	50	U	0.3	50		0.5	50	U	0.3
Zinc	µg/L	20	U	0.3	13.5	B	1.2	20	U	0.3	43.2		1.2	27.7	J	0.3
Cyanide	µg/L	10	U	1.8				10	U	1.8				10	U	1.8

Table checked by: R. Baig Date: 4/24/2006

Table E-1 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-7 Date Sampled: 2/3/2005 Lab ID: 566719 % Solids: NA			Sample Point MW-7 Date Sampled: 3/20/2006 Lab ID: 939710 % Solids: NA			Sample Point MW-8A Date Sampled: 2/8/2005 Lab ID: 568414 % Solids: NA			Sample Point MW-8A Date Sampled: 3/20/2006 Lab ID: 939713 %Solids: NA			Sample Point MW-8B Date Sampled: 2/8/2005 Lab ID: 568411 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	µg/L	244		13.5	311	J	8.8	30.9	B	13.5	61.4	J	8.8	212		13.5
Antimony	µg/L	60		2.1	60	U	1.2	60		2.1	60	U	1.2	60		2.1
Arsenic	µg/L	10		2.1	10	U	1.4	10		2.1	10	U	1.4	10		2.1
Barium	µg/L	65.5	B	0.1	64	J	0.1	32.1	B	0.1	51.6	J	0.1	19.8	B	0.1
Beryllium	µg/L	5		0.1	5	U	0.1	5		0.1	5	U	0.1	5		0.1
Cadmium	µg/L	15.3		0.3	8.9		0.2	12.5		0.3	12.8		0.2	5		0.3
Calcium	µg/L	4010	B	17	3200	J	6.5	9870		17	8480		6.5	3400	B	17
Chromium	µg/L	1.1	B	0.6	0.94	J	0.4	5.7	B	0.6	6.9	J	0.4	2.7	B	0.6
Cobalt	µg/L	6.7	B	0.6	7.6	J	0.5	8.2	B	0.6	11	J	0.5	0.71	B	0.6
Copper	µg/L	0.57	B	0.4	3.6	J	0.3	0.89	B	0.4	3.8	J	0.3	25		0.4
Iron	µg/L	369		11.2	729		9	1880		11.2	3050		9	482		11.2
Lead	µg/L	3		1.3	3	U	1	3		1.3	3	U	1	3		1.3
Magnesium	µg/L	691	B	7.3	583	J	2.5	883	B	7.3	832	J	2.5	1150	B	7.3
Manganese	µg/L	66.7		0.2	71.2		0.1	163		0.2	192		0.1	15.2		0.2
Mercury	µg/L	0.2		0.1	0.2	U	0.1	0.2		0.1	0.2	U	0.1	0.2		0.1
Nickel	µg/L	21.7	B	0.8	20	J	0.9	20.4	B	0.8	24.1	J	0.9	2.1	B	0.8
Potassium	µg/L	462	B	5.3	541	J	10	2730	B	5.3	2630	J	10	571	B	5.3
Selenium	µg/L	5		2.7	5	UJ	3.3	2.9	B	2.7	5	UJ	3.3	5		2.7
Silver	µg/L	10		0.8	10	U	0.5	10		0.8	10	U	0.5	10		0.8
Sodium	µg/L	2510	B	124	3100	J	46.2	4980	B	124	4040	J	46.2	6760		124
Thallium	µg/L	10		3	10	UJ	3.9	10		3	10	UJ	3.9	10		3
Vanadium	µg/L	50		0.5	0.42	J	0.3	0.53	B	0.5	50	U	0.3	0.73	B	0.5
Zinc	µg/L	150		1.2	102		0.3	109		1.2	150		0.3	13.8	B	1.2
Cyanide	µg/L				10	U	1.8				10	U	1.8			

Table checked by: R. Baig Date: 4/24/2006

Table E-1 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-8B Date Sampled: 3/20/2006 Lab ID: 939712 % Solids: NA			Sample Point MW-9 Date Sampled: 2/4/2005 Lab ID: 568404 % Solids: NA			Sample Point FMW-9 Date Sampled: 2/4/2005 Lab ID: 568409 % Solids: NA			Sample Point MW-9 Date Sampled: 3/21/2006 Lab ID: 939720 %Solids: NA			Sample Point MW-10 Date Sampled: 2/8/2005 Lab ID: 568416 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	µg/L	249	J	8.8	2110		13.5	2100		13.5	2930	J	8.8	107	B	13.5
Antimony	µg/L	60	U	1.2	60		2.1	60		2.1	60	U	1.2	60		2.1
Arsenic	µg/L	10	U	1.4	10		2.1	10		2.1	10	U	1.4	10		2.1
Barium	µg/L	29.5	J	0.1	3.4	B	0.1	3.2	BE	0.1	11.4	J	0.1	84.9	B	0.1
Beryllium	µg/L	5	U	0.1	5		0.1	5		0.1	5	U	0.1	5		0.1
Cadmium	µg/L	5	U	0.2	0.39	B	0.3	0.34	B	0.3	5	U	0.2	7.8		0.3
Calcium	µg/L	2140	J	6.5	1750	B	17	1740	B	17	1340	J	6.5	9760		17
Chromium	µg/L	6.2	J	0.4	4	B	0.6	4.1	B	0.6	3.9	J	0.4	28.2		0.6
Cobalt	µg/L	1.2	J	0.5	1.3	B	0.6	1.2	B	0.6	3.5	J	0.5	13.8	B	0.6
Copper	µg/L	2.7	J	0.3	1.3	B	0.4	0.72	B	0.4	6.4	J	0.3	1.3	B	0.4
Iron	µg/L	1270		9	160		11.2	148		11.2	635		9	50.2	B	11.2
Lead	µg/L	3	U	1	3		1.3	3		1.3	3	U	1	3		1.3
Magnesium	µg/L	1340	J	2.5	249	B	7.3	241	B	7.3	222	J	2.5	1250	B	7.3
Manganese	µg/L	15	J	0.1	14.8	B	0.2	14.8	B	0.2	12.4	J	0.1	163		0.2
Mercury	µg/L	0.2	U	0.1	0.2		0.1	0.2		0.1	0.12	J	0.1	0.2		0.1
Nickel	µg/L	3.9	J	0.9	7.6	B	0.8	7.5	B	0.8	5.3	J	0.9	22.3	B	0.8
Potassium	µg/L	598	J	10	860	B	5.3	839	B	5.3	918	J	10	1320	B	5.3
Selenium	µg/L	5	UJ	3.3	5		2.7	5		2.7	5	UJ	3.3	5		2.7
Silver	µg/L	10	U	0.5	10		0.8	10		0.8	10	U	0.5	10		0.8
Sodium	µg/L	3670	J	46.2	2020	B	124	2080	B	124	1820	J	46.2	8550		124
Thallium	µg/L	10	UJ	3.9	10		3	10		3	10	UJ	3.9	10		3
Vanadium	µg/L	1.4	J	0.3	0.93	B	0.5	0.69	B	0.5	1.5	J	0.3	50		0.5
Zinc	µg/L	20	U	0.3	485		1.2	480		1.2	253		0.3	99.5		1.2
Cyanide	µg/L	10	U	1.8							10	U	1.8			

Table checked by: R. Baig Date: 4/24/2006

Table E-1 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-10 Date Sampled: 3/21/2006 Lab ID: 940801 % Solids: NA			Sample Point MW-11 Date Sampled: 2/4/2005 Lab ID: 568408 % Solids: NA			Sample Point MW-11 Date Sampled: 3/20/2006 Lab ID: 939708 % Solids: NA			Sample Point MW-12 Date Sampled: 2/2/2005 Lab ID: 566710 %Solids: NA			Sample Point MW-12 Date Sampled: 3/14/2006 Lab ID: 934212 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	µg/L	280	J	8.8	534		13.5	1190	J	8.8	1030		13.5	327	J	8.8
Antimony	µg/L	7.5	J	1.2	60		2.1	60	U	1.2	60		2.1	60	U	1.2
Arsenic	µg/L	10	U	1.4	10		2.1	10	U	1.4	2.3	B	2.1	10	U	1.4
Barium	µg/L	111	J	0.1	117	B	0.1	143	J	0.1	29	B	0.1	41.5	J	0.1
Beryllium	µg/L	5	U	0.1	0.14	B	0.1	5	U	0.1	5		0.1	5	U	0.1
Cadmium	µg/L	5.8	J	0.2	0.65	B	0.3	0.4	J	0.2	5		0.3	5	U	0.2
Calcium	µg/L	8940		6.5	1530	B	17	1400	J	6.5	10700		17	10800		6.5
Chromium	µg/L	16.8		0.4	2.1	B	0.6	3.2	J	0.4	7.4	B	0.6	5.7	J	0.4
Cobalt	µg/L	13.1	J	0.5	14.1	B	0.6	13.5	J	0.5	2.2	B	0.6	1.4	J	0.5
Copper	µg/L	25	U	0.3	6.3	B	0.4	6.5	J	0.3	25		0.4	1.5	J	0.3
Iron	µg/L	685		9	222		11.2	1610		9	11500		11.2	11800	J	9
Lead	µg/L	3	U	1	3		1.3	2	J	1	3		1.3	3	U	1
Magnesium	µg/L	1440	J	2.5	893	B	7.3	912	J	2.5	2120	B	7.3	2230	J	2.5
Manganese	µg/L	151		0.1	80.7		0.2	72.9		0.1	45		0.2	32.2		0.1
Mercury	µg/L	0.2	U	0.1	0.2		0.1	0.2	U	0.1	0.16	B	0.1	0.2	U	0.1
Nickel	µg/L	19.5	J	0.9	6.1	B	0.8	5.7	J	0.9	1.9	B	0.8	3.1	J	0.9
Potassium	µg/L	1850	J	10	199	B	5.3	304	J	10	2750	B	5.3	3170	J	10
Selenium	µg/L	5	U	3.3	5		2.7	5	UJ	3.3	5		2.7	5	U	3.3
Silver	µg/L	10	U	0.5	10		0.8	10	U	0.5	10		0.8	10	U	0.5
Sodium	µg/L	6520		46.2	1490	B	124	1880	J	46.2	2750	B	124	2830	J	46.2
Thallium	µg/L	10	UJ	3.9	10		3	10	UJ	3.9	10		3	10	U	3.9
Vanadium	µg/L	1	J	0.3	0.6	B	0.5	2.6	J	0.3	8.2	B	0.5	4.4	J	0.3
Zinc	µg/L	96.6		0.3	23.8		1.2	20	U	0.3	5.7	B	1.2	20	UJ	0.3
Cyanide	µg/L	10	U	1.8				10	U	1.8						

Table checked by: R. Baig Date: 4/24/2006

Table E-1 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-13 Date Sampled: 2/2/2005 Lab ID: 566708 % Solids: NA			Sample Point MW-13 Date Sampled: 3/14/2006 Lab ID: 934207 % Solids: NA			Sample Point MW-14 Date Sampled: 2/3/2005 Lab ID: 568401 % Solids: NA			Sample Point MW-14 Date Sampled: 3/14/2006 Lab ID: 934206 %Solids: NA			Sample Point MW-15 Date Sampled: 2/1/2005 Lab ID: 566706 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	µg/L	336		13.5	200	U	8.8	90.7	B	13.5	200	U	8.8	430		13.5
Antimony	µg/L	60		2.1	60	U	1.2	60		2.1	2.5	J	1.2	2.5	B	2.1
Arsenic	µg/L	10		2.1	10	U	1.4	10		2.1	10	U	1.4	10		2.1
Barium	µg/L	27.6	B	0.1	36.4	J	0.1	14.6	B	0.1	27.7	J	0.1	28.4	B	0.1
Beryllium	µg/L	5		0.1	5	U	0.1	5		0.1	5	U	0.1	5		0.1
Cadmium	µg/L	5		0.3	0.35	J	0.2	5		0.3	5	U	0.2	5		0.3
Calcium	µg/L	6260		17	5870		6.5	2010	B	17	1990	J	6.5	8060		17
Chromium	µg/L	5.6	B	0.6	9.6	J	0.4	1.6	B	0.6	7	J	0.4	2.4	B	0.6
Cobalt	µg/L	50		0.6	1.1	J	0.5	50		0.6	1.2	J	0.5	50		0.6
Copper	µg/L	2.3	B	0.4	4.7	J	0.3	25		0.4	2.7	J	0.3	25		0.4
Iron	µg/L	785		11.2	874	J	9	323		11.2	861	J	9	1580		11.2
Lead	µg/L	3		1.3	3	U	1	3		1.3	3	UJ	1	3		1.3
Magnesium	µg/L	1390	B	7.3	1420	J	2.5	1180	B	7.3	1350	J	2.5	1950	B	7.3
Manganese	µg/L	18.9		0.2	17.7		0.1	11.6	B	0.2	11.9	J	0.1	15.7		0.2
Mercury	µg/L	0.2		0.1	0.2	U	0.1	0.2		0.1	0.2	U	0.1	0.2		0.1
Nickel	µg/L	4	B	0.8	6.5	J	0.9	1.3	B	0.8	4.5	J	0.9	1.3	B	0.8
Potassium	µg/L	2190	B	5.3	2230	J	10	546	B	5.3	650	J	10	3630	B	5.3
Selenium	µg/L	5		2.7	5	U	3.3	5		2.7	5	U	3.3	5		2.7
Silver	µg/L	10		0.8	10	U	0.5	10		0.8	10	U	0.5	10		0.8
Sodium	µg/L	5820		124	6330		46.2	2310	B	124	2690	J	46.2	2160	B	124
Thallium	µg/L	10		3	10	U	3.9	4.4	B	3	8.6	J	3.9	4.3	B	3
Vanadium	µg/L	1.4	B	0.5	1.6	J	0.3	0.64	B	0.5	1.1	J	0.3	1.9	B	0.5
Zinc	µg/L	10	B	1.2	17.4	J	0.3	18.4	B	1.2	4.8	J	0.3	9.4	B	1.2
Cyanide	µg/L															

Table checked by: R. Baig Date: 4/24/2006

Table E-1 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-15 Date Sampled: 3/14/2006 Lab ID: 934208 % Solids: NA			Sample Point MW-16 Date Sampled: 2/1/2005 Lab ID: 566704 % Solids: NA			Sample Point MW-16 Date Sampled: 3/23/2006 Lab ID: 940806 % Solids: NA			Sample Point MW-17 Date Sampled: 2/1/2005 Lab ID: 566703 %Solids: NA			Sample Point MW-17 Date Sampled: 3/13/2006 Lab ID: 934203 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	µg/L	200	U	8.8	200		13.5	200	U	8.8	26.5	B	13.5	565	J	8.8
Antimony	µg/L	60	U	1.2	60		2.1	60	UJ	1.2	60		2.1	60	U	1.2
Arsenic	µg/L	10	U	1.4	10		2.1	10	U	1.4	10		2.1	10	U	1.4
Barium	µg/L	56.5	J	0.1	24.1	B	0.1	31.8	J	0.1	32	B	0.1	28.5	J	0.1
Beryllium	µg/L	5	U	0.1	5		0.1	5	U	0.1	5		0.1	0.22	J	0.1
Cadmium	µg/L	5	U	0.2	5		0.3	5	U	0.2	5		0.3	5	U	0.2
Calcium	µg/L	8330		6.5	6780		17	5790		6.5	2390	B	17	1740	J	6.5
Chromium	µg/L	8.1	J	0.4	1.2	B	0.6	10	U	0.4	1.1	B	0.6	21.7		0.4
Cobalt	µg/L	0.51	J	0.5	50		0.6	50	U	0.5	1.9	B	0.6	1.4	J	0.5
Copper	µg/L	2.6	J	0.3	0.58	B	0.4	25	U	0.3	4.3	B	0.4	25	U	0.3
Iron	µg/L	1040	J	9	30.9	B	11.2	100	U	9	32.9	B	11.2	3490	J	9
Lead	µg/L	22		1	3		1.3	1.1	J	1	3		1.3	3	UJ	1
Magnesium	µg/L	2210	J	2.5	1640	B	7.3	1640	J	2.5	2050	B	7.3	1520	J	2.5
Manganese	µg/L	17		0.1	16.9		0.2	12.7	J	0.1	13.4	B	0.2	10.4	J	0.1
Mercury	µg/L	0.2	U	0.1	0.2		0.1	0.2	U	0.1	0.11	B	0.1	0.12	J	0.1
Nickel	µg/L	5	J	0.9	1.7	B	0.8	1.9	J	0.9	3.2	B	0.8	10	J	0.9
Potassium	µg/L	4040	J	10	1960	B	5.3	2750	J	10	872	B	5.3	1100	J	10
Selenium	µg/L	5	U	3.3	5		2.7	5	U	3.3	5		2.7	4.1	J	3.3
Silver	µg/L	10	U	0.5	10		0.8	10	U	0.5	10		0.8	10	U	0.5
Sodium	µg/L	2690	J	46.2	2100	B	124	2700	J	46.2	1740	B	124	5000	U	46.2
Thallium	µg/L	4.6	J	3.9	10		3	10	UJ	3.9	10		3	10	UJ	3.9
Vanadium	µg/L	1.4	J	0.3	50		0.5	50	U	0.3	50		0.5	4.1	J	0.3
Zinc	µg/L	2.4	J	0.3	9.9	B	1.2	8.9	J	0.3	11.3	B	1.2	12.6	J	0.3
Cyanide	µg/L	10	UJ	0.7				10	U	1.8						

Table checked by: R. Baig Date: 4/24/2006

Table E-1 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-18 Date Sampled: 1/31/2005 Lab ID: 566701 % Solids: NA			Sample Point MW-18 Date Sampled: 3/16/2006 Lab ID: 934220 % Solids: NA			Sample Point MW-19 Date Sampled: 2/2/2005 Lab ID: 566709 % Solids: NA			Sample Point FMW-19 Date Sampled: 2/2/2005 Lab ID: 566712 %Solids: NA			Sample Point MW-19 Date Sampled: 3/14/2006 Lab ID: 934213 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	µg/L	158	B	13.5	200	U	8.8	18.2	B	13.5	200		13.5	200	U	8.8
Antimony	µg/L	60		2.1	60	U	1.2	60		2.1	2.3	B	2.1	60	U	1.2
Arsenic	µg/L	10		2.1	10	U	1.4	10		2.1	10		2.1	10	U	1.4
Barium	µg/L	18.2	B	0.1	42.1	J	0.1	13.4	B	0.1	13.9	B	0.1	23.7	J	0.1
Beryllium	µg/L	5		0.1	5	U	0.1	5		0.1	5		0.1	5	U	0.1
Cadmium	µg/L	5		0.3	0.34	J	0.2	5		0.3	5		0.3	5	U	0.2
Calcium	µg/L	1520	B	17	1310	J	6.5	4790	B	17	4970	B	17	3260	J	6.5
Chromium	µg/L	21.8		0.6	2.8	J	0.4	3.4	B	0.6	3.1	B	0.6	2.2	J	0.4
Cobalt	µg/L	1.3	B	0.6	1.5	J	0.5	3.8	B	0.6	4	B	0.6	4.5	J	0.5
Copper	µg/L	5.9	B	0.4	25	U	0.3	10.5	B	0.4	13.4	B	0.4	6.4	J	0.3
Iron	µg/L	796		11.2	186	J	9	2290		11.2	2220		11.2	3750	J	9
Lead	µg/L	3		1.3	1.9	J	1	3		1.3	3		1.3	1.6	J	1
Magnesium	µg/L	864	B	7.3	1490	J	2.5	1080	B	7.3	1110	B	7.3	1160	J	2.5
Manganese	µg/L	30.8		0.2	26.4		0.1	109		0.2	112		0.2	93		0.1
Mercury	µg/L	0.12	B	0.1	0.2	U	0.1	0.2		0.1	0.2		0.1	0.2	U	0.1
Nickel	µg/L	17.6	B	0.8	4.3	J	0.9	36.6	B	0.8	40.4		0.8	2.1	J	0.9
Potassium	µg/L	537	B	5.3	860	J	10	432	B	5.3	455	B	5.3	583	J	10
Selenium	µg/L	5		2.7	5	U	3.3	5		2.7	5		2.7	5	U	3.3
Silver	µg/L	10		0.8	10	U	0.5	10		0.8	10		0.8	10	U	0.5
Sodium	µg/L	2750	B	124	5000	U	46.2	2030	B	124	2070	B	124	2090	J	46.2
Thallium	µg/L	10		3	10	U	3.9	10		3	10		3	10	U	3.9
Vanadium	µg/L	0.99	B	0.5	0.8	J	0.3	0.56	B	0.5	50		0.5	0.9	J	0.3
Zinc	µg/L	18.1	B	1.2	7.1	J	0.3	21.9		1.2	24.1		1.2	1.5	J	0.3
Cyanide	µg/L				10	UJ	0.7									

Table checked by: R. Baig Date: 4/24/2006

Table E-1 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-20 Date Sampled: 2/2/2005 Lab ID: 566713 % Solids: NA			Sample Point MW-20 Date Sampled: 3/14/2006 Lab ID: 934210 % Solids: NA			Sample Point FMW-20 Date Sampled: 3/14/2006 Lab ID: 934211 % Solids: NA			Sample Point MW-21 Date Sampled: 2/4/2005 Lab ID: 568406 %Solids: NA			Sample Point MW-21 Date Sampled: 3/20/2006 Lab ID: 939706 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	µg/L	83.2	B	13.5	200	U	8.8	200	U	8.8	1440		13.5	61.4	J	8.8
Antimony	µg/L	60		2.1	60	U	1.2	60	U	1.2	60		2.1	60	U	1.2
Arsenic	µg/L	10		2.1	10	U	1.4	10	U	1.4	10		2.1	10	U	1.4
Barium	µg/L	26.1	B	0.1	33.9	J	0.1	33.2	J	0.1	40.5	B	0.1	34.4	J	0.1
Beryllium	µg/L	5		0.1	5	U	0.1	5	U	0.1	5		0.1	5	U	0.1
Cadmium	µg/L	5		0.3	5	U	0.2	5	U	0.2	3.2	B	0.3	1.6	J	0.2
Calcium	µg/L	1490	B	17	1270	J	6.5	1260	J	6.5	15600		17	6460		6.5
Chromium	µg/L	2.9	B	0.6	1.8	J	0.4	1.5	J	0.4	6	B	0.6	0.82	J	0.4
Cobalt	µg/L	2	B	0.6	3.2	J	0.5	2.5	J	0.5	9.5	B	0.6	6.6	J	0.5
Copper	µg/L	6.6	B	0.4	2.9	J	0.3	2.6	J	0.3	2.7	B	0.4	1.8	J	0.3
Iron	µg/L	434		11.2	205	J	9	215	J	9	16400		11.2	12600		9
Lead	µg/L	3		1.3	3	U	1	3	U	1	3		1.3	3	U	1
Magnesium	µg/L	1800	B	7.3	1800	J	2.5	1770	J	2.5	1770	B	7.3	573	J	2.5
Manganese	µg/L	65.9		0.2	64.5		0.1	63.9		0.1	229		0.2	113		0.1
Mercury	µg/L	0.2		0.1	0.2	U	0.1	0.2	U	0.1	0.2		0.1	0.2	U	0.1
Nickel	µg/L	4.8	B	0.8	2.6	J	0.9	1.4	J	0.9	26.1	B	0.8	4.7	J	0.9
Potassium	µg/L	456	B	5.3	545	J	10	505	J	10	676	B	5.3	476	J	10
Selenium	µg/L	5		2.7	5	U	3.3	5	U	3.3	3	B	2.7	5	UJ	3.3
Silver	µg/L	10		0.8	10	U	0.5	10	U	0.5	10		0.8	10	U	0.5
Sodium	µg/L	2160	B	124	2670	J	46.2	2810	J	46.2	2270	B	124	1930	J	46.2
Thallium	µg/L	10		3	10	U	3.9	10	U	3.9	10		3	10	UJ	3.9
Vanadium	µg/L	0.79	B	0.5	0.61	J	0.3	50	U	0.3	5.3	B	0.5	0.34	J	0.3
Zinc	µg/L	8.3	B	1.2	1.1	J	0.3	71.7	J	0.3	98.4		1.2	65		0.3
Cyanide	µg/L													10	U	1.8

Table checked by: R. Baig Date: 4/24/2006

Table E-1 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point OSW Date Sampled: 3/21/2006 Lab ID: 939714 % Solids: NA			Sample Point WS-1 Date Sampled: 2/3/2005 Lab ID: 566718 % Solids: NA			Sample Point Date Sampled: Lab ID: % Solids:			Sample Point Date Sampled: Lab ID: %Solids:			Sample Point Date Sampled: Lab ID: %Solids:		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	µg/L	71.1	J	8.8	200		13.5									
Antimony	µg/L	60		1.2	60		2.1									
Arsenic	µg/L	10		1.4	10		2.1									
Barium	µg/L	28.6	J	0.1	21.8	B	0.1									
Beryllium	µg/L	5		0.1	5		0.1									
Cadmium	µg/L	5		0.2	5		0.3									
Calcium	µg/L	3940	J	6.5	4350	B	17									
Chromium	µg/L	10		0.4	10		0.6									
Cobalt	µg/L	0.57	J	0.5	0.77	B	0.6									
Copper	µg/L	2.3	J	0.3	62.7		0.4									
Iron	µg/L	212		9	747		11.2									
Lead	µg/L	1.3	J	1	2.4	B	1.3									
Magnesium	µg/L	1570	J	2.5	2080	B	7.3									
Manganese	µg/L	6	J	0.1	37.3		0.2									
Mercury	µg/L	0.1	J	0.1	0.2		0.1									
Nickel	µg/L	40		0.9	8.4	B	0.8									
Potassium	µg/L	1280	J	10	990	B	5.3									
Selenium	µg/L	5		3.3	5		2.7									
Silver	µg/L	10		0.5	10		0.8									
Sodium	µg/L	1910	J	46.2	1360	B	124									
Thallium	µg/L	10		3.9	10		3									
Vanadium	µg/L	50		0.3	50		0.5									
Zinc	µg/L	20		0.3	124		1.2									
Cyanide	µg/L	10		1.8												

Table checked by: R. Baig Date: 4/24/2006

Table E-1 (e)
Summary of Validated Data
Conventional Parameters
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-1 Date Sampled: 2/3/2005 Lab ID: 566720 % Solids: NA			Sample Point MW-1 Date Sampled: 3/21/2006 Lab ID: 939718 % Solids: NA			Sample Point FMW-1 Date Sampled: 3/21/2006 Lab ID: 939719 % Solids: NA			Sample Point MW-2A Date Sampled: 2/8/2005 Lab ID: 568412 %Solids: NA			Sample Point MW-2A Date Sampled: 3/23/2006 Lab ID: 940807 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Biochemical Oxygen Demand	mg/L	2	U								19.8					
Chloride	mg/L	133		0.85	10.8		0.85	10.7		0.85	6.1		0.85	17.3		0.85
Diss. Organic Carbon	mg/L	5	U	2.5	5	U	2.5	5	U	2.5	9.4		2.5	48.1		2.5
Ethane	µg/L	0.005		0.003	0.025	U	0.003	0.025	U	0.003	0.017		0.003	220		0.003
Ethene	µg/L	0.005		0.005	0.025	U	0.005	0.025	U	0.005	0.058		0.005	49		0.005
Methane	µg/L	0.27		0.011	26		0.011	26		0.011	0.84		0.011	87		0.011
Nitrate	mg/L	0.9		0.007	0.05	U	0.007	0.05	U	0.007	0.05		0.007	0.05	U	0.007
Nitrite	mg/L	0.05		0.014	0.05	U	0.014	0.05	U	0.014	0.05		0.014	0.05	U	0.014
Phosphate	mg/L				0.05	U	0.036	0.05	U	0.036				0.05	U	0.036
Sulfate	mg/L	3.9	J	0.095	12.9		0.095	12.9		0.095	5.5		0.095	6.7		0.095
TOC	mg/L	4.3	J	2.5	5	U	2.5	5	U	2.5	10.1		2.5	50.1		2.5
Total Alkalinity	mg/L	8.3	J	2.4	16.9		2.4	15.6		2.4	14.3		2.4	480		2.4
Total Phosphorus	mg/L	0.085	J	0.036							0.074	B	0.036			
Sulfide	mg/L	0.4	J	0.15	1	U	0.15	1	U	0.15	0.2	J	0.15	1.6	J	0.15

Table checked by: R. Baig Date: April 24, 2006

Table E-1 (e)
Summary of Validated Data
Conventional Parameters
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-2B Date Sampled: 2/4/2005 Lab ID: 568407 % Solids: NA			Sample Point MW-2B Date Sampled: 3/20/2006 Lab ID: 939707 % Solids: NA			Sample Point MW-3 Date Sampled: 2/3/2005 Lab ID: 566717 % Solids: NA			Sample Point MW-3 Date Sampled: 3/20/2006 Lab ID: 939709 %Solids: NA			Sample Point MW-4 Date Sampled: 2/3/2005 Lab ID: 566715 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Biochemical Oxygen Demand	mg/L	2	UJ					2	U					2	U	
Chloride	mg/L	6.4		0.85	5.7		0.85	3		0.85	2	J	0.85	6		0.85
Diss. Organic Carbon	mg/L	2.9	J	2.5	2.8	J	2.5	3.4	J	2.5	5.3		2.5	1.6	U	2.5
Ethane	µg/L	0.0079		0.003	0.025	U	0.003	0.018		0.003	0.071		0.003	0.03		0.003
Ethene	µg/L	0.012		0.005	0.025	U	0.005	0.039		0.005	0.062	U	0.005	0.023		0.005
Methane	µg/L	0.18		0.011	0.16	U	0.011	0.3		0.011	1.2	U	0.011	0.15		0.011
Nitrate	mg/L	2.2		0.007	0.61		0.007	0.05		0.007	0.05	U	0.007	4.7		0.007
Nitrite	mg/L	0.05		0.014	0.05	U	0.014	0.08		0.014	0.05	U	0.014	0.055		0.014
Phosphate	mg/L				0.05	U	0.036				0.05	U	0.036			
Sulfate	mg/L	17		0.095	19.2		0.095	5.3		0.095	6.3		0.095	5		0.095
TOC	mg/L	5	U	2.5	5	U	2.5	6		2.5	5		2.5	2.6	J	2.5
Total Alkalinity	mg/L	1.7	U	2.4	10	U	2.4	1.6	U	2.4	10	U	2.4	0.16	U	2.4
Total Phosphorus	mg/L	0.074	B	0.036				0.074	J	0.036				0.073	J	0.036
Sulfide	mg/L	0.4	J	0.15	1	U	0.15	0.4	J	0.15	1	U	0.15	0.2	J	0.15

Table checked by: R. Baig Date: April 24, 2006

Table E-1 (e)
Summary of Validated Data
Conventional Parameters
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-4 Date Sampled: 3/17/2006 Lab ID: 939703 % Solids: NA			Sample Point MW-5 Date Sampled: 2/8/2005 Lab ID: 568415 % Solids: NA			Sample Point MW-5 Date Sampled: 3/21/2006 Lab ID: 939716 % Solids: NA			Sample Point MW-6 Date Sampled: 2/4/2005 Lab ID: 568403 %Solids: NA			Sample Point MW-6 Date Sampled: 3/21/2006 Lab ID: 939715 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Biochemical Oxygen Demand	mg/L				2	U					2	UJ				
Chloride	mg/L	4.6		0.85	4.1		0.85	5.4		0.85	2.4		0.85	1.9	J	0.85
Diss. Organic Carbon	mg/L	5	U	2.5	2.8	J	2.5	5.1	U	2.5	1.5	U	2.5	5	U	2.5
Ethane	µg/L	0.025	U	0.003	0.005		0.003	0.049	U	0.003	0.005		0.003	0.025	U	0.003
Ethene	µg/L	0.032	U	0.005	0.005		0.005	0.32		0.005	0.005		0.005	0.025	U	0.005
Methane	µg/L	1.1	U	0.011	0.2		0.011	5.4		0.011	0.18		0.011	0.13	U	0.011
Nitrate	mg/L	4.2		0.007	0.05		0.007	0.16		0.007	0.05		0.007	0.05	U	0.007
Nitrite	mg/L	0.05	U	0.014	0.05		0.014	0.05	U	0.014	0.065		0.014	0.05	U	0.014
Phosphate	mg/L	0.05	U	0.036				0.05	U	0.036				0.05	U	0.036
Sulfate	mg/L	5	U	0.095	10.1		0.095	12.8		0.095	6.2		0.095	7.6		0.095
TOC	mg/L	5	U	2.5	1.9	U	2.5	5	U	2.5	1.3	U	2.5	5	U	2.5
Total Alkalinity	mg/L	10	U	2.4	1.4	U	2.4	10	U	2.4	0.3	U	2.4	10	U	2.4
Total Phosphorus	mg/L				0.072	J	0.036				0.073	J	0.036			
Sulfide	mg/L	1.2	J	0.15	0.6	J	0.15	1	U	0.15	0.4	J	0.15	1	U	0.15

Table checked by: R. Baig Date: April 24, 2006

Table E-1 (e)
Summary of Validated Data
Conventional Parameters
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-7 Date Sampled: 2/3/2005 Lab ID: 566719 % Solids: NA			Sample Point MW-7 Date Sampled: 3/20/2006 Lab ID: 939710 % Solids: NA			Sample Point MW-8A Date Sampled: 2/8/2005 Lab ID: 568414 % Solids: NA			Sample Point MW-8A Date Sampled: 3/20/2006 Lab ID: 939713 %Solids: NA			Sample Point MW-8B Date Sampled: 2/8/2005 Lab ID: 568411 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Biochemical Oxygen Demand	mg/L	2	U					2	U					2	U	
Chloride	mg/L	5		0.85	4.3		0.85	4		0.85	6.7		0.85	4.6		0.85
Diss. Organic Carbon	mg/L	2.5	U	2.5	4.5	J	2.5	5.1		2.5	5	U	2.5	3	J	2.5
Ethane	µg/L	0.025		0.003	0.025	U	0.003	0.012		0.003	0.025	U	0.003	0.005		0.003
Ethene	µg/L	0.033		0.005	0.025	U	0.005	0.005		0.005	0.036	U	0.005	0.005		0.005
Methane	µg/L	0.18		0.011	1.7		0.011	0.33		0.011	0.36	U	0.011	0.23		0.011
Nitrate	mg/L	0.05		0.007	0.05	U	0.007	1.6		0.007	0.91		0.007	0.05		0.007
Nitrite	mg/L	0.05		0.014	0.05	U	0.014	0.05		0.014	0.05	U	0.014	0.075		0.014
Phosphate	mg/L				0.05	U	0.036				0.05	U	0.036			
Sulfate	mg/L	4.7	J	0.095	6.2		0.095	19.2		0.095	15.3		0.095	9.6		0.095
TOC	mg/L	4	J	2.5	3.2	J	2.5	2.4	U	2.5	3.1	J	2.5	3	J	2.5
Total Alkalinity	mg/L	3.2	J	2.4	10	U	2.4	12.9		2.4	4.5	J	2.4	5.9	J	2.4
Total Phosphorus	mg/L	0.075	J	0.036				0.072	J	0.036				0.073	J	0.036
Sulfide	mg/L	0.2	J	0.15	1	U	0.15	0.2	J	0.15	1	U	0.15	0.2	J	0.15

Table checked by: R. Baig Date: April 24, 2006

Table E-1 (e)
Summary of Validated Data
Conventional Parameters
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-8B Date Sampled: 3/20/2006 Lab ID: 939712 % Solids: NA			Sample Point MW-9 Date Sampled: 2/4/2005 Lab ID: 568404 % Solids: NA			Sample Point FMW-9 Date Sampled: 2/4/2005 Lab ID: 568409 % Solids: NA			Sample Point MW-9 Date Sampled: 3/21/2006 Lab ID: 939720 %Solids: NA			Sample Point MW-10 Date Sampled: 2/8/2005 Lab ID: 568416 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Biochemical Oxygen Demand	mg/L				2	UJ		2	UJ					2	U	
Chloride	mg/L	4.1		0.85	1.7	J	0.85	2		0.85	1.4	J	0.85	5.2		0.85
Diss. Organic Carbon	mg/L	5	U	2.5	3	J	2.5	2.9	J	2.5	5	U	2.5	2.8	J	2.5
Ethane	µg/L	0.026	U	0.003	0.005		0.003	0.005		0.003	0.025	U	0.003	0.005		0.003
Ethene	µg/L	0.025	U	0.005	0.005		0.005	0.005		0.005	0.025	U	0.005	0.005		0.005
Methane	µg/L	0.52	U	0.011	0.27		0.011	0.2		0.011	0.14	U	0.011	0.26		0.011
Nitrate	mg/L	0.05	U	0.007	0.03	J	0.007	0.05		0.007	0.05	U	0.007	4		0.007
Nitrite	mg/L	0.05	U	0.014	0.12		0.014	0.05		0.014	0.05	U	0.014	0.055		0.014
Phosphate	mg/L	0.05	U	0.036							0.05	U	0.036			
Sulfate	mg/L	9.8		0.095	4.8	J	0.095	5		0.095	5.1		0.095	20.4		0.095
TOC	mg/L	5	U	2.5	2.5	J	2.5	3.3	J	2.5	5	U	2.5	3	J	2.5
Total Alkalinity	mg/L	10	U	2.4	2.7	J	2.4	3.2	J	2.4	10	U	2.4	0.58	U	2.4
Total Phosphorus	mg/L				0.072	J	0.036	0.072	J	0.036				0.072	J	0.036
Sulfide	mg/L	1	U	0.15	0.8	J	0.15	0.4	J	0.15	1	U	0.15	0.4	J	0.15

Table checked by: R. Baig Date: April 24, 2006

Table E-1 (e)
Summary of Validated Data
Conventional Parameters
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-10 Date Sampled: 3/21/2006 Lab ID: 940801 % Solids: NA			Sample Point MW-11 Date Sampled: 2/4/2005 Lab ID: 568408 % Solids: NA			Sample Point MW-11 Date Sampled: 3/20/2006 Lab ID: 939708 % Solids: NA			Sample Point MW-12 Date Sampled: 2/2/2005 Lab ID: 566710 %Solids: NA			Sample Point MW-12 Date Sampled: 3/14/2006 Lab ID: 934212 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Biochemical Oxygen Demand	mg/L				2	UJ					2	U				
Chloride	mg/L	4.3		0.85	2.1		0.85	2.6		0.85	7.1		0.85	6.2		0.85
Diss. Organic Carbon	mg/L	5	U	2.5	1.5	U	2.5	2.6	J	2.5	2.2	U	2.5	5	U	2.5
Ethane	µg/L	0.025	U	0.003	0.005		0.003	0.025	U	0.003	0.059		0.003	0.061	U	0.003
Ethene	µg/L	0.058	U	0.005	0.005		0.005	0.025	U	0.005	1.3		0.005	0.11	U	0.005
Methane	µg/L	1.3		0.011	0.26		0.011	0.24	U	0.011	0.71	J	0.011	0.84	U	0.011
Nitrate	mg/L	2.2		0.007	0.05		0.007	0.05	U	0.007	2.4		0.007	2.7		0.007
Nitrite	mg/L	0.05	U	0.014	0.43		0.014	0.05	U	0.014	0.09		0.014	0.05	U	0.014
Phosphate	mg/L	0.05	UJ	0.036				0.05	U	0.036				0.05	U	0.036
Sulfate	mg/L	23.1		0.095	7.8		0.095	9.3		0.095	14.3		0.095	16		0.095
TOC	mg/L	5	U	2.5	2.4	U	2.5	3.1	J	2.5	3.2	J	2.5	5	U	2.5
Total Alkalinity	mg/L	10	U	2.4	0.32	U	2.4	10	U	2.4	8	J	2.4	3.9	J	2.4
Total Phosphorus	mg/L				0.073	J	0.036				0.071	J	0.036			
Sulfide	mg/L	1	J	0.15	0.4	J	0.15	1	U	0.15	0.2	J	0.15	1	U	0.15

Table checked by: R. Baig Date: April 24, 2006

Table E-1 (e)
Summary of Validated Data
Conventional Parameters
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-13 Date Sampled: 2/2/2005 Lab ID: 566708 % Solids: NA			Sample Point MW-13 Date Sampled: 3/14/2006 Lab ID: 934207 % Solids: NA			Sample Point MW-14 Date Sampled: 2/3/2005 Lab ID: 568401 % Solids: NA			Sample Point MW-14 Date Sampled: 3/14/2006 Lab ID: 934206 %Solids: NA			Sample Point MW-15 Date Sampled: 2/1/2005 Lab ID: 566706 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Biochemical Oxygen Demand	mg/L	2	U					2	U					2	U	
Chloride	mg/L	8.1		0.85	7.6		0.85	2.8		0.85	2.7		0.85	3.3		0.85
Diss. Organic Carbon	mg/L	1.2	U	2.5	5	U	2.5	3.1	J	2.5				1.4	U	2.5
Ethane	µg/L	0.005		0.003	0.025	U	0.003	0.005		0.003	0.025	U	0.003	0.005		0.003
Ethene	µg/L	0.005		0.005	0.025	U	0.005	0.005		0.005	0.008	U	0.005	0.005		0.005
Methane	µg/L	0.032		0.011	0.14	U	0.011	0.33		0.011	0.1	U	0.011	0.28		0.011
Nitrate	mg/L	1.8		0.007	1.7		0.007	0.41		0.007	0.29		0.007	3		0.007
Nitrite	mg/L	0.11		0.014	0.05	U	0.014	0.05		0.014	0.05	U	0.014	0.15		0.014
Phosphate	mg/L				0.05	U	0.036				0.05	U	0.036			
Sulfate	mg/L	11.4		0.095	12.5		0.095	6.1		0.095	6.4		0.095	17.8		0.095
TOC	mg/L	0.95	U	2.5	5	U	2.5	1.7	U	2.5	5	U	2.5	2.6	J	2.5
Total Alkalinity	mg/L	1.8	U	2.4	3.1	J	2.4	3	J	2.4	10	U	2.4	2	U	2.4
Total Phosphorus	mg/L	0.072	J	0.036				0.085	J	0.036				0.072	J	0.036
Sulfide	mg/L	0.4	J	0.15	1	U	0.15	0.6	J	0.15	1	U	0.15	0.2	J	0.15

Table checked by: R. Baig Date: April 24, 2006

Table E-1 (e)
Summary of Validated Data
Conventional Parameters
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-15 Date Sampled: 3/14/2006 Lab ID: 934208 % Solids: NA			Sample Point MW-16 Date Sampled: 2/1/2005 Lab ID: 566704 % Solids: NA			Sample Point MW-16 Date Sampled: 3/23/2006 Lab ID: 940806 % Solids: NA			Sample Point MW-17 Date Sampled: 2/1/2005 Lab ID: 566703 %Solids: NA			Sample Point MW-17 Date Sampled: 3/13/2006 Lab ID: 934203 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Biochemical Oxygen Demand	mg/L				2	U					2	U				
Chloride	mg/L	3.4		0.85	3.5		0.85	3.1		0.85	3.9		0.85	3.1		0.85
Diss. Organic Carbon	mg/L	5	U	2.5	1.7	U	2.5	5	U	2.5	1.1	U	2.5			
Ethane	µg/L	0.025	U	0.003	0.005		0.003	0.025	U	0.003	0.005		0.003	0.025	U	0.003
Ethene	µg/L	0.025	U	0.005	0.005		0.005	0.025	U	0.005	0.005		0.005	0.025	U	0.005
Methane	µg/L	0.11	U	0.011	0.32		0.011	0.28	U	0.011	0.32		0.011	0.16	U	0.011
Nitrate	mg/L	3		0.007	2.7		0.007	1.4		0.007	3.7		0.007	2.4		0.007
Nitrite	mg/L	0.05	U	0.014	0.035		0.014	0.05	U	0.014	0.05		0.014	0.05	U	0.014
Phosphate	mg/L	0.05	U	0.036				0.05	U	0.036				0.05	U	0.036
Sulfate	mg/L	16.8		0.095	12		0.095	13.1		0.095	5		0.095	5	U	0.095
TOC	mg/L	5	U	2.5	1.1	U	2.5	5	U	2.5	1.6	U	2.5	2.6	J	2.5
Total Alkalinity	mg/L	3.1	J	2.4	1.5	U	2.4	2.8	J	2.4	0.15	U	2.4	10	U	2.4
Total Phosphorus	mg/L				0.072	J	0.036				0.084	J	0.036			
Sulfide	mg/L	1	U	0.15	0.2	J	0.15	1	U	0.15	0.4	J	0.15	1	U	0.15

Table checked by: R. Baig Date: April 24, 2006

Table E-1 (e)
Summary of Validated Data
Conventional Parameters
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-18 Date Sampled: 1/31/2005 Lab ID: 566701 % Solids: NA			Sample Point MW-18 Date Sampled: 3/16/2006 Lab ID: 934220 % Solids: NA			Sample Point MW-19 Date Sampled: 2/2/2005 Lab ID: 566709 % Solids: NA			Sample Point FMW-19 Date Sampled: 2/2/2005 Lab ID: 566712 %Solids: NA			Sample Point MW-19 Date Sampled: 3/14/2006 Lab ID: 934213 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Biochemical Oxygen Demand	mg/L	2	U					2	U		2	U				
Chloride	mg/L	5.3		0.85	8.7		0.85	2.9		0.85	3.5		0.85	2.8		0.85
Diss. Organic Carbon	mg/L	1.5	U	2.5	5	U	2.5	2.1	U	2.5	3	J	2.5	3.2	J	2.5
Ethane	µg/L	0.019		0.003	0.025	U	0.003	0.033		0.003	0.018		0.003	0.025	U	0.003
Ethene	µg/L	0.005		0.005	0.081	U	0.005	0.046		0.005	0.018		0.005	0.064	U	0.005
Methane	µg/L	0.26		0.011	1.5	U	0.011	0.19		0.011	0.17		0.011	0.34	U	0.011
Nitrate	mg/L	1.4		0.007	2.8		0.007	0.52		0.007	0.66		0.007	0.71		0.007
Nitrite	mg/L	0.05		0.014	0.05	U	0.014	0.05		0.014	0.05		0.014	0.05	U	0.014
Phosphate	mg/L				0.05	U	0.036							0.05	U	0.036
Sulfate	mg/L	0.65	J	0.095	5	U	0.095	9.9		0.095	9.6		0.095	11.3		0.095
TOC	mg/L	2.4	U	2.5	5	U	2.5	2.3	U	2.5	0.91	U	2.5	5	U	2.5
Total Alkalinity	mg/L	1.7	U	2.4	10	U	2.4	45.9		2.4	1.4	U	2.4	10	U	2.4
Total Phosphorus	mg/L	0.071	J	0.036				0.076	J	0.036	0.072	J	0.036			
Sulfide	mg/L	0.6	J	0.15	1	U	0.15	0.4	J	0.15	0.2	J	0.15	1	U	0.15

Table checked by: R. Baig Date: April 24, 2006

Table E-1 (e)
Summary of Validated Data
Conventional Parameters
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point MW-20 Date Sampled: 2/2/2005 Lab ID: 566713 % Solids: NA			Sample Point MW-20 Date Sampled: 3/14/2006 Lab ID: 934210 % Solids: NA			Sample Point FMW-20 Date Sampled: 3/14/2006 Lab ID: 934211 % Solids: NA			Sample Point MW-21 Date Sampled: 2/4/2005 Lab ID: 568406 %Solids: NA			Sample Point MW-21 Date Sampled: 3/20/2006 Lab ID: 939706 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Biochemical Oxygen Demand	mg/L	2	U								97.2	UJ				
Chloride	mg/L	4.3		0.85	4.3		0.85	4.1		0.85	8.3		0.85	2.9		0.85
Diss. Organic Carbon	mg/L	2	U	2.5							32.9		2.5	13.8		2.5
Ethane	µg/L	0.005		0.003	0.025	U	0.003	0.025	U	0.003	0.37		0.003	0.92		0.003
Ethene	µg/L	0.005		0.005	0.025	U	0.005	0.025	U	0.005	0.59		0.005	0.45		0.005
Methane	µg/L	0.058		0.011	0.14	U	0.011	0.13	U	0.011	1		0.011	1.5		0.011
Nitrate	mg/L	1.5		0.007	1.2		0.007	1.2		0.007	0.59		0.007	0.05	U	0.007
Nitrite	mg/L	0.04		0.014	0.05	U	0.014	0.05	U	0.014	0.05		0.014	0.05	U	0.014
Phosphate	mg/L				0.05	U	0.036	0.05	U	0.036				0.05	U	0.036
Sulfate	mg/L	1.5	J	0.095	1.3	J	0.095	1.3	J	0.095	7.7		0.095	8.6		0.095
TOC	mg/L	1.1	U	2.5	5	U	2.5	5	U	2.5	30.2		2.5	14.3		2.5
Total Alkalinity	mg/L	0.73	U	2.4	10	U	2.4	10	U	2.4	30.5		2.4	19.3		2.4
Total Phosphorus	mg/L	0.073	J	0.036							0.1	J	0.036			
Sulfide	mg/L	0.4	J	0.15	1	U	0.15	1	U	0.15	0.6	J	0.15	1	U	0.15

Table checked by: R. Baig Date: April 24, 2006

Table E-1 (e)
Summary of Validated Data
Conventional Parameters
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Groundwater (Monitoring Wells)

Parameter	Units	Sample Point OSW Date Sampled: 3/21/2006 Lab ID: 939714 % Solids: NA			Sample Point WS-1 Date Sampled: 2/3/2005 Lab ID: 566718 % Solids: NA			Sample Point Date Sampled: Lab ID: % Solids:			Sample Point Date Sampled: Lab ID: %Solids:			Sample Point Date Sampled: Lab ID: %Solids:		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Biochemical Oxygen Demand	mg/L				2	U										
Chloride	mg/L	3.6		0.85	3.9		0.85									
Diss. Organic Carbon	mg/L	5		2.5	1.2	U	2.5									
Ethane	µg/L	0.025		0.003	0.02		0.003									
Ethene	µg/L	0.025		0.005	0.005		0.005									
Methane	µg/L	0.14		0.011	0.27		0.011									
Nitrate	mg/L	1.2		0.007	1.5		0.007									
Nitrite	mg/L	0.05		0.014	0.05		0.014									
Phosphate	mg/L	0.05		0.036												
Sulfate	mg/L	6.4		0.095	4.6	J	0.095									
TOC	mg/L	5		2.5	1.3	U	2.5									
Total Alkalinity	mg/L	10		2.4	3.1	J	2.4									
Total Phosphorus	mg/L				0.072	J	0.036									
Sulfide	mg/L	1		0.15	0.2	J	0.15									

Table checked by: R. Baig Date: April 24, 2006

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

		Sample Point SB01-24 Date Sampled: 9/18/2002 Lab ID: Q2732-15 % Solids: 96			Sample Point SB01-72 Date Sampled: 9/18/2002 Lab ID: Q2732-16 % Solids: 95			Sample Point SB02-24 Date Sampled: 9/18/2002 Lab ID: Q2732-11 % Solids: 96			Sample Point SB02-72 Date Sampled: 9/18/2002 Lab ID: Q2732-12 %Solids: 97			Sample Point SB03-138 Date Sampled: 9/19/2002 Lab ID: U2732-2 %Solids: 96		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
Chloromethane	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
Vinyl Chloride	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
Bromomethane	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
Chloroethane	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
Trichlorofluoromethane	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
1,1-Dichloroethene	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
Acetone	µg/Kg	51		1.1	26		0.98	17		0.61	24		1.1	28	U	0.9
Carbon Disulfide	µg/Kg	11	U	1.1	10	U	0.98	3	J	0.61	11	U	1.1	10	U	0.9
Methyl acetate	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
Methylene chloride	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
trans-1,2-Dichloroethene	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
tert-Butyl methyl ether	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
1,1-Dichloroethane	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
cis-1,2-Dichloroethene	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
2-Butanone	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
Chloroform	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
1,1,1-Trichloroethane	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
Cyclohexane	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
Carbon tetrachloride	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
Benzene	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
1,2-Dichloroethane	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
Trichloroethene	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
Methylcyclohexane	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	1	J	0.9
1,2-Dichloropropane	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
Bromodichloromethane	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
cis-1,3-Dichloropropene	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB01-24 Date Sampled: 9/18/2002 Lab ID: Q2732-15 % Solids: 96			Sample Point SB01-72 Date Sampled: 9/18/2002 Lab ID: Q2732-16 % Solids: 95			Sample Point SB02-24 Date Sampled: 9/18/2002 Lab ID: Q2732-11 % Solids: 96			Sample Point SB02-72 Date Sampled: 9/18/2002 Lab ID: Q2732-12 %Solids: 97			Sample Point SB03-138 Date Sampled: 9/19/2002 Lab ID: U2732-2 %Solids: 96		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
4-Methyl-2-pentanone	µg/Kg	11	U	1.1	10	U	0.98	1	J	0.61	11	U	1.1	2	J	0.9
Toluene	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
trans-1,3-Dichloropropene	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
1,1,2-Trichloroethane	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
Tetrachloroethene	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
2-Hexanone	µg/Kg	11	U	1.1	10	U	0.98	10	UJ	0.61	11	U	1.1	10	U	0.9
Dibromochloromethane	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
1,2-Dibromoethane	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
Chlorobenzene	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
Ethylbenzene	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
Xylenes (total)	µg/Kg	11	U	0.01	10	U	0.01	10	U	0.01	11	U	0.01	10	U	0.01
Styrene	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
Bromoform	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
Isopropylbenzene	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
1,1,2,2-Tetrachloroethane	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
1,3-Dichlorobenzene	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
1,4-Dichlorobenzene	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
1,2-Dichlorobenzene	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9
1,2-Dibromo-3-chloropropane	µg/Kg	11	U	1.1	10	U	0.98	10	UJ	0.61	11	U	1.1	10	U	0.9
1,2,4-Trichlorobenzene	µg/Kg	11	U	1.1	10	U	0.98	10	U	0.61	11	U	1.1	10	U	0.9

Table checked by: D. Luer Date: 2/21/2005

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB03-24 Date Sampled: 9/19/2002 Lab ID: U2732-1 % Solids: 96			Sample Point SB04-24 Date Sampled: 9/19/2002 Lab ID: U2732-3 % Solids: 93			Sample Point SB04-72 Date Sampled: 9/19/2002 Lab ID: U2732-4 % Solids: 92			Sample Point SB05-24 Date Sampled: 9/19/2002 Lab ID: U2732-5 %Solids: 92			Sample Point SB05-72 Date Sampled: 9/19/2002 Lab ID: U2732-6 %Solids: 97		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
Chloromethane	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
Vinyl Chloride	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
Bromomethane	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
Chloroethane	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
Trichlorofluoromethane	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
1,1-Dichloroethene	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
Acetone	µg/Kg	10	U	0.9	12	U	0.9	13	U	1	68	U	0.9	11	U	1
Carbon Disulfide	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
Methyl acetate	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
Methylene chloride	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
trans-1,2-Dichloroethene	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
tert-Butyl methyl ether	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
1,1-Dichloroethane	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
cis-1,2-Dichloroethene	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
2-Butanone	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
Chloroform	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
1,1,1-Trichloroethane	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
Cyclohexane	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
Carbon tetrachloride	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
Benzene	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
1,2-Dichloroethane	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
Trichloroethene	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
Methylcyclohexane	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
1,2-Dichloropropane	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
Bromodichloromethane	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
cis-1,3-Dichloropropene	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB03-24 Date Sampled: 9/19/2002 Lab ID: U2732-1 % Solids: 96			Sample Point SB04-24 Date Sampled: 9/19/2002 Lab ID: U2732-3 % Solids: 93			Sample Point SB04-72 Date Sampled: 9/19/2002 Lab ID: U2732-4 % Solids: 92			Sample Point SB05-24 Date Sampled: 9/19/2002 Lab ID: U2732-5 %Solids: 92			Sample Point SB05-72 Date Sampled: 9/19/2002 Lab ID: U2732-6 %Solids: 97		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
4-Methyl-2-pentanone	µg/Kg	10	U	0.9	3	J	0.9	13	U	1	10	U	0.9	11	U	1
Toluene	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
trans-1,3-Dichloropropene	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
1,1,2-Trichloroethane	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
Tetrachloroethene	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
2-Hexanone	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
Dibromochloromethane	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
1,2-Dibromoethane	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
Chlorobenzene	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
Ethylbenzene	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
Xylenes (total)	µg/Kg	10	U	0.01	10	U	0.01	13	U	0.01	10	U	0.01	11	U	0.01
Styrene	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
Bromoform	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
Isopropylbenzene	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
1,1,2,2-Tetrachloroethane	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
1,3-Dichlorobenzene	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
1,4-Dichlorobenzene	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
1,2-Dichlorobenzene	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
1,2-Dibromo-3-chloropropane	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1
1,2,4-Trichlorobenzene	µg/Kg	10	U	0.9	10	U	0.9	13	U	1	10	U	0.9	11	U	1

Table checked by: D. Luer Date: 2/21/2005

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB06-24 Date Sampled: 9/19/2002 Lab ID: Q2732-19 % Solids: 94			Sample Point SB06-72 Date Sampled: 9/19/2002 Lab ID: Q2732-20 % Solids: 97			Sample Point SB07-24 Date Sampled: 9/19/2002 Lab ID: U2732-7 % Solids: 90			Sample Point DSB07-24 Date Sampled: 9/19/2002 Lab ID: U2732-9 %Solids: 92			Sample Point SB07-72 Date Sampled: 9/19/2002 Lab ID: U2732-8 %Solids: 97		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
Chloromethane	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
Vinyl Chloride	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
Bromomethane	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
Chloroethane	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
Trichlorofluoromethane	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
1,1-Dichloroethene	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
Acetone	µg/Kg	24		1	13		1.1	23	U	0.8	43	U	0.8	12	U	1
Carbon Disulfide	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
Methyl acetate	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
Methylene chloride	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
trans-1,2-Dichloroethene	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
tert-Butyl methyl ether	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
1,1-Dichloroethane	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
cis-1,2-Dichloroethene	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
2-Butanone	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
Chloroform	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
1,1,1-Trichloroethane	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
Cyclohexane	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
Carbon tetrachloride	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
Benzene	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
1,2-Dichloroethane	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
Trichloroethene	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
Methylcyclohexane	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
1,2-Dichloropropane	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
Bromodichloromethane	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
cis-1,3-Dichloropropene	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB06-24 Date Sampled: 9/19/2002 Lab ID: Q2732-19 % Solids: 94			Sample Point SB06-72 Date Sampled: 9/19/2002 Lab ID: Q2732-20 % Solids: 97			Sample Point SB07-24 Date Sampled: 9/19/2002 Lab ID: U2732-7 % Solids: 90			Sample Point DSB07-24 Date Sampled: 9/19/2002 Lab ID: U2732-9 %Solids: 92			Sample Point SB07-72 Date Sampled: 9/19/2002 Lab ID: U2732-8 %Solids: 97		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
4-Methyl-2-pentanone	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
Toluene	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
trans-1,3-Dichloropropene	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
1,1,2-Trichloroethane	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
Tetrachloroethene	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
2-Hexanone	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
Dibromochloromethane	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
1,2-Dibromoethane	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
Chlorobenzene	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
Ethylbenzene	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
Xylenes (total)	µg/Kg	11	U	0.01	11	U	0.01	10	U	0.01	10	U	0.01	12	U	0.01
Styrene	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
Bromoform	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
Isopropylbenzene	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
1,1,2,2-Tetrachloroethane	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
1,3-Dichlorobenzene	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
1,4-Dichlorobenzene	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
1,2-Dichlorobenzene	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
1,2-Dibromo-3-chloropropane	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1
1,2,4-Trichlorobenzene	µg/Kg	11	U	1	11	U	1.1	10	U	0.8	10	U	0.8	12	U	1

Table checked by: D. Luer Date: 2/21/2005

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

		Sample Point SB08-24 Date Sampled: 9/19/2002 Lab ID: U2732-10 % Solids: 95			Sample Point SB08-72 Date Sampled: 9/19/2002 Lab ID: U2732-11 % Solids: 96			Sample Point SB09-24 Date Sampled: 9/20/2002 Lab ID: V2732-6 % Solids: 95			Sample Point SB09-72 Date Sampled: 9/20/2002 Lab ID: V2732-7 %Solids: 97			Sample Point SB10-24 Date Sampled: 9/20/2002 Lab ID: V2732-4 %Solids: 93		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
Chloromethane	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
Vinyl Chloride	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
Bromomethane	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
Chloroethane	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
Trichlorofluoromethane	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
1,1-Dichloroethene	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
Acetone	µg/Kg	35	U	1	10	U	1	14	U	0.86	11	U	1.1	12	U	0.79
Carbon Disulfide	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
Methyl acetate	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
Methylene chloride	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
trans-1,2-Dichloroethene	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
tert-Butyl methyl ether	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
1,1-Dichloroethane	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
cis-1,2-Dichloroethene	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
2-Butanone	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
Chloroform	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
1,1,1-Trichloroethane	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
Cyclohexane	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
Carbon tetrachloride	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
Benzene	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
1,2-Dichloroethane	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
Trichloroethene	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
Methylcyclohexane	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
1,2-Dichloropropane	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
Bromodichloromethane	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
cis-1,3-Dichloropropene	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB08-24 Date Sampled: 9/19/2002 Lab ID: U2732-10 % Solids: 95			Sample Point SB08-72 Date Sampled: 9/19/2002 Lab ID: U2732-11 % Solids: 96			Sample Point SB09-24 Date Sampled: 9/20/2002 Lab ID: V2732-6 % Solids: 95			Sample Point SB09-72 Date Sampled: 9/20/2002 Lab ID: V2732-7 %Solids: 97			Sample Point SB10-24 Date Sampled: 9/20/2002 Lab ID: V2732-4 %Solids: 93		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
4-Methyl-2-pentanone	µg/Kg	2	J	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
Toluene	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
trans-1,3-Dichloropropene	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
1,1,2-Trichloroethane	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
Tetrachloroethene	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
2-Hexanone	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
Dibromochloromethane	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
1,2-Dibromoethane	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
Chlorobenzene	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
Ethylbenzene	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
Xylenes (total)	µg/Kg	10	U	0.01	10	U	0.01	10	U	0.01	11	U	0.01	10	U	0.01
Styrene	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
Bromoform	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
Isopropylbenzene	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
1,1,2,2-Tetrachloroethane	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
1,3-Dichlorobenzene	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
1,4-Dichlorobenzene	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
1,2-Dichlorobenzene	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
1,2-Dibromo-3-chloropropane	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79
1,2,4-Trichlorobenzene	µg/Kg	10	U	1	10	U	1	10	U	0.86	11	U	1.1	10	U	0.79

Table checked by: D. Luer Date: 2/21/2005

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

		Sample Point SB10-72 Date Sampled: 9/20/2002 Lab ID: V2732-5 % Solids: 98			Sample Point SB11-24 Date Sampled: 9/25/2002 Lab ID: X2732-6 % Solids: 93			Sample Point SB11-72 Date Sampled: 9/25/2002 Lab ID: X2732-7 % Solids: 98			Sample Point SB12-24 Date Sampled: 9/24/2002 Lab ID: V2732-9 %Solids: 93			Sample Point SB12-72 Date Sampled: 9/24/2002 Lab ID: V2732-8 %Solids: 97		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	1.1
Chloromethane	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	1.1
Vinyl Chloride	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	0.93
Bromomethane	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	1.1
Chloroethane	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	1.1
Trichlorofluoromethane	µg/Kg	3	J	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	0.93
1,1-Dichloroethene	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	0.93
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	0.93
Acetone	µg/Kg	13	U	1.2	44	U	0.89	10	U	1	10	U	0.79	10	U	0.93
Carbon Disulfide	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	1.1
Methyl acetate	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	UJ	0.93
Methylene chloride	µg/Kg	27	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	1.1
trans-1,2-Dichloroethene	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	0.93
tert-Butyl methyl ether	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	1.1
1,1-Dichloroethane	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	0.93
cis-1,2-Dichloroethene	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	0.93
2-Butanone	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	0.93
Chloroform	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	0.93
1,1,1-Trichloroethane	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	1.1
Cyclohexane	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	1.1
Carbon tetrachloride	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	0.93
Benzene	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	1.1
1,2-Dichloroethane	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	1.1
Trichloroethene	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	0.93
Methylcyclohexane	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	1.1
1,2-Dichloropropane	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	1.1
Bromodichloromethane	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	0.93
cis-1,3-Dichloropropene	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	0.93

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

		Sample Point SB10-72 Date Sampled: 9/20/2002 Lab ID: V2732-5 % Solids: 98			Sample Point SB11-24 Date Sampled: 9/25/2002 Lab ID: X2732-6 % Solids: 93			Sample Point SB11-72 Date Sampled: 9/25/2002 Lab ID: X2732-7 % Solids: 98			Sample Point SB12-24 Date Sampled: 9/24/2002 Lab ID: V2732-9 %Solids: 93			Sample Point SB12-72 Date Sampled: 9/24/2002 Lab ID: V2732-8 %Solids: 97		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
4-Methyl-2-pentanone	µg/Kg	13	U	1.2	10	U	0.89	1	J	1	10	U	0.79	10	U	1.1
Toluene	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	1.1
trans-1,3-Dichloropropene	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	0.93
1,1,2-Trichloroethane	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	0.93
Tetrachloroethene	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	0.93
2-Hexanone	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	1.1
Dibromochloromethane	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	0.93
1,2-Dibromoethane	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	0.93
Chlorobenzene	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	1.1
Ethylbenzene	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	0.93
Xylenes (total)	µg/Kg	13	U	0.01	10	U	0.01	10	U	0.01	10	U	0.01	10	U	0.01
Styrene	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	0.93
Bromoform	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	0.93
Isopropylbenzene	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	1.1
1,1,2,2-Tetrachloroethane	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	1.1
1,3-Dichlorobenzene	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	0.93
1,4-Dichlorobenzene	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	0.93
1,2-Dichlorobenzene	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	1.1
1,2-Dibromo-3-chloropropane	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	1.1
1,2,4-Trichlorobenzene	µg/Kg	13	U	1.2	10	U	0.89	10	U	1	10	U	0.79	10	U	0.93

Table checked by: D. Luer Date: 2/21/2005

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB13-108 Date Sampled: 9/20/2002 Lab ID: V2732-3 % Solids: 95			Sample Point SB13-24 Date Sampled: 9/20/2002 Lab ID: V2732-2 % Solids: 93			Sample Point SB14-24 Date Sampled: 9/25/2002 Lab ID: X2732-8 % Solids: 95			Sample Point SB14-72 Date Sampled: 9/25/2002 Lab ID: X2732-9 %Solids: 98			Sample Point SB15-24 Date Sampled: 9/20/2002 Lab ID: U2732-20 %Solids: 94		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
Chloromethane	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
Vinyl Chloride	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
Bromomethane	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
Chloroethane	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
Trichlorofluoromethane	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
1,1-Dichloroethene	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
Acetone	µg/Kg	13	U	1	15	U	0.85	13	U	0.91	13	U	1.3	28	U	3
Carbon Disulfide	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
Methyl acetate	µg/Kg	11	U	1	10	UJ	0.85	10	U	0.91	13	U	1.3	28	U	3
Methylene chloride	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
trans-1,2-Dichloroethene	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
tert-Butyl methyl ether	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
1,1-Dichloroethane	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
cis-1,2-Dichloroethene	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
2-Butanone	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
Chloroform	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
1,1,1-Trichloroethane	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
Cyclohexane	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
Carbon tetrachloride	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
Benzene	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
1,2-Dichloroethane	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
Trichloroethene	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
Methylcyclohexane	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
1,2-Dichloropropane	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
Bromodichloromethane	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
cis-1,3-Dichloropropene	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB13-108 Date Sampled: 9/20/2002 Lab ID: V2732-3 % Solids: 95			Sample Point SB13-24 Date Sampled: 9/20/2002 Lab ID: V2732-2 % Solids: 93			Sample Point SB14-24 Date Sampled: 9/25/2002 Lab ID: X2732-8 % Solids: 95			Sample Point SB14-72 Date Sampled: 9/25/2002 Lab ID: X2732-9 %Solids: 98			Sample Point SB15-24 Date Sampled: 9/20/2002 Lab ID: U2732-20 %Solids: 94		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
4-Methyl-2-pentanone	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
Toluene	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
trans-1,3-Dichloropropene	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
1,1,2-Trichloroethane	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
Tetrachloroethene	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
2-Hexanone	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
Dibromochloromethane	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
1,2-Dibromoethane	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
Chlorobenzene	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
Ethylbenzene	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
Xylenes (total)	µg/Kg	11	U	0.01	10	U	0.01	10	U	0.01	13	U	0.01	28	U	0.01
Styrene	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
Bromoform	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
Isopropylbenzene	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
1,1,2,2-Tetrachloroethane	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
1,3-Dichlorobenzene	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
1,4-Dichlorobenzene	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
1,2-Dichlorobenzene	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
1,2-Dibromo-3-chloropropane	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3
1,2,4-Trichlorobenzene	µg/Kg	11	U	1	10	U	0.85	10	U	0.91	13	U	1.3	28	U	3

Table checked by: D. Luer Date: 2/21/2005

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB15-72 Date Sampled: 9/20/2002 Lab ID: V2732-1 % Solids: 98			Sample Point SB16-24 Date Sampled: 9/18/2002 Lab ID: Q2732-13 % Solids: 94			Sample Point SB16-72 Date Sampled: 9/18/2002 Lab ID: Q2732-14 % Solids: 98			Sample Point SB17-24 Date Sampled: 9/18/2002 Lab ID: Q2732-3 %Solids: 96			Sample Point SB17-72 Date Sampled: 9/18/2002 Lab ID: Q2732-4 %Solids: 98		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
Chloromethane	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
Vinyl Chloride	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
Bromomethane	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
Chloroethane	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
Trichlorofluoromethane	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
1,1-Dichloroethene	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
Acetone	µg/Kg	13	U	1.2	22		0.87	9	J	1.1	15		0.88	16		1.1
Carbon Disulfide	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	2	J	1.1
Methyl acetate	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
Methylene chloride	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
trans-1,2-Dichloroethene	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
tert-Butyl methyl ether	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
1,1-Dichloroethane	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
cis-1,2-Dichloroethene	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
2-Butanone	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
Chloroform	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
1,1,1-Trichloroethane	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
Cyclohexane	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
Carbon tetrachloride	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
Benzene	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
1,2-Dichloroethane	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
Trichloroethene	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
Methylcyclohexane	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
1,2-Dichloropropane	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
Bromodichloromethane	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
cis-1,3-Dichloropropene	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB15-72 Date Sampled: 9/20/2002 Lab ID: V2732-1 % Solids: 98			Sample Point SB16-24 Date Sampled: 9/18/2002 Lab ID: Q2732-13 % Solids: 94			Sample Point SB16-72 Date Sampled: 9/18/2002 Lab ID: Q2732-14 % Solids: 98			Sample Point SB17-24 Date Sampled: 9/18/2002 Lab ID: Q2732-3 %Solids: 96			Sample Point SB17-72 Date Sampled: 9/18/2002 Lab ID: Q2732-4 %Solids: 98		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
4-Methyl-2-pentanone	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	UJ	0.88	11	UJ	1.1
Toluene	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
trans-1,3-Dichloropropene	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
1,1,2-Trichloroethane	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
Tetrachloroethene	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
2-Hexanone	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	UJ	0.88	11	UJ	1.1
Dibromochloromethane	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
1,2-Dibromoethane	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
Chlorobenzene	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
Ethylbenzene	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
Xylenes (total)	µg/Kg	13	U	0.01	10	U	0.01	12	U	0.01	10	U	0.01	11	U	0.01
Styrene	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
Bromoform	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
Isopropylbenzene	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
1,1,2,2-Tetrachloroethane	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
1,3-Dichlorobenzene	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
1,4-Dichlorobenzene	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
1,2-Dichlorobenzene	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1
1,2-Dibromo-3-chloropropane	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	UJ	0.88	11	UJ	1.1
1,2,4-Trichlorobenzene	µg/Kg	13	U	1.2	10	U	0.87	12	U	1.1	10	U	0.88	11	U	1.1

Table checked by: D. Luer Date: 2/21/2005

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

		Sample Point SB18-24 Date Sampled: 9/25/2002 Lab ID: X2732-10 % Solids: 96			Sample Point SB18-72 Date Sampled: 9/25/2002 Lab ID: X2732-11 % Solids: 98			Sample Point SB19-24 Date Sampled: 9/18/2002 Lab ID: Q2732-5 % Solids: 95			Sample Point SB19-72 Date Sampled: 9/18/2002 Lab ID: Q2732-10 %Solids: 97			Sample Point SB20-24 Date Sampled: 9/25/2002 Lab ID: X2732-12 %Solids: 96		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
Chloromethane	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
Vinyl Chloride	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
Bromomethane	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
Chloroethane	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
Trichlorofluoromethane	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
1,1-Dichloroethene	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
Acetone	µg/Kg	25	U	1	10	U	1	28		1	9	J	1	21	U	0.94
Carbon Disulfide	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
Methyl acetate	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
Methylene chloride	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
trans-1,2-Dichloroethene	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
tert-Butyl methyl ether	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
1,1-Dichloroethane	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
cis-1,2-Dichloroethene	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
2-Butanone	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
Chloroform	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
1,1,1-Trichloroethane	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
Cyclohexane	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
Carbon tetrachloride	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
Benzene	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
1,2-Dichloroethane	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
Trichloroethene	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
Methylcyclohexane	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
1,2-Dichloropropane	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
Bromodichloromethane	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
cis-1,3-Dichloropropene	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB18-24 Date Sampled: 9/25/2002 Lab ID: X2732-10 % Solids: 96			Sample Point SB18-72 Date Sampled: 9/25/2002 Lab ID: X2732-11 % Solids: 98			Sample Point SB19-24 Date Sampled: 9/18/2002 Lab ID: Q2732-5 % Solids: 95			Sample Point SB19-72 Date Sampled: 9/18/2002 Lab ID: Q2732-10 %Solids: 97			Sample Point SB20-24 Date Sampled: 9/25/2002 Lab ID: X2732-12 %Solids: 96		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
4-Methyl-2-pentanone	µg/Kg	1	J	1	10	U	1	10	UJ	1	1	J	1	10	U	0.94
Toluene	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
trans-1,3-Dichloropropene	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
1,1,2-Trichloroethane	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
Tetrachloroethene	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
2-Hexanone	µg/Kg	11	U	1	10	U	1	10	UJ	1	11	UJ	1	10	U	0.94
Dibromochloromethane	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
1,2-Dibromoethane	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
Chlorobenzene	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
Ethylbenzene	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
Xylenes (total)	µg/Kg	11	U	0.01	10	U	0.01	10	U	0.01	11	U	0.01	10	U	0.01
Styrene	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
Bromoform	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
Isopropylbenzene	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
1,1,2,2-Tetrachloroethane	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
1,3-Dichlorobenzene	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
1,4-Dichlorobenzene	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
1,2-Dichlorobenzene	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94
1,2-Dibromo-3-chloropropane	µg/Kg	11	U	1	10	U	1	10	UJ	1	11	UJ	1	10	U	0.94
1,2,4-Trichlorobenzene	µg/Kg	11	U	1	10	U	1	10	U	1	11	U	1	10	U	0.94

Table checked by: D. Luer Date: 2/21/2005

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

		Sample Point SB20-72 Date Sampled: 9/25/2002 Lab ID: X2732-13 % Solids: 96			Sample Point SB21-24 Date Sampled: 9/25/2002 Lab ID: X2732-19 % Solids: 97			Sample Point SB21-72 Date Sampled: 9/25/2002 Lab ID: X2732-20 % Solids: 98			Sample Point SB22-24 Date Sampled: 9/20/2002 Lab ID: U2732-18 %Solids: 92			Sample Point SB22-72 Date Sampled: 9/20/2002 Lab ID: U2732-19 %Solids: 85		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
Chloromethane	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
Vinyl Chloride	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
Bromomethane	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
Chloroethane	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
Trichlorofluoromethane	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
1,1-Dichloroethene	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
Acetone	µg/Kg	10	U	1	54	U	1	11	U	0.9	10	U	0.9	12	U	1
Carbon Disulfide	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
Methyl acetate	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
Methylene chloride	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
trans-1,2-Dichloroethene	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
tert-Butyl methyl ether	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
1,1-Dichloroethane	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
cis-1,2-Dichloroethene	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
2-Butanone	µg/Kg	10	U	1	11	U	1	6	J	0.9	10	U	0.9	12	U	1
Chloroform	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
1,1,1-Trichloroethane	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
Cyclohexane	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
Carbon tetrachloride	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
Benzene	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
1,2-Dichloroethane	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
Trichloroethene	µg/Kg	10	U	1	4	J	1	10	U	0.9	10	U	0.9	12	U	1
Methylcyclohexane	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
1,2-Dichloropropane	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
Bromodichloromethane	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
cis-1,3-Dichloropropene	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

		Sample Point SB20-72 Date Sampled: 9/25/2002 Lab ID: X2732-13 % Solids: 96			Sample Point SB21-24 Date Sampled: 9/25/2002 Lab ID: X2732-19 % Solids: 97			Sample Point SB21-72 Date Sampled: 9/25/2002 Lab ID: X2732-20 % Solids: 98			Sample Point SB22-24 Date Sampled: 9/20/2002 Lab ID: U2732-18 %Solids: 92			Sample Point SB22-72 Date Sampled: 9/20/2002 Lab ID: U2732-19 %Solids: 85		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
4-Methyl-2-pentanone	µg/Kg	1	J	1	11	U	1	2	J	0.9	10	U	0.9	12	U	1
Toluene	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
trans-1,3-Dichloropropene	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
1,1,2-Trichloroethane	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
Tetrachloroethene	µg/Kg	10	U	1	18		1	10	U	0.9	10	U	0.9	12	U	1
2-Hexanone	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
Dibromochloromethane	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
1,2-Dibromoethane	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
Chlorobenzene	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
Ethylbenzene	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
Xylenes (total)	µg/Kg	10	U	0.01	11	U	0.01	10	U	0.01	10	U	0.01	12	U	0.01
Styrene	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
Bromoform	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
Isopropylbenzene	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
1,1,2,2-Tetrachloroethane	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
1,3-Dichlorobenzene	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
1,4-Dichlorobenzene	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
1,2-Dichlorobenzene	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
1,2-Dibromo-3-chloropropane	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1
1,2,4-Trichlorobenzene	µg/Kg	10	U	1	11	U	1	10	U	0.9	10	U	0.9	12	U	1

Table checked by: D. Luer Date: 2/21/2005

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

		Sample Point SB23-24 Date Sampled: 9/18/2002 Lab ID: Q2732-1 % Solids: 94			Sample Point SB23-72 Date Sampled: 9/18/2002 Lab ID: Q2732-2 % Solids: 97			Sample Point SB24-24 Date Sampled: 9/25/2002 Lab ID: X2732-14 % Solids: 95			Sample Point SB24-72 Date Sampled: 9/25/2002 Lab ID: X2732-15 %Solids: 98			Sample Point SB25-192 Date Sampled: 9/19/2002 Lab ID: Q2732-18 %Solids: 88		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
Chloromethane	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
Vinyl Chloride	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
Bromomethane	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
Chloroethane	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
Trichlorofluoromethane	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
1,1-Dichloroethene	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
Acetone	µg/Kg	31		0.89	14		1	31	U	1.1	11	U	1.1	16		0.94
Carbon Disulfide	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
Methyl acetate	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
Methylene chloride	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
trans-1,2-Dichloroethene	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
tert-Butyl methyl ether	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
1,1-Dichloroethane	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
cis-1,2-Dichloroethene	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
2-Butanone	µg/Kg	10	U	0.89	11	U	1	5	J	1.1	11	U	1.1	11	U	0.94
Chloroform	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
1,1,1-Trichloroethane	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
Cyclohexane	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
Carbon tetrachloride	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
Benzene	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
1,2-Dichloroethane	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
Trichloroethene	µg/Kg	10	U	0.89	11	U	1	37		1.1	11	U	1.1	1	J	0.94
Methylcyclohexane	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
1,2-Dichloropropane	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
Bromodichloromethane	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
cis-1,3-Dichloropropene	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB23-24 Date Sampled: 9/18/2002 Lab ID: Q2732-1 % Solids: 94			Sample Point SB23-72 Date Sampled: 9/18/2002 Lab ID: Q2732-2 % Solids: 97			Sample Point SB24-24 Date Sampled: 9/25/2002 Lab ID: X2732-14 % Solids: 95			Sample Point SB24-72 Date Sampled: 9/25/2002 Lab ID: X2732-15 %Solids: 98			Sample Point SB25-192 Date Sampled: 9/19/2002 Lab ID: Q2732-18 %Solids: 88		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
4-Methyl-2-pentanone	µg/Kg	10	UJ	0.89	2	J	1	11	U	1.1	11	U	1.1	1	J	0.94
Toluene	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
trans-1,3-Dichloropropene	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
1,1,2-Trichloroethane	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
Tetrachloroethene	µg/Kg	10	U	0.89	11	U	1	89		1.1	11	U	1.1	2	J	0.94
2-Hexanone	µg/Kg	10	UJ	0.89	11	UJ	1	11	U	1.1	11	U	1.1	11	U	0.94
Dibromochloromethane	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
1,2-Dibromoethane	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
Chlorobenzene	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
Ethylbenzene	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
Xylenes (total)	µg/Kg	10	U	0.01	11	U	0.01	11	U	0.01	11	U	0.01	11	U	0.01
Styrene	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
Bromoform	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
Isopropylbenzene	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
1,1,2,2-Tetrachloroethane	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
1,3-Dichlorobenzene	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
1,4-Dichlorobenzene	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
1,2-Dichlorobenzene	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94
1,2-Dibromo-3-chloropropane	µg/Kg	10	UJ	0.89	11	UJ	1	11	U	1.1	11	U	1.1	11	U	0.94
1,2,4-Trichlorobenzene	µg/Kg	10	U	0.89	11	U	1	11	U	1.1	11	U	1.1	11	U	0.94

Table checked by: D. Luer Date: 2/21/2005

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB25-24 Date Sampled: 9/19/2002 Lab ID: Q2732-17 % Solids: 93			Sample Point SB26-24 Date Sampled: 9/18/2002 Lab ID: Q2732-8 % Solids: 94			Sample Point SB26-72 Date Sampled: 9/18/2002 Lab ID: Q2732-9 % Solids: 94			Sample Point SB27-24 Date Sampled: 9/20/2002 Lab ID: U2732-14 %Solids: 95			Sample Point SB27-72 Date Sampled: 9/20/2002 Lab ID: U2732-15 %Solids: 96		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
Chloromethane	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
Vinyl Chloride	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
Bromomethane	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
Chloroethane	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
Trichlorofluoromethane	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
1,1-Dichloroethene	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
Acetone	µg/Kg	120		0.88	20		0.88	47		0.92	44	U	1	12	U	1
Carbon Disulfide	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
Methyl acetate	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
Methylene chloride	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
trans-1,2-Dichloroethene	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
tert-Butyl methyl ether	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
1,1-Dichloroethane	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
cis-1,2-Dichloroethene	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
2-Butanone	µg/Kg	8	J	0.88	10	U	0.88	9	J	0.92	13	U	1	11	U	1
Chloroform	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
1,1,1-Trichloroethane	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
Cyclohexane	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
Carbon tetrachloride	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
Benzene	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
1,2-Dichloroethane	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
Trichloroethene	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	2	J	1	11	U	1
Methylcyclohexane	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
1,2-Dichloropropane	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
Bromodichloromethane	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
cis-1,3-Dichloropropene	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB25-24 Date Sampled: 9/19/2002 Lab ID: Q2732-17 % Solids: 93			Sample Point SB26-24 Date Sampled: 9/18/2002 Lab ID: Q2732-8 % Solids: 94			Sample Point SB26-72 Date Sampled: 9/18/2002 Lab ID: Q2732-9 % Solids: 94			Sample Point SB27-24 Date Sampled: 9/20/2002 Lab ID: U2732-14 %Solids: 95			Sample Point SB27-72 Date Sampled: 9/20/2002 Lab ID: U2732-15 %Solids: 96		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
4-Methyl-2-pentanone	µg/Kg	10	U	0.88	10	UJ	0.88	2	J	0.92	13	U	1	11	U	1
Toluene	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
trans-1,3-Dichloropropene	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
1,1,2-Trichloroethane	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
Tetrachloroethene	µg/Kg	2	J	0.88	2	J	0.88	10	U	0.92	9	J	1	11	U	1
2-Hexanone	µg/Kg	10	U	0.88	10	UJ	0.88	10	UJ	0.92	13	U	1	11	U	1
Dibromochloromethane	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
1,2-Dibromoethane	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
Chlorobenzene	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
Ethylbenzene	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
Xylenes (total)	µg/Kg	10	U	0.01	10	U	0.01	10	U	0.01	13	U	0.01	11	U	0.01
Styrene	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
Bromoform	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
Isopropylbenzene	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
1,1,2,2-Tetrachloroethane	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
1,3-Dichlorobenzene	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
1,4-Dichlorobenzene	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
1,2-Dichlorobenzene	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1
1,2-Dibromo-3-chloropropane	µg/Kg	10	U	0.88	10	UJ	0.88	10	UJ	0.92	13	U	1	11	U	1
1,2,4-Trichlorobenzene	µg/Kg	10	U	0.88	10	U	0.88	10	U	0.92	13	U	1	11	U	1

Table checked by: D. Luer Date: 2/21/2005

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB28-156 Date Sampled: 9/20/2002 Lab ID: U2732-17 % Solids: 98			Sample Point SB28-24 Date Sampled: 9/20/2002 Lab ID: U2732-16 % Solids: 97			Sample Point SB29-228 Date Sampled: 9/19/2002 Lab ID: U2732-13 % Solids: 96			Sample Point SB29-24 Date Sampled: 9/19/2002 Lab ID: U2732-12 %Solids: 96			Sample Point SB30-24 Date Sampled: 9/25/2002 Lab ID: X2732-16 %Solids: 94		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
Chloromethane	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
Vinyl Chloride	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
Bromomethane	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
Chloroethane	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
Trichlorofluoromethane	µg/Kg	13	U	1	2	J	1	10	U	1	10	U	1	10	U	0.9
1,1-Dichloroethene	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
Acetone	µg/Kg	13	U	1	25	U	1	10	U	1	22	U	1	19	U	0.9
Carbon Disulfide	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
Methyl acetate	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
Methylene chloride	µg/Kg	13	U	1	12	U	1	10	U	1	10	U	1	10	U	0.9
trans-1,2-Dichloroethene	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
tert-Butyl methyl ether	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
1,1-Dichloroethane	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
cis-1,2-Dichloroethene	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
2-Butanone	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
Chloroform	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
1,1,1-Trichloroethane	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
Cyclohexane	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
Carbon tetrachloride	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
Benzene	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
1,2-Dichloroethane	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
Trichloroethene	µg/Kg	13	U	1	2	J	1	10	U	1	10	U	1	10	U	0.9
Methylcyclohexane	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
1,2-Dichloropropane	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
Bromodichloromethane	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
cis-1,3-Dichloropropene	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB28-156 Date Sampled: 9/20/2002 Lab ID: U2732-17 % Solids: 98			Sample Point SB28-24 Date Sampled: 9/20/2002 Lab ID: U2732-16 % Solids: 97			Sample Point SB29-228 Date Sampled: 9/19/2002 Lab ID: U2732-13 % Solids: 96			Sample Point SB29-24 Date Sampled: 9/19/2002 Lab ID: U2732-12 %Solids: 96			Sample Point SB30-24 Date Sampled: 9/25/2002 Lab ID: X2732-16 %Solids: 94		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
4-Methyl-2-pentanone	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
Toluene	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
trans-1,3-Dichloropropene	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
1,1,2-Trichloroethane	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
Tetrachloroethene	µg/Kg	13	U	1	8	J	1	10	U	1	10	U	1	1	J	0.9
2-Hexanone	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
Dibromochloromethane	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
1,2-Dibromoethane	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
Chlorobenzene	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
Ethylbenzene	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
Xylenes (total)	µg/Kg	13	U	0.01	11	U	0.01	10	U	0.01	10	U	0.01	10	U	0.01
Styrene	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
Bromoform	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
Isopropylbenzene	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
1,1,2,2-Tetrachloroethane	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
1,3-Dichlorobenzene	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
1,4-Dichlorobenzene	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
1,2-Dichlorobenzene	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
1,2-Dibromo-3-chloropropane	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9
1,2,4-Trichlorobenzene	µg/Kg	13	U	1	11	U	1	10	U	1	10	U	1	10	U	0.9

Table checked by: D. Luer Date: 2/21/2005

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

		Sample Point SB30-72 Date Sampled: 9/25/2002 Lab ID: X2732-17 % Solids: 97			Sample Point SB31-204 Date Sampled: 9/25/2002 Lab ID: X2732-5 % Solids: 96			Sample Point DSB31-204 Date Sampled: 9/25/2002 Lab ID: X2732-4 % Solids: 98			Sample Point SB31-24 Date Sampled: 9/25/2002 Lab ID: X2732-18 %Solids: 94			Sample Point SB32-24 Date Sampled: 9/25/2002 Lab ID: A2732-1 %Solids: 95		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
Chloromethane	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
Vinyl Chloride	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
Bromomethane	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
Chloroethane	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
Trichlorofluoromethane	µg/Kg	11	U	1.1	10	U	0.97	2	J	0.94	1	J	0.86	11	U	1.1
1,1-Dichloroethene	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
Acetone	µg/Kg	13	U	1.1	110		0.97	99		0.94	27	U	0.86	11	U	1.1
Carbon Disulfide	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
Methyl acetate	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
Methylene chloride	µg/Kg	11	U	1.1	10	U	0.97	15	U	0.94	13	U	0.86	11	U	1.1
trans-1,2-Dichloroethene	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
tert-Butyl methyl ether	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
1,1-Dichloroethane	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
cis-1,2-Dichloroethene	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
2-Butanone	µg/Kg	11	U	1.1	13		0.97	10	U	0.94	10	U	0.86	11	U	1.1
Chloroform	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
1,1,1-Trichloroethane	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
Cyclohexane	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
Carbon tetrachloride	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
Benzene	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
1,2-Dichloroethane	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
Trichloroethene	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
Methylcyclohexane	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
1,2-Dichloropropane	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
Bromodichloromethane	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
cis-1,3-Dichloropropene	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

		Sample Point SB30-72 Date Sampled: 9/25/2002 Lab ID: X2732-17 % Solids: 97			Sample Point SB31-204 Date Sampled: 9/25/2002 Lab ID: X2732-5 % Solids: 96			Sample Point DSB31-204 Date Sampled: 9/25/2002 Lab ID: X2732-4 % Solids: 98			Sample Point SB31-24 Date Sampled: 9/25/2002 Lab ID: X2732-18 %Solids: 94			Sample Point SB32-24 Date Sampled: 9/25/2002 Lab ID: A2732-1 %Solids: 95		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
4-Methyl-2-pentanone	µg/Kg	2	J	1.1	2	J	0.97	10	U	0.94	10	U	0.86	11	U	1.1
Toluene	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
trans-1,3-Dichloropropene	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
1,1,2-Trichloroethane	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
Tetrachloroethene	µg/Kg	11	U	1.1	1	J	0.97	10	U	0.94	1	J	0.86	11	U	1.1
2-Hexanone	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
Dibromochloromethane	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
1,2-Dibromoethane	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
Chlorobenzene	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
Ethylbenzene	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
Xylenes (total)	µg/Kg	11	U	0.01	10	U	0.01	10	U	0.01	10	U	0.01	11	U	0.01
Styrene	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
Bromoform	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
Isopropylbenzene	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
1,1,2,2-Tetrachloroethane	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
1,3-Dichlorobenzene	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
1,4-Dichlorobenzene	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
1,2-Dichlorobenzene	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
1,2-Dibromo-3-chloropropane	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1
1,2,4-Trichlorobenzene	µg/Kg	11	U	1.1	10	U	0.97	10	U	0.94	10	U	0.86	11	U	1.1

Table checked by: D. Luer Date: 2/21/2005

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB32-72 Date Sampled: 9/25/2002 Lab ID: A2732-2 % Solids: 97			Sample Point SB33-24 Date Sampled: 9/18/2002 Lab ID: Q2732-6 % Solids: 96			Sample Point SB33-72 Date Sampled: 9/18/2002 Lab ID: Q2732-7 % Solids: 98			Sample Point SB34-24 Date Sampled: 9/24/2002 Lab ID: V2732-10 %Solids: 94			Sample Point SB34-72 Date Sampled: 9/24/2002 Lab ID: V2732-11 %Solids: 94		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
Chloromethane	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
Vinyl Chloride	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
Bromomethane	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
Chloroethane	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
Trichlorofluoromethane	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
1,1-Dichloroethene	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
Acetone	µg/Kg	10	U	0.99	46		1.1	16		0.94	15	U	0.94	12	U	0.99
Carbon Disulfide	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
Methyl acetate	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	UJ	0.94	11	UJ	0.99
Methylene chloride	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
trans-1,2-Dichloroethene	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
tert-Butyl methyl ether	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
1,1-Dichloroethane	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
cis-1,2-Dichloroethene	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
2-Butanone	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
Chloroform	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
1,1,1-Trichloroethane	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
Cyclohexane	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
Carbon tetrachloride	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
Benzene	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
1,2-Dichloroethane	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
Trichloroethene	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
Methylcyclohexane	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
1,2-Dichloropropane	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
Bromodichloromethane	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
cis-1,3-Dichloropropene	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB32-72 Date Sampled: 9/25/2002 Lab ID: A2732-2 % Solids: 97			Sample Point SB33-24 Date Sampled: 9/18/2002 Lab ID: Q2732-6 % Solids: 96			Sample Point SB33-72 Date Sampled: 9/18/2002 Lab ID: Q2732-7 % Solids: 98			Sample Point SB34-24 Date Sampled: 9/24/2002 Lab ID: V2732-10 %Solids: 94			Sample Point SB34-72 Date Sampled: 9/24/2002 Lab ID: V2732-11 %Solids: 94		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
4-Methyl-2-pentanone	µg/Kg	10	U	0.99	11	UJ	1.1	3	J	0.94	10	U	0.94	11	U	0.99
Toluene	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
trans-1,3-Dichloropropene	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
1,1,2-Trichloroethane	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
Tetrachloroethene	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
2-Hexanone	µg/Kg	10	U	0.99	11	UJ	1.1	10	UJ	0.94	10	U	0.94	11	U	0.99
Dibromochloromethane	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
1,2-Dibromoethane	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
Chlorobenzene	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
Ethylbenzene	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
Xylenes (total)	µg/Kg	10	U	0.01	11	U	0.01	10	U	0.01	10	U	0.01	11	U	0.01
Styrene	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
Bromoform	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
Isopropylbenzene	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
1,1,2,2-Tetrachloroethane	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
1,3-Dichlorobenzene	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
1,4-Dichlorobenzene	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
1,2-Dichlorobenzene	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99
1,2-Dibromo-3-chloropropane	µg/Kg	10	U	0.99	11	UJ	1.1	10	UJ	0.94	10	U	0.94	11	U	0.99
1,2,4-Trichlorobenzene	µg/Kg	10	U	0.99	11	U	1.1	10	U	0.94	10	U	0.94	11	U	0.99

Table checked by: D. Luer Date: 2/21/2005

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB35-24 Date Sampled: 9/24/2002 Lab ID: V2732-18 % Solids: 95			Sample Point SB35-72 Date Sampled: 9/24/2002 Lab ID: V2732-19 % Solids: 95			Sample Point SB36-24 Date Sampled: 9/24/2002 Lab ID: V2732-20 % Solids: 92			Sample Point SB36-72 Date Sampled: 9/24/2002 Lab ID: X2732-1 %Solids: 97			Sample Point SB37-24 Date Sampled: 9/24/2002 Lab ID: X2732-2 %Solids: 93		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
Chloromethane	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
Vinyl Chloride	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
Bromomethane	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
Chloroethane	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
Trichlorofluoromethane	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
1,1-Dichloroethene	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
Acetone	µg/Kg	32	U	0.87	10	U	0.97	46	U	0.87	13	U	1.3	22	U	0.85
Carbon Disulfide	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
Methyl acetate	µg/Kg	10	UJ	0.87	10	UJ	0.97	10	U	0.87	13	UJ	1.3	10	UJ	0.85
Methylene chloride	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
trans-1,2-Dichloroethene	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
tert-Butyl methyl ether	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
1,1-Dichloroethane	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
cis-1,2-Dichloroethene	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
2-Butanone	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
Chloroform	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
1,1,1-Trichloroethane	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
Cyclohexane	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
Carbon tetrachloride	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
Benzene	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
1,2-Dichloroethane	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
Trichloroethene	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
Methylcyclohexane	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
1,2-Dichloropropane	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
Bromodichloromethane	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
cis-1,3-Dichloropropene	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

		Sample Point SB35-24 Date Sampled: 9/24/2002 Lab ID: V2732-18 % Solids: 95			Sample Point SB35-72 Date Sampled: 9/24/2002 Lab ID: V2732-19 % Solids: 95			Sample Point SB36-24 Date Sampled: 9/24/2002 Lab ID: V2732-20 % Solids: 92			Sample Point SB36-72 Date Sampled: 9/24/2002 Lab ID: X2732-1 %Solids: 97			Sample Point SB37-24 Date Sampled: 9/24/2002 Lab ID: X2732-2 %Solids: 93		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
4-Methyl-2-pentanone	µg/Kg	10	U	0.87	1	J	0.97	1	J	0.87	13	U	1.3	10	U	0.85
Toluene	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
trans-1,3-Dichloropropene	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
1,1,2-Trichloroethane	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
Tetrachloroethene	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	13		0.85
2-Hexanone	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
Dibromochloromethane	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
1,2-Dibromoethane	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
Chlorobenzene	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
Ethylbenzene	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
Xylenes (total)	µg/Kg	10	U	0.01	10	U	0.01	10	U	0.01	13	U	0.01	10	U	0.01
Styrene	µg/Kg	23		0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
Bromoform	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
Isopropylbenzene	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
1,1,2,2-Tetrachloroethane	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
1,3-Dichlorobenzene	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
1,4-Dichlorobenzene	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
1,2-Dichlorobenzene	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
1,2-Dibromo-3-chloropropane	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85
1,2,4-Trichlorobenzene	µg/Kg	10	U	0.87	10	U	0.97	10	U	0.87	13	U	1.3	10	U	0.85

Table checked by: D. Luer Date: 2/21/2005

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB37-72 Date Sampled: 9/24/2002 Lab ID: X2732-3 % Solids: 96			Sample Point SB38-24 Date Sampled: 9/24/2002 Lab ID: V2732-12 % Solids: 97			Sample Point SB38-72 Date Sampled: 9/24/2002 Lab ID: V2732-13 % Solids: 99			Sample Point SB39-24 Date Sampled: 9/24/2002 Lab ID: V2732-14 %Solids: 93			Sample Point SB39-72 Date Sampled: 9/24/2002 Lab ID: V2732-15 %Solids: 98		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
Chloromethane	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
Vinyl Chloride	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
Bromomethane	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
Chloroethane	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
Trichlorofluoromethane	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
1,1-Dichloroethene	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
Acetone	µg/Kg	10	U	0.93	26	U	0.93	17	U	1.7	25	U	0.91	11	U	1.1
Carbon Disulfide	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
Methyl acetate	µg/Kg	10	UJ	0.93	10	UJ	0.93	17	UJ	1.7	10	UJ	0.91	11	UJ	1.1
Methylene chloride	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
trans-1,2-Dichloroethene	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
tert-Butyl methyl ether	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
1,1-Dichloroethane	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
cis-1,2-Dichloroethene	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
2-Butanone	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
Chloroform	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
1,1,1-Trichloroethane	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
Cyclohexane	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
Carbon tetrachloride	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
Benzene	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
1,2-Dichloroethane	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
Trichloroethene	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
Methylcyclohexane	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
1,2-Dichloropropane	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
Bromodichloromethane	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
cis-1,3-Dichloropropene	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB37-72 Date Sampled: 9/24/2002 Lab ID: X2732-3 % Solids: 96			Sample Point SB38-24 Date Sampled: 9/24/2002 Lab ID: V2732-12 % Solids: 97			Sample Point SB38-72 Date Sampled: 9/24/2002 Lab ID: V2732-13 % Solids: 99			Sample Point SB39-24 Date Sampled: 9/24/2002 Lab ID: V2732-14 %Solids: 93			Sample Point SB39-72 Date Sampled: 9/24/2002 Lab ID: V2732-15 %Solids: 98		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
4-Methyl-2-pentanone	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	1	J	1
Toluene	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
trans-1,3-Dichloropropene	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
1,1,2-Trichloroethane	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
Tetrachloroethene	µg/Kg	10	U	0.93	1	J	0.93	17	U	1.7	3	J	0.91	11	U	1.1
2-Hexanone	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
Dibromochloromethane	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
1,2-Dibromoethane	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
Chlorobenzene	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
Ethylbenzene	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
Xylenes (total)	µg/Kg	10	U	0.01	10	U	0.01	17	U	0.01	10	U	0.01	11	U	0.01
Styrene	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	1	J	0.91	11	U	1.1
Bromoform	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
Isopropylbenzene	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
1,1,2,2-Tetrachloroethane	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
1,3-Dichlorobenzene	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
1,4-Dichlorobenzene	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
1,2-Dichlorobenzene	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
1,2-Dibromo-3-chloropropane	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1
1,2,4-Trichlorobenzene	µg/Kg	10	U	0.93	10	U	0.93	17	U	1.7	10	U	0.91	11	U	1.1

Table checked by: D. Luer Date: 2/21/2005

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB40-24 Date Sampled: 9/24/2002 Lab ID: V2732-16 % Solids: 94			Sample Point SB40-72 Date Sampled: 9/24/2002 Lab ID: V2732-17 % Solids: 97			Sample Point SS01-12 Date Sampled: 9/26/2002 Lab ID: A2732-5 % Solids: 96			Sample Point SS02-12 Date Sampled: 9/26/2002 Lab ID: A2732-6 %Solids: 92			Sample Point SS03-12 Date Sampled: 9/26/2002 Lab ID: A2732-7 %Solids: 94		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	UJ	1.4	11	UJ	1
Chloromethane	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
Vinyl Chloride	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	UJ	1.4	11	UJ	1
Bromomethane	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
Chloroethane	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
Trichlorofluoromethane	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	UJ	1.4	11	UJ	1
1,1-Dichloroethene	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	UJ	1.4	11	UJ	1
Acetone	µg/Kg	25	U	0.9	16	U	1.6	45	U	1	200		1.4	47	U	1
Carbon Disulfide	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
Methyl acetate	µg/Kg	10	UJ	0.9	16	UJ	1.6	10	U	1	15	U	1.4	11	U	1
Methylene chloride	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
trans-1,2-Dichloroethene	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
tert-Butyl methyl ether	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	UJ	1.4	11	UJ	1
1,1-Dichloroethane	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
cis-1,2-Dichloroethene	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
2-Butanone	µg/Kg	10	U	0.9	16	U	1.6	6	J	1	15		1.4	11	U	1
Chloroform	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
1,1,1-Trichloroethane	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
Cyclohexane	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
Carbon tetrachloride	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
Benzene	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
1,2-Dichloroethane	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
Trichloroethene	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
Methylcyclohexane	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
1,2-Dichloropropane	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
Bromodichloromethane	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
cis-1,3-Dichloropropene	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

		Sample Point SB40-24 Date Sampled: 9/24/2002 Lab ID: V2732-16 % Solids: 94			Sample Point SB40-72 Date Sampled: 9/24/2002 Lab ID: V2732-17 % Solids: 97			Sample Point SS01-12 Date Sampled: 9/26/2002 Lab ID: A2732-5 % Solids: 96			Sample Point SS02-12 Date Sampled: 9/26/2002 Lab ID: A2732-6 %Solids: 92			Sample Point SS03-12 Date Sampled: 9/26/2002 Lab ID: A2732-7 %Solids: 94		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
4-Methyl-2-pentanone	µg/Kg	10	U	0.9	2	J	1.6	10	U	1	15	U	1.4	11	U	1
Toluene	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
trans-1,3-Dichloropropene	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
1,1,2-Trichloroethane	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
Tetrachloroethene	µg/Kg	4	J	0.9	16	U	1.6	10	U	1	15	UJ	1.4	11	UJ	1
2-Hexanone	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
Dibromochloromethane	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
1,2-Dibromoethane	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
Chlorobenzene	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
Ethylbenzene	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
Xylenes (total)	µg/Kg	10	U	0.01	16	U	0.01	10	U	0.01	15	U	0.01	11	U	0.01
Styrene	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
Bromoform	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
Isopropylbenzene	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
1,1,2,2-Tetrachloroethane	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
1,3-Dichlorobenzene	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
1,4-Dichlorobenzene	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
1,2-Dichlorobenzene	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
1,2-Dibromo-3-chloropropane	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1
1,2,4-Trichlorobenzene	µg/Kg	10	U	0.9	16	U	1.6	10	U	1	15	U	1.4	11	U	1

Table checked by: D. Luer Date: 2/21/2005

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point DSS03-12 Date Sampled: 9/26/2002 Lab ID: A2732-3 % Solids: 94			Sample Point SS04-12 Date Sampled: 9/26/2002 Lab ID: A2732-8 % Solids: 97			Sample Point SS05-12 Date Sampled: 9/26/2002 Lab ID: A2732-9 % Solids: 97			Sample Point SS06-12 Date Sampled: 9/26/2002 Lab ID: A2732-10 %Solids: 93			Sample Point DSS06-12 Date Sampled: 9/26/2002 Lab ID: A2732-4 %Solids: 95		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/Kg	10	U	0.97	13	UJ	1.2	11	UJ	1.1	12	UJ	1.1	11	U	1
Chloromethane	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
Vinyl Chloride	µg/Kg	10	U	0.97	13	UJ	1.2	11	UJ	1.1	12	UJ	1.1	11	U	1
Bromomethane	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
Chloroethane	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
Trichlorofluoromethane	µg/Kg	10	U	0.97	13	UJ	1.2	11	UJ	1.1	12	UJ	1.1	11	U	1
1,1-Dichloroethene	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/Kg	10	U	0.97	13	UJ	1.2	11	UJ	1.1	12	UJ	1.1	11	U	1
Acetone	µg/Kg	42	U	0.97	92		1.2	41	U	1.1	100		1.1	94		1
Carbon Disulfide	µg/Kg	10	U	0.97	13	U	1.2	2	J	1.1	12	U	1.1	11	U	1
Methyl acetate	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
Methylene chloride	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
trans-1,2-Dichloroethene	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
tert-Butyl methyl ether	µg/Kg	10	U	0.97	13	UJ	1.2	11	UJ	1.1	12	UJ	1.1	11	U	1
1,1-Dichloroethane	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
cis-1,2-Dichloroethene	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
2-Butanone	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	7	J	1.1	11	U	1
Chloroform	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
1,1,1-Trichloroethane	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
Cyclohexane	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
Carbon tetrachloride	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
Benzene	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
1,2-Dichloroethane	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
Trichloroethene	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
Methylcyclohexane	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
1,2-Dichloropropane	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
Bromodichloromethane	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
cis-1,3-Dichloropropene	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point DSS03-12 Date Sampled: 9/26/2002 Lab ID: A2732-3 % Solids: 94			Sample Point SS04-12 Date Sampled: 9/26/2002 Lab ID: A2732-8 % Solids: 97			Sample Point SS05-12 Date Sampled: 9/26/2002 Lab ID: A2732-9 % Solids: 97			Sample Point SS06-12 Date Sampled: 9/26/2002 Lab ID: A2732-10 %Solids: 93			Sample Point DSS06-12 Date Sampled: 9/26/2002 Lab ID: A2732-4 %Solids: 95		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
4-Methyl-2-pentanone	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	10	J	1
Toluene	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
trans-1,3-Dichloropropene	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
1,1,2-Trichloroethane	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
Tetrachloroethene	µg/Kg	10	U	0.97	13	UJ	1.2	11	UJ	1.1	12	UJ	1.1	11	U	1
2-Hexanone	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
Dibromochloromethane	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
1,2-Dibromoethane	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
Chlorobenzene	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
Ethylbenzene	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
Xylenes (total)	µg/Kg	10	U	0.01	13	U	0.01	11	U	0.01	12	U	0.01	11	U	0.01
Styrene	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
Bromoform	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
Isopropylbenzene	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
1,1,2,2-Tetrachloroethane	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
1,3-Dichlorobenzene	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
1,4-Dichlorobenzene	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
1,2-Dichlorobenzene	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
1,2-Dibromo-3-chloropropane	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1
1,2,4-Trichlorobenzene	µg/Kg	10	U	0.97	13	U	1.2	11	U	1.1	12	U	1.1	11	U	1

Table checked by: D. Luer Date: 2/21/2005

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

		Sample Point SS07-12 Date Sampled: 9/26/2002 Lab ID: A2732-11 % Solids: 97			Sample Point SS08-12 Date Sampled: 9/26/2002 Lab ID: A2732-12 % Solids: 96			Sample Point SS09-12 Date Sampled: 9/26/2002 Lab ID: A2732-13 % Solids: 97			Sample Point Date Sampled: Lab ID: %Solids:			Sample Point Date Sampled: Lab ID: %Solids:		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/Kg	11	UJ	1.1	11	UJ	1	12	UJ	1.2						
Chloromethane	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
Vinyl Chloride	µg/Kg	11	UJ	1.1	11	UJ	1	12	UJ	1.2						
Bromomethane	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
Chloroethane	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
Trichlorofluoromethane	µg/Kg	11	UJ	1.1	11	UJ	1	12	UJ	1.2						
1,1-Dichloroethene	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/Kg	11	UJ	1.1	11	UJ	1	12	UJ	1.2						
Acetone	µg/Kg	11	U	1.1	74		1	12	U	1.2						
Carbon Disulfide	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
Methyl acetate	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
Methylene chloride	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
trans-1,2-Dichloroethene	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
tert-Butyl methyl ether	µg/Kg	11	UJ	1.1	11	UJ	1	12	UJ	1.2						
1,1-Dichloroethane	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
cis-1,2-Dichloroethene	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
2-Butanone	µg/Kg	11	U	1.1	5	J	1	12	U	1.2						
Chloroform	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
1,1,1-Trichloroethane	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
Cyclohexane	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
Carbon tetrachloride	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
Benzene	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
1,2-Dichloroethane	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
Trichloroethene	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
Methylcyclohexane	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
1,2-Dichloropropane	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
Bromodichloromethane	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
cis-1,3-Dichloropropene	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						

Table E-2 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

		Sample Point SS07-12 Date Sampled: 9/26/2002 Lab ID: A2732-11 % Solids: 97			Sample Point SS08-12 Date Sampled: 9/26/2002 Lab ID: A2732-12 % Solids: 96			Sample Point SS09-12 Date Sampled: 9/26/2002 Lab ID: A2732-13 % Solids: 97			Sample Point Date Sampled: Lab ID: %Solids:			Sample Point Date Sampled: Lab ID: %Solids:		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
4-Methyl-2-pentanone	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
Toluene	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
trans-1,3-Dichloropropene	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
1,1,2-Trichloroethane	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
Tetrachloroethene	µg/Kg	11	UJ	1.1	11	UJ	1	12	UJ	1.2						
2-Hexanone	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
Dibromochloromethane	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
1,2-Dibromoethane	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
Chlorobenzene	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
Ethylbenzene	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
Xylenes (total)	µg/Kg	11	U	0.01	11	U	0.01	12	U	0.01						
Styrene	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
Bromoform	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
Isopropylbenzene	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
1,1,2,2-Tetrachloroethane	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
1,3-Dichlorobenzene	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
1,4-Dichlorobenzene	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
1,2-Dichlorobenzene	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
1,2-Dibromo-3-chloropropane	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						
1,2,4-Trichlorobenzene	µg/Kg	11	U	1.1	11	U	1	12	U	1.2						

Table checked by: D. Luer Date: 2/21/2005

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB01-06 Date Sampled: 9/18/2002 Lab ID: R2732-15 % Solids: 97.1			Sample Point SB01-66 Date Sampled: 9/18/2002 Lab ID: R2732-16 % Solids: 93			Sample Point SB02-06 Date Sampled: 9/18/2002 Lab ID: R2732-11 % Solids: 95.4			Sample Point SB02-66 Date Sampled: 9/18/2002 Lab ID: R2732-12 %Solids: 97.6			Sample Point SB03-06 Date Sampled: 9/19/2002 Lab ID: T2732-1 %Solids: 95.4		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/Kg	340	U	4	350	U	4	350	U	4	340	U	4	350	U	4
Phenol	µg/Kg	340	U	8	350	U	8	350	U	8	340	U	8	350	U	8
bis(2-Chloroethyl)ether	µg/Kg	340	U	8	350	U	8	350	U	8	340	U	8	350	U	8
2-Chlorophenol	µg/Kg	340	U	8	350	U	8	350	U	8	340	U	8	350	U	8
2-Methylphenol	µg/Kg	340	U	11	350	U	11	350	U	11	340	U	11	350	U	11
2,2'-Oxybis(1-Chloropropane)	µg/Kg	340	U	9	350	U	9	350	U	9	340	U	9	350	U	9
Acetophenone	µg/Kg	340	U	10	350	U	10	350	U	10	340	U	10	350	U	10
4-Methylphenol	µg/Kg	340	U	12	350	U	12	350	U	12	340	U	12	350	U	12
N-Nitroso-di-n-propylamine	µg/Kg	340	U	10	350	U	10	350	U	10	340	U	10	350	U	10
Hexachloroethane	µg/Kg	340	U	8	350	U	8	350	U	8	340	U	8	350	U	8
Nitrobenzene	µg/Kg	340	U	12	350	U	12	350	U	12	340	U	12	350	U	12
Isophorone	µg/Kg	340	U	9	350	U	9	350	U	9	340	U	9	350	U	9
2-Nitrophenol	µg/Kg	340	U	10	350	U	10	350	U	10	340	U	10	350	U	10
2,4-Dimethylphenol	µg/Kg	340	U	9	350	U	9	350	U	9	340	U	9	350	U	9
bis(2-Chloroethoxy)Methane	µg/Kg	340	U	9	350	U	9	350	U	9	340	U	9	350	U	9
2,4-Dichlorophenol	µg/Kg	340	U	7	350	U	7	350	U	7	340	U	7	350	U	7
Naphthalene	µg/Kg	340	U	8	350	U	8	350	U	8	340	U	8	350	U	8
4-Chloroaniline	µg/Kg	340	U	2	350	U	2	350	U	2	340	U	2	350	U	2
Hexachlorobutadiene	µg/Kg	340	U	8	350	U	8	350	U	8	340	U	8	350	U	8
4-Chloro-3-Methylphenol	µg/Kg	340	U	12	350	U	12	350	U	12	340	U	12	350	U	12
2-Methylnaphthalene	µg/Kg	340	UJ	10	350	UJ	10	350	UJ	10	340	UJ	10	350	U	10
Hexachlorocyclopentadiene	µg/Kg	340	U	11	350	U	11	350	U	11	340	U	11	350	U	11
Caprolactam	µg/Kg	340	U	14	350	U	14	350	U	14	340	U	14	350	U	14
2,4,6-Trichlorophenol	µg/Kg	340	U	15	350	U	15	350	U	15	340	U	15	350	U	15
2,4,5-Trichlorophenol	µg/Kg	860	U	13	890	U	13	870	U	13	850	U	13	870	U	13
1,1'-Biphenyl	µg/Kg	340	U	9	350	U	9	350	U	9	340	U	9	350	U	9
2-Chloronaphthalene	µg/Kg	340	U	9	350	U	9	350	U	9	340	U	9	350	U	9
2-Nitroaniline	µg/Kg	860	U	7	890	U	7	870	U	7	850	U	7	870	UJ	7
Dimethyl Phthalate	µg/Kg	340	U	9	350	U	9	350	U	9	340	U	9	350	U	9
2,6-Dinitrotoluene	µg/Kg	340	U	10	350	U	10	350	U	10	340	U	10	350	U	10
Acenaphthylene	µg/Kg	340	U	8	350	U	8	350	U	8	340	U	8	350	U	8
3-Nitroaniline	µg/Kg	860	U	9	890	U	9	870	U	9	850	U	9	870	U	9
Acenaphthene	µg/Kg	340	U	9	350	U	9	350	U	9	340	U	9	350	U	9
2,4-Dinitrophenol	µg/Kg	860	U	150	890	U	150	870	U	150	850	U	150	870	UJ	150
4-Nitrophenol	µg/Kg	860	UJ	55	890	UJ	55	870	UJ	55	850	UJ	55	870	UJ	55

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB01-06 Date Sampled: 9/18/2002 Lab ID: R2732-15 % Solids: 97.1			Sample Point SB01-66 Date Sampled: 9/18/2002 Lab ID: R2732-16 % Solids: 93			Sample Point SB02-06 Date Sampled: 9/18/2002 Lab ID: R2732-11 % Solids: 95.4			Sample Point SB02-66 Date Sampled: 9/18/2002 Lab ID: R2732-12 %Solids: 97.6			Sample Point SB03-06 Date Sampled: 9/19/2002 Lab ID: T2732-1 %Solids: 95.4		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dibenzofuran	µg/Kg	340	U	7	350	U	7	350	U	7	340	U	7	350	U	7
2,4-Dinitrotoluene	µg/Kg	340	U	7	350	U	7	350	U	7	340	U	7	350	U	7
Diethylphthalate	µg/Kg	340	U	9	350	U	9	350	U	9	340	U	9	350	U	9
Fluorene	µg/Kg	340	U	8	350	U	8	350	U	8	340	U	8	350	U	8
4-Chlorophenyl-phenylether	µg/Kg	340	UJ	7	350	UJ	7	350	UJ	7	340	UJ	7	350	U	7
4-Nitroaniline	µg/Kg	860	U	17	890	U	17	870	U	17	850	U	17	870	U	17
4,6-Dinitro-2-methylphenol	µg/Kg	860	U	14	890	U	14	870	U	14	850	U	14	870	U	14
N-Nitrosodiphenylamine	µg/Kg	340	U	10	350	U	10	350	U	10	340	U	10	350	U	10
4-Bromophenyl-phenylether	µg/Kg	340	UJ	10	350	UJ	10	350	UJ	10	340	UJ	10	350	U	10
Hexachlorobenzene	µg/Kg	340	U	11	350	U	11	350	U	11	340	U	11	350	U	11
Atrazine	µg/Kg	340	U	6	350	U	6	350	U	6	340	U	6	350	U	6
Pentachlorophenol	µg/Kg	860	U	33	890	U	33	870	U	33	850	U	33	870	U	33
Phenanthrene	µg/Kg	340	U	10	350	U	10	350	U	10	340	U	10	350	U	10
Anthracene	µg/Kg	340	U	8	350	U	8	350	U	8	340	U	8	350	U	8
Carbazole	µg/Kg	340	U	9	350	U	9	350	U	9	340	U	9	350	U	9
Di-n-butylphthalate	µg/Kg	340	U	11	350	U	11	350	U	11	340	U	11	350	U	11
Fluoranthene	µg/Kg	340	U	7	350	U	7	350	U	7	340	U	7	350	U	7
Pyrene	µg/Kg	340	U	13	350	U	13	350	U	13	340	U	13	350	U	13
Butylbenzylphthalate	µg/Kg	340	U	9	350	U	9	350	U	9	340	U	9	350	UJ	9
3,3'-Dichlorobenzidine	µg/Kg	340	U	20	350	U	20	350	U	20	340	U	20	350	U	20
Benzo(a)Anthracene	µg/Kg	340	U	9	350	U	9	350	U	9	340	U	9	350	U	9
Chrysene	µg/Kg	340	U	8	350	U	8	350	U	8	340	U	8	350	U	8
bis(2-Ethylhexyl)Phthalate	µg/Kg	830		10	350	U	10	350	U	10	340	U	10	350	U	10
Di-n-Octyl Phthalate	µg/Kg	340	U	9	350	U	9	350	U	9	340	U	9	350	UJ	9
Benzo(b)Fluoranthene	µg/Kg	340	U	13	350	U	13	350	U	13	340	U	13	350	U	13
Benzo(k)Fluoranthene	µg/Kg	340	U	14	350	U	14	350	U	14	340	U	14	350	U	14
Benzo(a)Pyrene	µg/Kg	340	U	8	350	U	8	350	U	8	340	U	8	350	U	8
Indeno(1,2,3-cd)Pyrene	µg/Kg	340	U	8	350	U	8	350	U	8	340	U	8	350	U	8
Dibenz(a,h)Anthracene	µg/Kg	340	U	11	350	U	11	350	U	11	340	U	11	350	U	11
Benzo(g,h,i)Perylene	µg/Kg	340	U	40	350	U	40	350	U	40	340	U	40	350	U	40

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB03-132 Date Sampled: 9/19/2002 Lab ID: T2732-2 % Solids: 95.4			Sample Point SB04-06 Date Sampled: 9/19/2002 Lab ID: T2732-3 % Solids: 94.9			Sample Point SB04-66 Date Sampled: 9/19/2002 Lab ID: T2732-4 % Solids: 95.6			Sample Point SB05-06 Date Sampled: 9/19/2002 Lab ID: T2732-5 %Solids: 93.8			Sample Point SB05-66 Date Sampled: 9/19/2002 Lab ID: T2732-6 %Solids: 97.8		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/Kg	350	U	4	350	U	4	340	U	4	350	U	4	340	U	4
Phenol	µg/Kg	350	U	8	350	U	8	340	U	8	350	U	8	340	U	8
bis(2-Chloroethyl)ether	µg/Kg	350	U	8	350	U	8	340	U	8	350	U	8	340	U	8
2-Chlorophenol	µg/Kg	350	U	8	350	U	8	340	U	8	350	U	8	340	U	8
2-Methylphenol	µg/Kg	350	U	11	350	U	11	340	U	11	350	U	11	340	U	11
2,2'-Oxybis(1-Chloropropane)	µg/Kg	350	U	9	350	U	9	340	U	9	350	U	9	340	U	9
Acetophenone	µg/Kg	350	U	10	350	U	10	340	U	10	350	U	10	340	U	10
4-Methylphenol	µg/Kg	350	U	12	350	U	12	340	U	12	350	U	12	340	U	12
N-Nitroso-di-n-propylamine	µg/Kg	350	U	10	350	U	10	340	U	10	350	U	10	340	U	10
Hexachloroethane	µg/Kg	350	U	8	350	U	8	340	U	8	350	U	8	340	U	8
Nitrobenzene	µg/Kg	350	U	12	350	U	12	340	U	12	350	U	12	340	U	12
Isophorone	µg/Kg	350	U	9	350	U	9	340	U	9	350	U	9	340	U	9
2-Nitrophenol	µg/Kg	350	U	10	350	U	10	340	U	10	350	U	10	340	U	10
2,4-Dimethylphenol	µg/Kg	350	U	9	350	U	9	340	U	9	350	U	9	340	U	9
bis(2-Chloroethoxy)Methane	µg/Kg	350	U	9	350	U	9	340	U	9	350	U	9	340	U	9
2,4-Dichlorophenol	µg/Kg	350	U	7	350	U	7	340	U	7	350	U	7	340	U	7
Naphthalene	µg/Kg	350	U	8	350	U	8	340	U	8	350	U	8	340	U	8
4-Chloroaniline	µg/Kg	350	U	2	350	U	2	340	U	2	350	U	2	340	U	2
Hexachlorobutadiene	µg/Kg	350	U	8	350	U	8	340	U	8	350	U	8	340	U	8
4-Chloro-3-Methylphenol	µg/Kg	350	U	12	350	U	12	340	U	12	350	U	12	340	U	12
2-Methylnaphthalene	µg/Kg	350	U	10	350	U	10	340	U	10	350	U	10	340	U	10
Hexachlorocyclopentadiene	µg/Kg	350	U	11	350	U	11	340	U	11	350	U	11	340	U	11
Caprolactam	µg/Kg	350	U	14	350	U	14	340	U	14	350	U	14	340	U	14
2,4,6-Trichlorophenol	µg/Kg	350	U	15	350	U	15	340	U	15	350	U	15	340	U	15
2,4,5-Trichlorophenol	µg/Kg	870	U	13	870	U	13	860	U	13	880	U	13	850	U	13
1,1'-Biphenyl	µg/Kg	350	U	9	350	U	9	340	U	9	350	U	9	340	U	9
2-Chloronaphthalene	µg/Kg	350	U	9	350	U	9	340	U	9	350	U	9	340	U	9
2-Nitroaniline	µg/Kg	870	UJ	7	870	UJ	7	860	UJ	7	880	UJ	7	850	UJ	7
Dimethyl Phthalate	µg/Kg	350	U	9	350	U	9	340	U	9	350	U	9	340	U	9
2,6-Dinitrotoluene	µg/Kg	350	U	10	350	U	10	340	U	10	350	U	10	340	U	10
Acenaphthylene	µg/Kg	350	U	8	350	U	8	340	U	8	350	U	8	340	U	8
3-Nitroaniline	µg/Kg	870	U	9	870	U	9	860	U	9	880	U	9	850	U	9
Acenaphthene	µg/Kg	350	U	9	350	U	9	340	U	9	350	U	9	340	U	9
2,4-Dinitrophenol	µg/Kg	870	UJ	150	870	UJ	150	860	UJ	150	880	UJ	150	850	UJ	150
4-Nitrophenol	µg/Kg	870	UJ	55	870	UJ	55	860	UJ	55	880	UJ	55	850	UJ	55

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB03-132 Date Sampled: 9/19/2002 Lab ID: T2732-2 % Solids: 95.4			Sample Point SB04-06 Date Sampled: 9/19/2002 Lab ID: T2732-3 % Solids: 94.9			Sample Point SB04-66 Date Sampled: 9/19/2002 Lab ID: T2732-4 % Solids: 95.6			Sample Point SB05-06 Date Sampled: 9/19/2002 Lab ID: T2732-5 %Solids: 93.8			Sample Point SB05-66 Date Sampled: 9/19/2002 Lab ID: T2732-6 %Solids: 97.8		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dibenzofuran	µg/Kg	350	U	7	350	U	7	340	U	7	350	U	7	340	U	7
2,4-Dinitrotoluene	µg/Kg	350	U	7	350	U	7	340	U	7	350	U	7	340	U	7
Diethylphthalate	µg/Kg	350	U	9	350	U	9	340	U	9	350	U	9	340	U	9
Fluorene	µg/Kg	350	U	8	350	U	8	340	U	8	350	U	8	340	U	8
4-Chlorophenyl-phenylether	µg/Kg	350	U	7	350	U	7	340	U	7	350	U	7	340	U	7
4-Nitroaniline	µg/Kg	870	U	17	870	U	17	860	U	17	880	U	17	850	U	17
4,6-Dinitro-2-methylphenol	µg/Kg	870	U	14	870	U	14	860	U	14	880	U	14	850	U	14
N-Nitrosodiphenylamine	µg/Kg	350	U	10	350	U	10	340	U	10	350	U	10	340	U	10
4-Bromophenyl-phenylether	µg/Kg	350	U	10	350	U	10	340	U	10	350	U	10	340	U	10
Hexachlorobenzene	µg/Kg	350	U	11	350	U	11	340	U	11	350	U	11	340	U	11
Atrazine	µg/Kg	350	U	6	350	U	6	340	U	6	350	U	6	340	U	6
Pentachlorophenol	µg/Kg	870	U	33	870	U	33	860	U	33	880	U	33	850	U	33
Phenanthrene	µg/Kg	350	U	10	350	U	10	340	U	10	350	U	10	340	U	10
Anthracene	µg/Kg	350	U	8	350	U	8	340	U	8	350	U	8	340	U	8
Carbazole	µg/Kg	350	U	9	350	U	9	340	U	9	350	U	9	340	U	9
Di-n-butylphthalate	µg/Kg	350	U	11	350	U	11	340	U	11	350	U	11	340	U	11
Fluoranthene	µg/Kg	16	J	7	350	U	7	340	U	7	350	U	7	340	U	7
Pyrene	µg/Kg	15	J	13	350	U	13	340	U	13	350	U	13	340	U	13
Butylbenzylphthalate	µg/Kg	350	UJ	9	350	UJ	9	340	UJ	9	350	UJ	9	340	UJ	9
3,3'-Dichlorobenzidine	µg/Kg	350	U	20	350	U	20	340	U	20	350	U	20	340	U	20
Benzo(a)Anthracene	µg/Kg	350	U	9	350	U	9	340	U	9	350	U	9	340	U	9
Chrysene	µg/Kg	12	J	8	350	U	8	340	U	8	350	U	8	340	U	8
bis(2-Ethylhexyl)Phthalate	µg/Kg	350	U	10	350	U	10	340	U	10	350	U	10	340	U	10
Di-n-Octyl Phthalate	µg/Kg	350	UJ	9	32	J	9	340	UJ	9	10	J	9	340	UJ	9
Benzo(b)Fluoranthene	µg/Kg	17	J	13	350	U	13	340	U	13	350	U	13	340	U	13
Benzo(k)Fluoranthene	µg/Kg	350	U	14	350	U	14	340	U	14	350	U	14	340	U	14
Benzo(a)Pyrene	µg/Kg	8	J	8	350	U	8	340	U	8	350	U	8	340	U	8
Indeno(1,2,3-cd)Pyrene	µg/Kg	350	U	8	350	U	8	340	U	8	350	U	8	340	U	8
Dibenz(a,h)Anthracene	µg/Kg	350	U	11	350	U	11	340	U	11	350	U	11	340	U	11
Benzo(g,h,i)Perylene	µg/Kg	350	U	40	350	U	40	340	U	40	350	U	40	340	U	40

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB06-06 Date Sampled: 9/19/2002 Lab ID: R2732-19 % Solids: 95.7			Sample Point SB06-66 Date Sampled: 9/19/2002 Lab ID: R2732-20 % Solids: 96.9			Sample Point SB07-06 Date Sampled: 9/19/2002 Lab ID: T2732-7 % Solids: 87			Sample Point DSB07-06 Date Sampled: 9/19/2002 Lab ID: T2732-9 %Solids: 88.1			Sample Point SB07-66 Date Sampled: 9/19/2002 Lab ID: T2732-8 %Solids: 96.7		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/Kg	340	U	4	340	U	4	30	J	4	97	J	4	340	U	4
Phenol	µg/Kg	340	U	8	340	U	8	380	UJ	8	380	U	8	340	U	8
bis(2-Chloroethyl)ether	µg/Kg	340	U	8	340	U	8	380	UJ	8	380	U	8	340	U	8
2-Chlorophenol	µg/Kg	340	U	8	340	U	8	380	UJ	8	380	U	8	340	U	8
2-Methylphenol	µg/Kg	340	U	11	340	U	11	380	UJ	11	380	U	11	340	U	11
2,2'-Oxybis(1-Chloropropane)	µg/Kg	340	U	9	340	U	9	380	UJ	9	380	U	9	340	U	9
Acetophenone	µg/Kg	340	U	10	340	U	10	18	J	10	380	U	10	340	U	10
4-Methylphenol	µg/Kg	340	U	12	340	U	12	380	UJ	12	380	U	12	340	U	12
N-Nitroso-di-n-propylamine	µg/Kg	340	U	10	340	UJ	10	380	UJ	10	380	U	10	340	U	10
Hexachloroethane	µg/Kg	340	U	8	340	U	8	380	UJ	8	380	U	8	340	U	8
Nitrobenzene	µg/Kg	340	U	12	340	UJ	12	380	UJ	12	380	U	12	340	U	12
Isophorone	µg/Kg	340	U	9	340	U	9	380	UJ	9	380	U	9	340	U	9
2-Nitrophenol	µg/Kg	340	U	10	340	U	10	380	UJ	10	380	U	10	340	U	10
2,4-Dimethylphenol	µg/Kg	340	U	9	340	UJ	9	380	UJ	9	380	U	9	340	U	9
bis(2-Chloroethoxy)Methane	µg/Kg	340	U	9	340	U	9	380	UJ	9	380	U	9	340	U	9
2,4-Dichlorophenol	µg/Kg	340	U	7	340	U	7	380	UJ	7	380	U	7	340	U	7
Naphthalene	µg/Kg	340	U	8	340	U	8	19	J	8	61	J	8	340	U	8
4-Chloroaniline	µg/Kg	340	U	2	340	UJ	2	380	UJ	2	380	U	2	340	U	2
Hexachlorobutadiene	µg/Kg	340	U	8	340	U	8	380	UJ	8	380	U	8	340	U	8
4-Chloro-3-Methylphenol	µg/Kg	340	U	12	340	U	12	380	UJ	12	380	U	12	340	U	12
2-Methylnaphthalene	µg/Kg	340	UJ	10	340	U	10	380	UJ	10	380	U	10	340	U	10
Hexachlorocyclopentadiene	µg/Kg	340	U	11	340	U	11	380	UJ	11	380	U	11	340	U	11
Caprolactam	µg/Kg	340	U	14	340	U	14	380	UJ	14	380	U	14	340	U	14
2,4,6-Trichlorophenol	µg/Kg	340	U	15	340	U	15	380	UJ	15	380	U	15	340	U	15
2,4,5-Trichlorophenol	µg/Kg	860	U	13	860	U	13	950	UJ	13	940	U	13	860	U	13
1,1'-Biphenyl	µg/Kg	340	U	9	340	U	9	380	UJ	9	380	U	9	340	U	9
2-Chloronaphthalene	µg/Kg	340	U	9	340	U	9	380	UJ	9	380	U	9	340	U	9
2-Nitroaniline	µg/Kg	860	U	7	860	U	7	950	UJ	7	940	U	7	860	U	7
Dimethyl Phthalate	µg/Kg	340	U	9	340	U	9	380	UJ	9	380	U	9	340	U	9
2,6-Dinitrotoluene	µg/Kg	340	U	10	340	U	10	380	UJ	10	380	U	10	340	U	10
Acenaphthylene	µg/Kg	340	U	8	340	U	8	380	UJ	8	380	U	8	340	U	8
3-Nitroaniline	µg/Kg	860	U	9	860	U	9	950	UJ	9	940	U	9	860	U	9
Acenaphthene	µg/Kg	340	U	9	340	U	9	380	UJ	9	380	U	9	340	U	9
2,4-Dinitrophenol	µg/Kg	860	U	150	860	U	150	950	UJ	150	940	UJ	150	860	U	150
4-Nitrophenol	µg/Kg	860	UJ	55	860	UJ	55	950	UJ	55	940	UJ	55	860	U	55

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB06-06 Date Sampled: 9/19/2002 Lab ID: R2732-19 % Solids: 95.7			Sample Point SB06-66 Date Sampled: 9/19/2002 Lab ID: R2732-20 % Solids: 96.9			Sample Point SB07-06 Date Sampled: 9/19/2002 Lab ID: T2732-7 % Solids: 87			Sample Point DSB07-06 Date Sampled: 9/19/2002 Lab ID: T2732-9 %Solids: 88.1			Sample Point SB07-66 Date Sampled: 9/19/2002 Lab ID: T2732-8 %Solids: 96.7		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dibenzofuran	µg/Kg	340	U	7	340	U	7	380	UJ	7	380	U	7	340	U	7
2,4-Dinitrotoluene	µg/Kg	340	U	7	340	U	7	380	UJ	7	380	U	7	340	U	7
Diethylphthalate	µg/Kg	340	U	9	340	U	9	380	UJ	9	380	U	9	340	U	9
Fluorene	µg/Kg	340	U	8	340	U	8	380	UJ	8	380	U	8	340	U	8
4-Chlorophenyl-phenylether	µg/Kg	340	UJ	7	340	U	7	380	UJ	7	380	U	7	340	UJ	7
4-Nitroaniline	µg/Kg	860	U	17	860	U	17	950	UJ	17	940	U	17	860	U	17
4,6-Dinitro-2-methylphenol	µg/Kg	860	U	14	860	U	14	950	UJ	14	940	U	14	860	U	14
N-Nitrosodiphenylamine	µg/Kg	340	U	10	340	U	10	380	UJ	10	380	U	10	340	U	10
4-Bromophenyl-phenylether	µg/Kg	340	UJ	10	340	U	10	380	UJ	10	380	U	10	340	U	10
Hexachlorobenzene	µg/Kg	340	U	11	340	U	11	380	UJ	11	380	U	11	340	U	11
Atrazine	µg/Kg	340	U	6	340	UJ	6	380	UJ	6	380	U	6	340	UJ	6
Pentachlorophenol	µg/Kg	860	U	33	860	U	33	950	UJ	33	940	U	33	860	U	33
Phenanthrene	µg/Kg	13	J	10	340	U	10	380	UJ	10	380	U	10	340	U	10
Anthracene	µg/Kg	340	U	8	340	U	8	380	UJ	8	380	U	8	340	U	8
Carbazole	µg/Kg	340	U	9	340	U	9	380	UJ	9	380	U	9	340	U	9
Di-n-butylphthalate	µg/Kg	14	J	11	340	U	11	32	J	11	60	J	11	340	U	11
Fluoranthene	µg/Kg	12	J	7	340	U	7	9	J	7	9	J	7	340	U	7
Pyrene	µg/Kg	16	J	13	340	U	13	380	UJ	13	20	J	13	340	U	13
Butylbenzylphthalate	µg/Kg	29	J	9	340	U	9	380	UJ	9	51	J	9	340	U	9
3,3'-Dichlorobenzidine	µg/Kg	340	U	20	340	U	20	380	UJ	20	380	U	20	340	U	20
Benzo(a)Anthracene	µg/Kg	340	U	9	340	U	9	380	UJ	9	380	U	9	340	U	9
Chrysene	µg/Kg	340	U	8	340	U	8	380	UJ	8	380	UJ	8	340	U	8
bis(2-Ethylhexyl)Phthalate	µg/Kg	8800		10	170	J	10	380	UJ	10	400	U	10	340	U	10
Di-n-Octyl Phthalate	µg/Kg	770		9	340	U	9	380	UJ	9	380	UJ	9	340	UJ	9
Benzo(b)Fluoranthene	µg/Kg	340	U	13	340	U	13	380	UJ	13	16	J	13	340	UJ	13
Benzo(k)Fluoranthene	µg/Kg	340	U	14	340	U	14	380	UJ	14	380	U	14	340	U	14
Benzo(a)Pyrene	µg/Kg	340	U	8	340	U	8	380	UJ	8	380	U	8	340	U	8
Indeno(1,2,3-cd)Pyrene	µg/Kg	340	U	8	340	U	8	380	UJ	8	380	U	8	340	U	8
Dibenz(a,h)Anthracene	µg/Kg	340	U	11	340	U	11	380	UJ	11	380	U	11	340	U	11
Benzo(g,h,i)Perylene	µg/Kg	340	U	40	340	U	40	380	UJ	40	380	U	40	340	U	40

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB08-06 Date Sampled: 9/19/2002 Lab ID: T2732-10 % Solids: 95			Sample Point SB08-66 Date Sampled: 9/19/2002 Lab ID: T2732-11 % Solids: 95.2			Sample Point SB09-06 Date Sampled: 9/20/2002 Lab ID: W2732-6 % Solids: 89.7			Sample Point SB09-66 Date Sampled: 9/20/2002 Lab ID: W2732-7 %Solids: 96.3			Sample Point SB10-06 Date Sampled: 9/20/2002 Lab ID: W2732-4 %Solids: 84.8		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/Kg	350	U	4	350	U	4	370	U	4	340	U	4	390	U	4
Phenol	µg/Kg	350	U	8	350	U	8	370	U	8	340	U	8	390	U	8
bis(2-Chloroethyl)ether	µg/Kg	350	U	8	350	U	8	370	U	8	340	U	8	390	U	8
2-Chlorophenol	µg/Kg	350	U	8	350	U	8	370	U	8	340	U	8	390	U	8
2-Methylphenol	µg/Kg	350	U	11	350	U	11	370	U	11	340	U	11	390	U	11
2,2'-Oxybis(1-Chloropropane)	µg/Kg	350	U	9	350	U	9	370	U	9	340	U	9	390	U	9
Acetophenone	µg/Kg	350	U	10	350	U	10	370	U	10	340	U	10	390	U	10
4-Methylphenol	µg/Kg	350	U	12	350	U	12	370	U	12	340	U	12	390	U	12
N-Nitroso-di-n-propylamine	µg/Kg	350	U	10	350	U	10	370	U	10	340	U	10	390	U	10
Hexachloroethane	µg/Kg	350	U	8	350	U	8	370	U	8	340	U	8	390	U	8
Nitrobenzene	µg/Kg	350	U	12	350	U	12	370	U	12	340	U	12	390	U	12
Isophorone	µg/Kg	350	U	9	350	U	9	370	U	9	340	U	9	390	U	9
2-Nitrophenol	µg/Kg	350	U	10	350	U	10	370	U	10	340	U	10	390	U	10
2,4-Dimethylphenol	µg/Kg	350	U	9	350	U	9	370	U	9	340	U	9	390	U	9
bis(2-Chloroethoxy)Methane	µg/Kg	350	U	9	350	U	9	370	U	9	340	U	9	390	U	9
2,4-Dichlorophenol	µg/Kg	350	U	7	350	U	7	370	U	7	340	U	7	390	U	7
Naphthalene	µg/Kg	350	U	8	350	U	8	370	U	8	340	U	8	390	U	8
4-Chloroaniline	µg/Kg	350	U	2	350	U	2	370	U	2	340	U	2	390	U	2
Hexachlorobutadiene	µg/Kg	350	U	8	350	U	8	370	U	8	340	U	8	390	U	8
4-Chloro-3-Methylphenol	µg/Kg	350	U	12	350	U	12	370	U	12	340	U	12	390	U	12
2-Methylnaphthalene	µg/Kg	350	U	10	350	U	10	370	U	10	340	U	10	390	U	10
Hexachlorocyclopentadiene	µg/Kg	350	UJ	11	350	UJ	11	370	U	11	340	U	11	390	U	11
Caprolactam	µg/Kg	350	U	14	350	U	14	370	U	14	340	U	14	390	U	14
2,4,6-Trichlorophenol	µg/Kg	350	U	15	350	U	15	370	U	15	340	U	15	390	U	15
2,4,5-Trichlorophenol	µg/Kg	870	U	13	870	U	13	920	U	13	860	U	13	980	U	13
1,1'-Biphenyl	µg/Kg	350	U	9	350	U	9	370	U	9	340	U	9	390	U	9
2-Chloronaphthalene	µg/Kg	350	U	9	350	U	9	370	U	9	340	U	9	390	U	9
2-Nitroaniline	µg/Kg	870	U	7	870	U	7	920	U	7	860	U	7	980	U	7
Dimethyl Phthalate	µg/Kg	350	U	9	350	U	9	370	U	9	340	U	9	390	U	9
2,6-Dinitrotoluene	µg/Kg	350	U	10	350	U	10	370	U	10	340	U	10	390	U	10
Acenaphthylene	µg/Kg	350	U	8	350	U	8	370	U	8	340	U	8	390	U	8
3-Nitroaniline	µg/Kg	870	U	9	870	U	9	920	U	9	860	U	9	980	U	9
Acenaphthene	µg/Kg	350	U	9	350	U	9	370	U	9	340	U	9	390	U	9
2,4-Dinitrophenol	µg/Kg	870	UJ	150	870	UJ	150	920	UJ	150	860	UJ	150	980	UJ	150
4-Nitrophenol	µg/Kg	870	UJ	55	870	UJ	55	920	UJ	55	860	UJ	55	980	UJ	55

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB08-06 Date Sampled: 9/19/2002 Lab ID: T2732-10 % Solids: 95			Sample Point SB08-66 Date Sampled: 9/19/2002 Lab ID: T2732-11 % Solids: 95.2			Sample Point SB09-06 Date Sampled: 9/20/2002 Lab ID: W2732-6 % Solids: 89.7			Sample Point SB09-66 Date Sampled: 9/20/2002 Lab ID: W2732-7 %Solids: 96.3			Sample Point SB10-06 Date Sampled: 9/20/2002 Lab ID: W2732-4 %Solids: 84.8		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dibenzofuran	µg/Kg	350	U	7	350	U	7	370	U	7	340	U	7	390	U	7
2,4-Dinitrotoluene	µg/Kg	350	U	7	350	U	7	370	U	7	340	U	7	390	U	7
Diethylphthalate	µg/Kg	12	J	9	350	U	9	370	U	9	340	U	9	390	U	9
Fluorene	µg/Kg	350	U	8	350	U	8	370	U	8	340	U	8	390	U	8
4-Chlorophenyl-phenylether	µg/Kg	350	U	7	350	U	7	370	UJ	7	340	UJ	7	390	UJ	7
4-Nitroaniline	µg/Kg	870	U	17	870	U	17	920	UJ	17	860	UJ	17	980	UJ	17
4,6-Dinitro-2-methylphenol	µg/Kg	870	U	14	870	U	14	920	U	14	860	U	14	980	U	14
N-Nitrosodiphenylamine	µg/Kg	350	U	10	350	U	10	370	U	10	340	U	10	390	U	10
4-Bromophenyl-phenylether	µg/Kg	350	U	10	350	U	10	370	U	10	340	U	10	390	U	10
Hexachlorobenzene	µg/Kg	350	U	11	350	U	11	370	U	11	340	U	11	390	U	11
Atrazine	µg/Kg	350	U	6	350	U	6	370	U	6	340	U	6	390	U	6
Pentachlorophenol	µg/Kg	870	U	33	870	U	33	920	U	33	860	U	33	980	U	33
Phenanthrene	µg/Kg	350	U	10	350	U	10	370	U	10	340	U	10	390	U	10
Anthracene	µg/Kg	350	U	8	350	U	8	370	U	8	340	U	8	390	U	8
Carbazole	µg/Kg	350	U	9	350	U	9	370	U	9	340	U	9	390	U	9
Di-n-butylphthalate	µg/Kg	300	J	11	350	U	11	370	U	11	340	U	11	22	J	11
Fluoranthene	µg/Kg	9	J	7	350	U	7	370	U	7	340	U	7	390	U	7
Pyrene	µg/Kg	22	J	13	350	U	13	370	UJ	13	340	UJ	13	390	UJ	13
Butylbenzylphthalate	µg/Kg	50	J	9	350	U	9	370	UJ	9	340	UJ	9	14	J	9
3,3'-Dichlorobenzidine	µg/Kg	350	UJ	20	350	UJ	20	370	U	20	340	U	20	390	U	20
Benzo(a)Anthracene	µg/Kg	350	U	9	350	U	9	370	U	9	340	U	9	390	U	9
Chrysene	µg/Kg	11	J	8	350	U	8	370	U	8	340	U	8	390	U	8
bis(2-Ethylhexyl)Phthalate	µg/Kg	1800		10	350	U	10	370	U	10	340	U	10	740	J	10
Di-n-Octyl Phthalate	µg/Kg	110	J	9	350	U	9	370	UJ	9	340	UJ	9	390	UJ	9
Benzo(b)Fluoranthene	µg/Kg	350	U	13	350	U	13	370	U	13	340	U	13	390	U	13
Benzo(k)Fluoranthene	µg/Kg	350	U	14	350	U	14	370	U	14	340	U	14	390	U	14
Benzo(a)Pyrene	µg/Kg	350	U	8	350	U	8	370	U	8	340	U	8	390	U	8
Indeno(1,2,3-cd)Pyrene	µg/Kg	350	U	8	350	U	8	370	U	8	340	U	8	390	U	8
Dibenz(a,h)Anthracene	µg/Kg	350	U	11	350	U	11	370	U	11	340	U	11	390	U	11
Benzo(g,h,i)Perylene	µg/Kg	350	U	40	350	U	40	370	U	40	340	U	40	390	U	40

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB10-66 Date Sampled: 9/20/2002 Lab ID: W2732-5 % Solids: 98			Sample Point SB11-06 Date Sampled: 9/25/2002 Lab ID: Y2732-3 % Solids: 94.8			Sample Point SB11-66 Date Sampled: 9/25/2002 Lab ID: Y2732-4 % Solids: 97.9			Sample Point SB12-06 Date Sampled: 9/24/2002 Lab ID: W2732-8 %Solids: 95.8			Sample Point SB13-06 Date Sampled: 9/20/2002 Lab ID: W2732-2 %Solids: 93.3		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/Kg	340	UJ	4	350	U	4	340	U	4	340	U	4	350	U	4
Phenol	µg/Kg	340	UJ	8	350	U	8	340	U	8	340	U	8	350	U	8
bis(2-Chloroethyl)ether	µg/Kg	340	UJ	8	350	U	8	340	U	8	340	U	8	350	U	8
2-Chlorophenol	µg/Kg	340	UJ	8	350	U	8	340	U	8	340	U	8	350	U	8
2-Methylphenol	µg/Kg	340	UJ	11	350	U	11	340	U	11	340	U	11	350	U	11
2,2'-Oxybis(1-Chloropropane)	µg/Kg	340	UJ	9	350	U	9	340	U	9	340	U	9	350	U	9
Acetophenone	µg/Kg	340	UJ	10	350	U	10	340	U	10	340	U	10	350	U	10
4-Methylphenol	µg/Kg	340	UJ	12	350	U	12	340	U	12	340	U	12	350	U	12
N-Nitroso-di-n-propylamine	µg/Kg	340	UJ	10	350	UJ	10	340	UJ	10	340	U	10	350	U	10
Hexachloroethane	µg/Kg	340	UJ	8	350	U	8	340	U	8	340	U	8	350	U	8
Nitrobenzene	µg/Kg	340	UJ	12	350	UJ	12	340	UJ	12	340	U	12	350	U	12
Isophorone	µg/Kg	340	UJ	9	13	J	9	340	U	9	340	U	9	350	U	9
2-Nitrophenol	µg/Kg	340	UJ	10	350	U	10	340	U	10	340	U	10	350	U	10
2,4-Dimethylphenol	µg/Kg	340	UJ	9	350	UJ	9	340	UJ	9	340	U	9	350	U	9
bis(2-Chloroethoxy)Methane	µg/Kg	340	UJ	9	350	U	9	340	U	9	340	U	9	350	U	9
2,4-Dichlorophenol	µg/Kg	340	UJ	7	350	U	7	340	U	7	340	U	7	350	U	7
Naphthalene	µg/Kg	340	UJ	8	350	U	8	340	U	8	340	U	8	350	U	8
4-Chloroaniline	µg/Kg	340	UJ	2	350	UJ	2	340	UJ	2	340	U	2	350	U	2
Hexachlorobutadiene	µg/Kg	340	UJ	8	350	U	8	340	U	8	340	U	8	350	U	8
4-Chloro-3-Methylphenol	µg/Kg	340	UJ	12	350	U	12	340	U	12	340	U	12	350	U	12
2-Methylnaphthalene	µg/Kg	340	UJ	10	350	U	10	340	U	10	340	U	10	350	U	10
Hexachlorocyclopentadiene	µg/Kg	340	UJ	11	350	U	11	340	U	11	340	U	11	350	U	11
Caprolactam	µg/Kg	340	UJ	14	350	U	14	340	U	14	340	U	14	350	U	14
2,4,6-Trichlorophenol	µg/Kg	340	UJ	15	350	U	15	340	U	15	340	U	15	350	U	15
2,4,5-Trichlorophenol	µg/Kg	850	UJ	13	870	U	13	850	U	13	860	U	13	890	U	13
1,1'-Biphenyl	µg/Kg	340	UJ	9	350	U	9	340	U	9	340	U	9	350	U	9
2-Chloronaphthalene	µg/Kg	340	UJ	9	350	U	9	340	U	9	340	U	9	350	U	9
2-Nitroaniline	µg/Kg	850	UJ	7	870	U	7	850	U	7	860	U	7	890	U	7
Dimethyl Phthalate	µg/Kg	340	UJ	9	350	U	9	340	U	9	340	U	9	350	U	9
2,6-Dinitrotoluene	µg/Kg	340	UJ	10	350	U	10	340	U	10	340	U	10	350	U	10
Acenaphthylene	µg/Kg	340	UJ	8	350	U	8	340	U	8	340	U	8	350	U	8
3-Nitroaniline	µg/Kg	850	UJ	9	870	U	9	850	U	9	860	U	9	890	U	9
Acenaphthene	µg/Kg	340	UJ	9	350	U	9	340	U	9	340	U	9	350	U	9
2,4-Dinitrophenol	µg/Kg	850	UJ	150	870	U	150	850	U	150	860	UJ	150	890	UJ	150
4-Nitrophenol	µg/Kg	850	UJ	55	870	UJ	55	850	UJ	55	860	UJ	55	890	UJ	55

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB10-66 Date Sampled: 9/20/2002 Lab ID: W2732-5 % Solids: 98			Sample Point SB11-06 Date Sampled: 9/25/2002 Lab ID: Y2732-3 % Solids: 94.8			Sample Point SB11-66 Date Sampled: 9/25/2002 Lab ID: Y2732-4 % Solids: 97.9			Sample Point SB12-06 Date Sampled: 9/24/2002 Lab ID: W2732-8 %Solids: 95.8			Sample Point SB13-06 Date Sampled: 9/20/2002 Lab ID: W2732-2 %Solids: 93.3		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dibenzofuran	µg/Kg	340	UJ	7	350	U	7	340	U	7	340	U	7	350	U	7
2,4-Dinitrotoluene	µg/Kg	340	UJ	7	350	U	7	340	U	7	340	U	7	350	U	7
Diethylphthalate	µg/Kg	340	UJ	9	350	U	9	340	U	9	340	U	9	350	U	9
Fluorene	µg/Kg	340	UJ	8	350	U	8	340	U	8	340	U	8	350	U	8
4-Chlorophenyl-phenylether	µg/Kg	340	UJ	7	350	U	7	340	U	7	340	UJ	7	350	UJ	7
4-Nitroaniline	µg/Kg	850	UJ	17	870	U	17	850	U	17	860	UJ	17	890	UJ	17
4,6-Dinitro-2-methylphenol	µg/Kg	850	UJ	14	870	U	14	850	U	14	860	U	14	890	U	14
N-Nitrosodiphenylamine	µg/Kg	340	UJ	10	350	U	10	340	U	10	340	U	10	350	U	10
4-Bromophenyl-phenylether	µg/Kg	340	UJ	10	350	U	10	340	U	10	340	U	10	350	U	10
Hexachlorobenzene	µg/Kg	340	UJ	11	350	U	11	340	U	11	340	U	11	350	U	11
Atrazine	µg/Kg	340	UJ	6	350	UJ	6	340	UJ	6	340	U	6	350	U	6
Pentachlorophenol	µg/Kg	850	UJ	33	870	U	33	850	U	33	860	U	33	890	U	33
Phenanthrene	µg/Kg	340	UJ	10	350	U	10	340	U	10	340	U	10	350	U	10
Anthracene	µg/Kg	340	UJ	8	350	U	8	340	U	8	340	U	8	350	U	8
Carbazole	µg/Kg	340	UJ	9	350	U	9	340	U	9	340	U	9	350	U	9
Di-n-butylphthalate	µg/Kg	340	UJ	11	110	J	11	340	U	11	340	U	11	350	U	11
Fluoranthene	µg/Kg	340	UJ	7	350	U	7	340	U	7	340	U	7	350	U	7
Pyrene	µg/Kg	340	UJ	13	350	U	13	340	U	13	340	UJ	13	350	UJ	13
Butylbenzylphthalate	µg/Kg	340	UJ	9	10	J	9	340	U	9	340	UJ	9	350	UJ	9
3,3'-Dichlorobenzidine	µg/Kg	340	UJ	20	350	U	20	340	U	20	340	U	20	350	U	20
Benzo(a)Anthracene	µg/Kg	340	UJ	9	350	U	9	340	U	9	340	U	9	350	U	9
Chrysene	µg/Kg	340	UJ	8	350	U	8	340	U	8	340	U	8	350	U	8
bis(2-Ethylhexyl)Phthalate	µg/Kg	340	UJ	10	810		10	340	U	10	340	U	10	350	U	10
Di-n-Octyl Phthalate	µg/Kg	340	UJ	9	350	U	9	340	U	9	340	UJ	9	350	UJ	9
Benzo(b)Fluoranthene	µg/Kg	340	UJ	13	350	U	13	340	U	13	340	U	13	350	U	13
Benzo(k)Fluoranthene	µg/Kg	340	UJ	14	350	U	14	340	U	14	340	U	14	350	U	14
Benzo(a)Pyrene	µg/Kg	340	UJ	8	350	U	8	340	U	8	340	U	8	350	U	8
Indeno(1,2,3-cd)Pyrene	µg/Kg	340	UJ	8	350	U	8	340	U	8	340	U	8	350	U	8
Dibenz(a,h)Anthracene	µg/Kg	340	UJ	11	350	U	11	340	U	11	340	U	11	350	U	11
Benzo(g,h,i)Perylene	µg/Kg	340	UJ	40	350	U	40	340	U	40	340	U	40	350	U	40

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB13-102 Date Sampled: 9/20/2002 Lab ID: W2732-3 % Solids: 96.4			Sample Point SB14-06 Date Sampled: 9/25/2002 Lab ID: Y2732-5 % Solids: 95.5			Sample Point SB14-66 Date Sampled: 9/25/2002 Lab ID: Y2732-6 % Solids: 97.7			Sample Point SB15-06 Date Sampled: 9/20/2002 Lab ID: T2732-20 %Solids: 94.8			Sample Point SB15-66 Date Sampled: 9/20/2002 Lab ID: W2732-1 %Solids: 97.3		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/Kg	340	U	4	340	U	4	340	U	4	350	U	4	340	U	4
Phenol	µg/Kg	340	U	8	340	U	8	340	U	8	350	U	8	340	U	8
bis(2-Chloroethyl)ether	µg/Kg	340	U	8	340	U	8	340	U	8	350	U	8	340	U	8
2-Chlorophenol	µg/Kg	340	U	8	340	U	8	340	U	8	350	U	8	340	U	8
2-Methylphenol	µg/Kg	340	U	11	340	U	11	340	U	11	350	U	11	340	U	11
2,2'-Oxybis(1-Chloropropane)	µg/Kg	340	U	9	340	U	9	340	U	9	350	U	9	340	U	9
Acetophenone	µg/Kg	340	U	10	340	U	10	340	U	10	350	U	10	340	U	10
4-Methylphenol	µg/Kg	340	U	12	340	U	12	340	U	12	350	U	12	340	U	12
N-Nitroso-di-n-propylamine	µg/Kg	340	U	10	340	UJ	10	340	UJ	10	350	U	10	340	U	10
Hexachloroethane	µg/Kg	340	U	8	340	U	8	340	U	8	350	U	8	340	U	8
Nitrobenzene	µg/Kg	340	U	12	340	UJ	12	340	UJ	12	350	U	12	340	U	12
Isophorone	µg/Kg	340	U	9	340	U	9	340	U	9	350	U	9	340	U	9
2-Nitrophenol	µg/Kg	340	U	10	340	U	10	340	U	10	350	U	10	340	U	10
2,4-Dimethylphenol	µg/Kg	340	U	9	340	UJ	9	340	UJ	9	350	U	9	340	U	9
bis(2-Chloroethoxy)Methane	µg/Kg	340	U	9	340	U	9	340	U	9	350	U	9	340	U	9
2,4-Dichlorophenol	µg/Kg	340	U	7	340	U	7	340	U	7	350	U	7	340	U	7
Naphthalene	µg/Kg	340	U	8	340	U	8	340	U	8	350	U	8	340	U	8
4-Chloroaniline	µg/Kg	340	U	2	340	UJ	2	340	UJ	2	350	U	2	340	U	2
Hexachlorobutadiene	µg/Kg	340	U	8	340	U	8	340	U	8	350	U	8	340	U	8
4-Chloro-3-Methylphenol	µg/Kg	340	U	12	340	U	12	340	U	12	350	U	12	340	U	12
2-Methylnaphthalene	µg/Kg	340	U	10	340	U	10	340	U	10	350	U	10	340	U	10
Hexachlorocyclopentadiene	µg/Kg	340	U	11	340	U	11	340	U	11	350	UJ	11	340	U	11
Caprolactam	µg/Kg	340	U	14	340	U	14	340	U	14	350	U	14	340	U	14
2,4,6-Trichlorophenol	µg/Kg	340	U	15	340	U	15	340	U	15	350	U	15	340	U	15
2,4,5-Trichlorophenol	µg/Kg	860	U	13	860	U	13	850	U	13	870	U	13	860	U	13
1,1'-Biphenyl	µg/Kg	340	U	9	340	U	9	340	U	9	350	U	9	340	U	9
2-Chloronaphthalene	µg/Kg	340	U	9	340	U	9	340	U	9	350	U	9	340	U	9
2-Nitroaniline	µg/Kg	860	U	7	860	U	7	850	U	7	870	U	7	860	U	7
Dimethyl Phthalate	µg/Kg	340	U	9	340	U	9	340	U	9	350	U	9	340	U	9
2,6-Dinitrotoluene	µg/Kg	340	U	10	340	U	10	340	U	10	350	U	10	340	U	10
Acenaphthylene	µg/Kg	340	U	8	340	U	8	340	U	8	350	U	8	340	U	8
3-Nitroaniline	µg/Kg	860	U	9	860	U	9	850	U	9	870	U	9	860	U	9
Acenaphthene	µg/Kg	340	U	9	340	U	9	340	U	9	350	U	9	340	U	9
2,4-Dinitrophenol	µg/Kg	860	UJ	150	860	U	150	850	U	150	870	UJ	150	860	UJ	150
4-Nitrophenol	µg/Kg	860	UJ	55	860	UJ	55	850	UJ	55	870	UJ	55	860	UJ	55

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB13-102 Date Sampled: 9/20/2002 Lab ID: W2732-3 % Solids: 96.4			Sample Point SB14-06 Date Sampled: 9/25/2002 Lab ID: Y2732-5 % Solids: 95.5			Sample Point SB14-66 Date Sampled: 9/25/2002 Lab ID: Y2732-6 % Solids: 97.7			Sample Point SB15-06 Date Sampled: 9/20/2002 Lab ID: T2732-20 %Solids: 94.8			Sample Point SB15-66 Date Sampled: 9/20/2002 Lab ID: W2732-1 %Solids: 97.3		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dibenzofuran	µg/Kg	340	U	7	340	U	7	340	U	7	350	U	7	340	U	7
2,4-Dinitrotoluene	µg/Kg	340	U	7	340	U	7	340	U	7	350	U	7	340	U	7
Diethylphthalate	µg/Kg	340	U	9	340	U	9	340	U	9	350	U	9	340	U	9
Fluorene	µg/Kg	340	U	8	340	U	8	340	U	8	350	U	8	340	U	8
4-Chlorophenyl-phenylether	µg/Kg	340	UJ	7	340	U	7	340	U	7	350	U	7	340	UJ	7
4-Nitroaniline	µg/Kg	860	UJ	17	860	U	17	850	U	17	870	U	17	860	UJ	17
4,6-Dinitro-2-methylphenol	µg/Kg	860	U	14	860	U	14	850	U	14	870	U	14	860	U	14
N-Nitrosodiphenylamine	µg/Kg	340	U	10	340	U	10	340	U	10	350	U	10	340	U	10
4-Bromophenyl-phenylether	µg/Kg	340	U	10	340	U	10	340	U	10	350	U	10	340	U	10
Hexachlorobenzene	µg/Kg	340	U	11	340	U	11	340	U	11	350	U	11	340	U	11
Atrazine	µg/Kg	340	U	6	340	UJ	6	340	UJ	6	350	U	6	340	U	6
Pentachlorophenol	µg/Kg	860	U	33	860	U	33	850	U	33	870	U	33	860	U	33
Phenanthrene	µg/Kg	340	U	10	340	U	10	340	U	10	350	U	10	340	U	10
Anthracene	µg/Kg	340	U	8	340	U	8	340	U	8	350	U	8	340	U	8
Carbazole	µg/Kg	340	U	9	340	U	9	340	U	9	350	U	9	340	U	9
Di-n-butylphthalate	µg/Kg	17	J	11	340	U	11	340	U	11	350	U	11	340	U	11
Fluoranthene	µg/Kg	340	U	7	340	U	7	340	U	7	350	U	7	340	U	7
Pyrene	µg/Kg	340	UJ	13	340	U	13	340	U	13	350	U	13	340	UJ	13
Butylbenzylphthalate	µg/Kg	340	UJ	9	340	U	9	340	U	9	350	U	9	340	UJ	9
3,3'-Dichlorobenzidine	µg/Kg	340	U	20	340	U	20	340	U	20	350	UJ	20	340	U	20
Benzo(a)Anthracene	µg/Kg	340	U	9	340	U	9	340	U	9	350	U	9	340	U	9
Chrysene	µg/Kg	340	U	8	340	U	8	340	U	8	350	U	8	340	U	8
bis(2-Ethylhexyl)Phthalate	µg/Kg	340	U	10	340	U	10	340	U	10	350	U	10	340	U	10
Di-n-Octyl Phthalate	µg/Kg	340	UJ	9	340	U	9	32	J	9	63	J	9	340	UJ	9
Benzo(b)Fluoranthene	µg/Kg	340	U	13	340	U	13	340	U	13	350	U	13	340	U	13
Benzo(k)Fluoranthene	µg/Kg	340	U	14	340	U	14	340	U	14	350	U	14	340	U	14
Benzo(a)Pyrene	µg/Kg	340	U	8	340	U	8	340	U	8	350	U	8	340	U	8
Indeno(1,2,3-cd)Pyrene	µg/Kg	340	U	8	340	U	8	340	U	8	350	U	8	340	U	8
Dibenz(a,h)Anthracene	µg/Kg	340	U	11	340	U	11	340	U	11	350	U	11	340	U	11
Benzo(g,h,i)Perylene	µg/Kg	340	U	40	340	U	40	340	U	40	350	U	40	340	U	40

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB16-06 Date Sampled: 9/18/2002 Lab ID: R2732-13 % Solids: 91.6			Sample Point SB16-66 Date Sampled: 9/18/2002 Lab ID: R2732-14 % Solids: 95.8			Sample Point SB17-06 Date Sampled: 9/18/2002 Lab ID: R2732-4 % Solids: 94.7			Sample Point SB17-66 Date Sampled: 9/18/2002 Lab ID: R2732-5 %Solids: 96.3			Sample Point SB18-06 Date Sampled: 9/25/2002 Lab ID: Y2732-7 %Solids: 96.7		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/Kg	360	U	4	340	U	4	350	U	4	340	U	4	340	U	4
Phenol	µg/Kg	360	U	8	340	U	8	350	U	8	340	U	8	340	U	8
bis(2-Chloroethyl)ether	µg/Kg	360	U	8	340	U	8	350	U	8	340	U	8	340	U	8
2-Chlorophenol	µg/Kg	360	U	8	340	U	8	350	U	8	340	U	8	340	U	8
2-Methylphenol	µg/Kg	360	U	11	340	U	11	350	U	11	340	U	11	340	U	11
2,2'-Oxybis(1-Chloropropane)	µg/Kg	360	U	9	340	U	9	350	U	9	340	U	9	340	U	9
Acetophenone	µg/Kg	360	U	10	340	U	10	350	U	10	340	U	10	340	U	10
4-Methylphenol	µg/Kg	360	U	12	340	U	12	350	U	12	340	U	12	340	U	12
N-Nitroso-di-n-propylamine	µg/Kg	360	U	10	340	U	10	350	U	10	340	U	10	340	UJ	10
Hexachloroethane	µg/Kg	360	U	8	340	U	8	350	U	8	340	U	8	340	U	8
Nitrobenzene	µg/Kg	360	U	12	340	U	12	350	UJ	12	340	U	12	340	UJ	12
Isophorone	µg/Kg	360	U	9	340	U	9	350	U	9	340	U	9	10	J	9
2-Nitrophenol	µg/Kg	360	U	10	340	U	10	350	U	10	340	U	10	340	U	10
2,4-Dimethylphenol	µg/Kg	360	U	9	340	U	9	350	U	9	340	U	9	340	UJ	9
bis(2-Chloroethoxy)Methane	µg/Kg	360	U	9	340	U	9	350	U	9	340	U	9	340	U	9
2,4-Dichlorophenol	µg/Kg	360	U	7	340	U	7	350	U	7	340	U	7	340	U	7
Naphthalene	µg/Kg	360	U	8	340	U	8	350	U	8	340	U	8	340	U	8
4-Chloroaniline	µg/Kg	360	U	2	340	U	2	350	U	2	340	U	2	340	UJ	2
Hexachlorobutadiene	µg/Kg	360	U	8	340	U	8	350	U	8	340	U	8	340	U	8
4-Chloro-3-Methylphenol	µg/Kg	360	U	12	340	U	12	350	U	12	340	U	12	340	U	12
2-Methylnaphthalene	µg/Kg	360	UJ	10	340	UJ	10	350	U	10	340	UJ	10	340	U	10
Hexachlorocyclopentadiene	µg/Kg	360	U	11	340	U	11	350	U	11	340	U	11	340	U	11
Caprolactam	µg/Kg	360	U	14	340	U	14	350	U	14	340	U	14	340	U	14
2,4,6-Trichlorophenol	µg/Kg	360	U	15	340	U	15	350	U	15	340	U	15	340	U	15
2,4,5-Trichlorophenol	µg/Kg	900	U	13	860	U	13	870	U	13	860	U	13	860	U	13
1,1'-Biphenyl	µg/Kg	360	U	9	340	U	9	350	U	9	340	U	9	340	U	9
2-Chloronaphthalene	µg/Kg	360	U	9	340	U	9	350	U	9	340	U	9	340	U	9
2-Nitroaniline	µg/Kg	900	U	7	860	U	7	870	U	7	860	U	7	860	U	7
Dimethyl Phthalate	µg/Kg	360	U	9	340	U	9	350	U	9	340	U	9	340	U	9
2,6-Dinitrotoluene	µg/Kg	360	U	10	340	U	10	350	U	10	340	U	10	340	U	10
Acenaphthylene	µg/Kg	360	U	8	340	U	8	350	U	8	340	U	8	340	U	8
3-Nitroaniline	µg/Kg	900	U	9	860	U	9	870	U	9	860	U	9	860	U	9
Acenaphthene	µg/Kg	360	U	9	340	U	9	350	U	9	340	U	9	340	U	9
2,4-Dinitrophenol	µg/Kg	900	U	150	860	U	150	870	U	150	860	U	150	860	U	150
4-Nitrophenol	µg/Kg	900	UJ	55	860	UJ	55	870	UJ	55	860	UJ	55	860	UJ	55

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB16-06 Date Sampled: 9/18/2002 Lab ID: R2732-13 % Solids: 91.6			Sample Point SB16-66 Date Sampled: 9/18/2002 Lab ID: R2732-14 % Solids: 95.8			Sample Point SB17-06 Date Sampled: 9/18/2002 Lab ID: R2732-4 % Solids: 94.7			Sample Point SB17-66 Date Sampled: 9/18/2002 Lab ID: R2732-5 %Solids: 96.3			Sample Point SB18-06 Date Sampled: 9/25/2002 Lab ID: Y2732-7 %Solids: 96.7		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dibenzofuran	µg/Kg	360	U	7	340	U	7	350	U	7	340	U	7	340	U	7
2,4-Dinitrotoluene	µg/Kg	360	U	7	340	U	7	350	U	7	340	U	7	340	U	7
Diethylphthalate	µg/Kg	360	U	9	340	U	9	350	U	9	340	U	9	340	U	9
Fluorene	µg/Kg	360	U	8	340	U	8	350	U	8	340	U	8	340	U	8
4-Chlorophenyl-phenylether	µg/Kg	360	UJ	7	340	UJ	7	350	U	7	340	UJ	7	340	U	7
4-Nitroaniline	µg/Kg	900	U	17	860	U	17	870	U	17	860	U	17	860	U	17
4,6-Dinitro-2-methylphenol	µg/Kg	900	U	14	860	U	14	870	U	14	860	U	14	860	U	14
N-Nitrosodiphenylamine	µg/Kg	360	U	10	340	U	10	350	U	10	340	U	10	340	U	10
4-Bromophenyl-phenylether	µg/Kg	360	UJ	10	340	UJ	10	350	U	10	340	UJ	10	340	U	10
Hexachlorobenzene	µg/Kg	360	U	11	340	U	11	350	U	11	340	U	11	340	U	11
Atrazine	µg/Kg	360	U	6	340	U	6	350	U	6	340	U	6	340	UJ	6
Pentachlorophenol	µg/Kg	900	U	33	860	U	33	870	U	33	860	U	33	860	U	33
Phenanthrene	µg/Kg	360	U	10	340	U	10	350	U	10	340	U	10	340	U	10
Anthracene	µg/Kg	360	U	8	340	U	8	350	U	8	340	U	8	340	U	8
Carbazole	µg/Kg	360	U	9	340	U	9	350	U	9	340	U	9	340	U	9
Di-n-butylphthalate	µg/Kg	360	U	11	340	U	11	350	U	11	340	U	11	77	J	11
Fluoranthene	µg/Kg	360	U	7	340	U	7	350	U	7	340	U	7	340	U	7
Pyrene	µg/Kg	360	U	13	340	U	13	350	U	13	340	U	13	340	U	13
Butylbenzylphthalate	µg/Kg	360	U	9	340	U	9	350	U	9	340	U	9	17	J	9
3,3'-Dichlorobenzidine	µg/Kg	360	U	20	340	U	20	350	U	20	340	U	20	340	U	20
Benzo(a)Anthracene	µg/Kg	360	U	9	340	U	9	350	U	9	340	U	9	340	U	9
Chrysene	µg/Kg	360	U	8	340	U	8	350	U	8	340	U	8	340	U	8
bis(2-Ethylhexyl)Phthalate	µg/Kg	360	U	10	340	U	10	350	U	10	340	U	10	230	J	10
Di-n-Octyl Phthalate	µg/Kg	360	U	9	340	U	9	350	U	9	340	U	9	340	U	9
Benzo(b)Fluoranthene	µg/Kg	360	U	13	340	U	13	350	U	13	340	U	13	340	U	13
Benzo(k)Fluoranthene	µg/Kg	360	U	14	340	U	14	350	U	14	340	U	14	340	U	14
Benzo(a)Pyrene	µg/Kg	360	U	8	340	U	8	350	U	8	340	U	8	340	U	8
Indeno(1,2,3-cd)Pyrene	µg/Kg	360	U	8	340	U	8	350	U	8	340	U	8	340	U	8
Dibenz(a,h)Anthracene	µg/Kg	360	U	11	340	U	11	350	U	11	340	U	11	340	U	11
Benzo(g,h,i)Perylene	µg/Kg	360	U	40	340	U	40	350	U	40	340	U	40	340	U	40

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB18-66 Date Sampled: 9/25/2002 Lab ID: Y2732-8 % Solids: 96.7			Sample Point SB19-06 Date Sampled: 9/18/2002 Lab ID: R2732-9 % Solids: 94.8			Sample Point SB19-66 Date Sampled: 9/18/2002 Lab ID: R2732-10 % Solids: 96.8			Sample Point SB20-06 Date Sampled: 9/25/2002 Lab ID: Y2732-9 %Solids: 96.4			Sample Point SB20-66 Date Sampled: 9/25/2002 Lab ID: Y2732-10 %Solids: 97.4		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/Kg	340	U	4	50	J	4	340	U	4	340	U	4	340	U	4
Phenol	µg/Kg	340	U	8	350	U	8	340	U	8	340	U	8	340	U	8
bis(2-Chloroethyl)ether	µg/Kg	340	U	8	350	U	8	340	U	8	340	U	8	340	U	8
2-Chlorophenol	µg/Kg	340	U	8	350	U	8	340	U	8	340	U	8	340	U	8
2-Methylphenol	µg/Kg	340	U	11	350	U	11	340	U	11	340	U	11	340	U	11
2,2'-Oxybis(1-Chloropropane)	µg/Kg	340	U	9	350	U	9	340	U	9	340	U	9	340	U	9
Acetophenone	µg/Kg	340	U	10	350	U	10	340	U	10	340	U	10	340	U	10
4-Methylphenol	µg/Kg	340	U	12	350	U	12	340	U	12	340	U	12	340	U	12
N-Nitroso-di-n-propylamine	µg/Kg	340	UJ	10	350	U	10	340	U	10	340	UJ	10	340	UJ	10
Hexachloroethane	µg/Kg	340	U	8	350	U	8	340	U	8	340	U	8	340	U	8
Nitrobenzene	µg/Kg	340	UJ	12	350	U	12	340	U	12	340	UJ	12	340	UJ	12
Isophorone	µg/Kg	340	U	9	350	U	9	340	U	9	340	U	9	340	U	9
2-Nitrophenol	µg/Kg	340	U	10	350	U	10	340	U	10	340	U	10	340	U	10
2,4-Dimethylphenol	µg/Kg	340	UJ	9	350	U	9	340	U	9	340	UJ	9	340	UJ	9
bis(2-Chloroethoxy)Methane	µg/Kg	340	U	9	350	U	9	340	U	9	340	U	9	340	U	9
2,4-Dichlorophenol	µg/Kg	340	U	7	350	U	7	340	U	7	340	U	7	340	U	7
Naphthalene	µg/Kg	340	U	8	20	J	8	340	U	8	340	U	8	340	U	8
4-Chloroaniline	µg/Kg	340	UJ	2	350	U	2	340	U	2	340	UJ	2	340	UJ	2
Hexachlorobutadiene	µg/Kg	340	U	8	350	U	8	340	U	8	340	U	8	340	U	8
4-Chloro-3-Methylphenol	µg/Kg	340	U	12	350	U	12	340	U	12	340	U	12	340	U	12
2-Methylnaphthalene	µg/Kg	340	U	10	350	UJ	10	340	UJ	10	340	U	10	340	U	10
Hexachlorocyclopentadiene	µg/Kg	340	U	11	350	U	11	340	U	11	340	U	11	340	U	11
Caprolactam	µg/Kg	340	U	14	350	U	14	340	U	14	340	U	14	340	U	14
2,4,6-Trichlorophenol	µg/Kg	340	U	15	350	U	15	340	U	15	340	U	15	340	U	15
2,4,5-Trichlorophenol	µg/Kg	860	U	13	870	U	13	860	U	13	860	U	13	860	U	13
1,1'-Biphenyl	µg/Kg	340	U	9	350	U	9	340	U	9	340	U	9	340	U	9
2-Chloronaphthalene	µg/Kg	340	U	9	350	U	9	340	U	9	340	U	9	340	U	9
2-Nitroaniline	µg/Kg	860	U	7	870	U	7	860	U	7	860	U	7	860	U	7
Dimethyl Phthalate	µg/Kg	340	U	9	350	U	9	340	U	9	340	U	9	340	U	9
2,6-Dinitrotoluene	µg/Kg	340	U	10	350	U	10	340	U	10	340	U	10	340	U	10
Acenaphthylene	µg/Kg	340	U	8	350	U	8	340	U	8	340	U	8	340	U	8
3-Nitroaniline	µg/Kg	860	U	9	870	U	9	860	U	9	860	U	9	860	U	9
Acenaphthene	µg/Kg	340	U	9	350	U	9	340	U	9	340	U	9	340	U	9
2,4-Dinitrophenol	µg/Kg	860	U	150	870	U	150	860	U	150	860	U	150	860	U	150
4-Nitrophenol	µg/Kg	860	UJ	55	870	UJ	55	860	UJ	55	860	UJ	55	860	UJ	55

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB18-66 Date Sampled: 9/25/2002 Lab ID: Y2732-8 % Solids: 96.7			Sample Point SB19-06 Date Sampled: 9/18/2002 Lab ID: R2732-9 % Solids: 94.8			Sample Point SB19-66 Date Sampled: 9/18/2002 Lab ID: R2732-10 % Solids: 96.8			Sample Point SB20-06 Date Sampled: 9/25/2002 Lab ID: Y2732-9 %Solids: 96.4			Sample Point SB20-66 Date Sampled: 9/25/2002 Lab ID: Y2732-10 %Solids: 97.4		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dibenzofuran	µg/Kg	340	U	7	350	U	7	340	U	7	340	U	7	340	U	7
2,4-Dinitrotoluene	µg/Kg	340	U	7	350	U	7	340	U	7	340	U	7	340	U	7
Diethylphthalate	µg/Kg	340	U	9	350	U	9	340	U	9	340	U	9	340	U	9
Fluorene	µg/Kg	340	U	8	350	U	8	340	U	8	340	U	8	340	U	8
4-Chlorophenyl-phenylether	µg/Kg	340	U	7	350	UJ	7	340	UJ	7	340	U	7	340	U	7
4-Nitroaniline	µg/Kg	860	U	17	870	U	17	860	U	17	860	U	17	860	U	17
4,6-Dinitro-2-methylphenol	µg/Kg	860	U	14	870	U	14	860	U	14	860	U	14	860	U	14
N-Nitrosodiphenylamine	µg/Kg	340	U	10	350	U	10	340	U	10	340	U	10	340	U	10
4-Bromophenyl-phenylether	µg/Kg	340	U	10	350	UJ	10	340	UJ	10	340	U	10	340	U	10
Hexachlorobenzene	µg/Kg	340	U	11	350	U	11	340	U	11	340	U	11	340	U	11
Atrazine	µg/Kg	340	UJ	6	350	U	6	340	U	6	340	UJ	6	340	UJ	6
Pentachlorophenol	µg/Kg	860	U	33	870	U	33	860	U	33	860	U	33	860	U	33
Phenanthrene	µg/Kg	340	U	10	350	U	10	340	U	10	340	U	10	340	U	10
Anthracene	µg/Kg	340	U	8	350	U	8	340	U	8	340	U	8	340	U	8
Carbazole	µg/Kg	340	U	9	350	U	9	340	U	9	340	U	9	340	U	9
Di-n-butylphthalate	µg/Kg	340	U	11	50	J	11	340	U	11	51	J	11	340	U	11
Fluoranthene	µg/Kg	340	U	7	350	U	7	340	U	7	340	U	7	340	U	7
Pyrene	µg/Kg	340	U	13	350	U	13	340	U	13	340	U	13	340	U	13
Butylbenzylphthalate	µg/Kg	340	U	9	350	U	9	340	U	9	340	U	9	340	U	9
3,3'-Dichlorobenzidine	µg/Kg	340	U	20	350	U	20	340	U	20	340	U	20	340	U	20
Benzo(a)Anthracene	µg/Kg	340	U	9	350	U	9	340	U	9	340	U	9	340	U	9
Chrysene	µg/Kg	340	U	8	350	U	8	340	U	8	340	U	8	340	U	8
bis(2-Ethylhexyl)Phthalate	µg/Kg	340	U	10	350	U	10	340	U	10	340	U	10	340	U	10
Di-n-Octyl Phthalate	µg/Kg	340	U	9	350	U	9	340	U	9	340	U	9	340	U	9
Benzo(b)Fluoranthene	µg/Kg	340	U	13	350	U	13	340	U	13	340	U	13	340	U	13
Benzo(k)Fluoranthene	µg/Kg	340	U	14	350	U	14	340	U	14	340	U	14	340	U	14
Benzo(a)Pyrene	µg/Kg	340	U	8	350	U	8	340	U	8	340	U	8	340	U	8
Indeno(1,2,3-cd)Pyrene	µg/Kg	340	U	8	350	U	8	340	U	8	340	U	8	340	U	8
Dibenz(a,h)Anthracene	µg/Kg	340	U	11	350	U	11	340	U	11	340	U	11	340	U	11
Benzo(g,h,i)Perylene	µg/Kg	340	U	40	350	U	40	340	U	40	340	U	40	340	U	40

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB21-06 Date Sampled: 9/25/2002 Lab ID: Y2732-11 % Solids: 96.2			Sample Point SB21-66 Date Sampled: 9/25/2002 Lab ID: Y2732-12 % Solids: 98.5			Sample Point SB22-06 Date Sampled: 9/20/2002 Lab ID: T2732-18 % Solids: 93.2			Sample Point SB22-66 Date Sampled: 9/20/2002 Lab ID: T2732-19 %Solids: 96.7			Sample Point SB23-06 Date Sampled: 9/18/2002 Lab ID: R2732-2 %Solids: 85.8		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/Kg	340	U	4	340	U	4	350	U	4	340	U	4	380	U	4
Phenol	µg/Kg	340	U	8	340	U	8	350	U	8	340	U	8	380	U	8
bis(2-Chloroethyl)ether	µg/Kg	340	U	8	340	U	8	350	U	8	340	U	8	380	U	8
2-Chlorophenol	µg/Kg	340	U	8	340	U	8	350	U	8	340	U	8	380	U	8
2-Methylphenol	µg/Kg	340	U	11	340	U	11	350	U	11	340	U	11	380	U	11
2,2'-Oxybis(1-Chloropropane)	µg/Kg	340	U	9	340	U	9	350	U	9	340	U	9	380	U	9
Acetophenone	µg/Kg	340	U	10	340	U	10	350	U	10	340	U	10	380	U	10
4-Methylphenol	µg/Kg	340	U	12	340	U	12	350	U	12	340	U	12	380	U	12
N-Nitroso-di-n-propylamine	µg/Kg	340	UJ	10	340	U	10	350	U	10	340	U	10	380	U	10
Hexachloroethane	µg/Kg	340	U	8	340	U	8	350	U	8	340	U	8	380	U	8
Nitrobenzene	µg/Kg	340	UJ	12	340	U	12	350	U	12	340	U	12	380	UJ	12
Isophorone	µg/Kg	340	U	9	340	U	9	350	U	9	340	U	9	380	U	9
2-Nitrophenol	µg/Kg	340	U	10	340	U	10	350	U	10	340	U	10	380	U	10
2,4-Dimethylphenol	µg/Kg	340	UJ	9	340	U	9	350	U	9	340	U	9	380	U	9
bis(2-Chloroethoxy)Methane	µg/Kg	340	U	9	340	U	9	350	U	9	340	U	9	380	U	9
2,4-Dichlorophenol	µg/Kg	340	U	7	340	U	7	350	U	7	340	U	7	380	U	7
Naphthalene	µg/Kg	340	U	8	340	U	8	350	U	8	340	U	8	380	U	8
4-Chloroaniline	µg/Kg	340	UJ	2	340	U	2	350	U	2	340	U	2	380	U	2
Hexachlorobutadiene	µg/Kg	340	U	8	340	U	8	350	U	8	340	U	8	380	U	8
4-Chloro-3-Methylphenol	µg/Kg	340	U	12	340	U	12	350	U	12	340	U	12	380	U	12
2-Methylnaphthalene	µg/Kg	340	U	10	340	U	10	350	U	10	340	U	10	380	U	10
Hexachlorocyclopentadiene	µg/Kg	340	U	11	340	U	11	350	UJ	11	340	UJ	11	380	U	11
Caprolactam	µg/Kg	340	U	14	340	U	14	350	U	14	340	U	14	63	J	14
2,4,6-Trichlorophenol	µg/Kg	340	U	15	340	U	15	350	U	15	340	U	15	380	U	15
2,4,5-Trichlorophenol	µg/Kg	860	U	13	850	U	13	890	U	13	860	U	13	970	U	13
1,1'-Biphenyl	µg/Kg	340	U	9	340	U	9	350	U	9	340	U	9	380	U	9
2-Chloronaphthalene	µg/Kg	340	U	9	340	U	9	350	U	9	340	U	9	28	J	9
2-Nitroaniline	µg/Kg	860	U	7	850	UJ	7	890	U	7	860	U	7	970	U	7
Dimethyl Phthalate	µg/Kg	340	U	9	340	U	9	350	U	9	340	U	9	380	U	9
2,6-Dinitrotoluene	µg/Kg	340	U	10	340	U	10	350	U	10	340	U	10	380	U	10
Acenaphthylene	µg/Kg	340	U	8	340	U	8	350	U	8	340	U	8	380	U	8
3-Nitroaniline	µg/Kg	860	U	9	850	U	9	890	U	9	860	U	9	970	U	9
Acenaphthene	µg/Kg	340	U	9	340	U	9	350	U	9	340	U	9	380	U	9
2,4-Dinitrophenol	µg/Kg	860	U	150	850	UJ	150	890	UJ	150	860	UJ	150	970	U	150
4-Nitrophenol	µg/Kg	860	UJ	55	850	UJ	55	890	UJ	55	860	UJ	55	970	UJ	55

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB21-06 Date Sampled: 9/25/2002 Lab ID: Y2732-11 % Solids: 96.2			Sample Point SB21-66 Date Sampled: 9/25/2002 Lab ID: Y2732-12 % Solids: 98.5			Sample Point SB22-06 Date Sampled: 9/20/2002 Lab ID: T2732-18 % Solids: 93.2			Sample Point SB22-66 Date Sampled: 9/20/2002 Lab ID: T2732-19 %Solids: 96.7			Sample Point SB23-06 Date Sampled: 9/18/2002 Lab ID: R2732-2 %Solids: 85.8		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dibenzofuran	µg/Kg	340	U	7	340	U	7	350	U	7	340	U	7	380	U	7
2,4-Dinitrotoluene	µg/Kg	340	U	7	340	U	7	350	UJ	7	340	UJ	7	380	U	7
Diethylphthalate	µg/Kg	340	U	9	340	U	9	350	U	9	340	U	9	380	U	9
Fluorene	µg/Kg	340	U	8	340	U	8	350	U	8	340	U	8	380	U	8
4-Chlorophenyl-phenylether	µg/Kg	340	U	7	340	U	7	350	U	7	340	U	7	380	U	7
4-Nitroaniline	µg/Kg	860	U	17	850	U	17	890	U	17	860	U	17	970	U	17
4,6-Dinitro-2-methylphenol	µg/Kg	860	U	14	850	U	14	890	U	14	860	U	14	970	U	14
N-Nitrosodiphenylamine	µg/Kg	340	U	10	340	U	10	350	U	10	340	U	10	380	U	10
4-Bromophenyl-phenylether	µg/Kg	340	U	10	340	U	10	350	U	10	340	U	10	380	U	10
Hexachlorobenzene	µg/Kg	340	U	11	340	U	11	350	U	11	340	U	11	380	U	11
Atrazine	µg/Kg	340	UJ	6	340	U	6	350	U	6	340	U	6	380	U	6
Pentachlorophenol	µg/Kg	860	U	33	850	U	33	890	U	33	860	U	33	970	U	33
Phenanthrene	µg/Kg	340	U	10	340	U	10	350	U	10	340	U	10	380	U	10
Anthracene	µg/Kg	340	U	8	340	U	8	350	U	8	340	U	8	380	U	8
Carbazole	µg/Kg	340	U	9	340	U	9	350	U	9	340	U	9	380	U	9
Di-n-butylphthalate	µg/Kg	340	U	11	340	U	11	350	U	11	340	U	11	380	U	11
Fluoranthene	µg/Kg	340	U	7	340	U	7	350	U	7	340	U	7	16	J	7
Pyrene	µg/Kg	340	U	13	340	U	13	350	U	13	340	U	13	380	U	13
Butylbenzylphthalate	µg/Kg	340	U	9	340	UJ	9	350	U	9	340	U	9	380	U	9
3,3'-Dichlorobenzidine	µg/Kg	340	U	20	340	U	20	350	UJ	20	340	UJ	20	380	U	20
Benzo(a)Anthracene	µg/Kg	340	U	9	340	U	9	350	U	9	340	U	9	380	U	9
Chrysene	µg/Kg	340	U	8	340	U	8	350	U	8	340	U	8	380	U	8
bis(2-Ethylhexyl)Phthalate	µg/Kg	340	U	10	340	U	10	350	U	10	340	U	10	380	U	10
Di-n-Octyl Phthalate	µg/Kg	340	U	9	60	J	9	350	U	9	31	J	9	380	U	9
Benzo(b)Fluoranthene	µg/Kg	340	U	13	340	U	13	350	U	13	340	U	13	380	U	13
Benzo(k)Fluoranthene	µg/Kg	340	U	14	340	U	14	350	U	14	340	U	14	380	U	14
Benzo(a)Pyrene	µg/Kg	340	U	8	340	U	8	350	U	8	340	U	8	380	U	8
Indeno(1,2,3-cd)Pyrene	µg/Kg	340	U	8	340	U	8	350	U	8	340	U	8	380	U	8
Dibenz(a,h)Anthracene	µg/Kg	340	U	11	340	U	11	350	U	11	340	U	11	380	U	11
Benzo(g,h,i)Perylene	µg/Kg	340	U	40	340	U	40	350	U	40	340	U	40	380	U	40

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB23-66 Date Sampled: 9/18/2002 Lab ID: R2732-3 % Solids: 97.5			Sample Point SB24-06 Date Sampled: 9/25/2002 Lab ID: Y2732-13 % Solids: 95.9			Sample Point SB24-66 Date Sampled: 9/25/2002 Lab ID: Y2732-14 % Solids: 98.6			Sample Point SB25-06 Date Sampled: 9/19/2002 Lab ID: R2732-17 %Solids: 92.3			Sample Point SB25-186 Date Sampled: 9/19/2002 Lab ID: R2732-18 %Solids: 93.3		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/Kg	340	U	4	340	U	4	330	U	4	360	U	4	350	U	4
Phenol	µg/Kg	340	U	8	340	U	8	330	U	8	360	U	8	350	U	8
bis(2-Chloroethyl)ether	µg/Kg	340	U	8	340	U	8	330	U	8	360	U	8	350	U	8
2-Chlorophenol	µg/Kg	340	U	8	340	U	8	330	U	8	360	U	8	350	U	8
2-Methylphenol	µg/Kg	340	U	11	340	U	11	330	U	11	360	U	11	350	U	11
2,2'-Oxybis(1-Chloropropane)	µg/Kg	340	U	9	340	U	9	330	U	9	360	U	9	350	U	9
Acetophenone	µg/Kg	340	U	10	340	U	10	330	U	10	360	U	10	350	U	10
4-Methylphenol	µg/Kg	340	U	12	340	U	12	330	U	12	360	U	12	350	U	12
N-Nitroso-di-n-propylamine	µg/Kg	340	U	10	340	U	10	330	U	10	360	U	10	350	U	10
Hexachloroethane	µg/Kg	340	U	8	340	U	8	330	U	8	360	U	8	350	U	8
Nitrobenzene	µg/Kg	340	UJ	12	340	U	12	330	U	12	360	U	12	350	U	12
Isophorone	µg/Kg	340	U	9	340	U	9	330	U	9	360	U	9	350	U	9
2-Nitrophenol	µg/Kg	340	U	10	340	U	10	330	U	10	360	U	10	350	U	10
2,4-Dimethylphenol	µg/Kg	340	U	9	340	U	9	330	U	9	360	U	9	350	U	9
bis(2-Chloroethoxy)Methane	µg/Kg	340	U	9	340	U	9	330	U	9	360	U	9	350	U	9
2,4-Dichlorophenol	µg/Kg	340	U	7	340	U	7	330	U	7	360	U	7	350	U	7
Naphthalene	µg/Kg	340	U	8	340	U	8	330	U	8	360	U	8	350	U	8
4-Chloroaniline	µg/Kg	340	U	2	340	U	2	330	U	2	360	U	2	350	U	2
Hexachlorobutadiene	µg/Kg	340	U	8	340	U	8	330	U	8	360	U	8	350	U	8
4-Chloro-3-Methylphenol	µg/Kg	340	U	12	340	U	12	330	U	12	360	U	12	350	U	12
2-Methylnaphthalene	µg/Kg	340	U	10	340	U	10	330	U	10	360	UJ	10	350	UJ	10
Hexachlorocyclopentadiene	µg/Kg	340	U	11	340	U	11	330	U	11	360	U	11	350	U	11
Caprolactam	µg/Kg	340	U	14	340	U	14	330	U	14	360	U	14	350	U	14
2,4,6-Trichlorophenol	µg/Kg	340	U	15	340	U	15	330	U	15	360	U	15	350	U	15
2,4,5-Trichlorophenol	µg/Kg	860	U	13	860	U	13	840	U	13	900	U	13	890	U	13
1,1'-Biphenyl	µg/Kg	340	U	9	340	U	9	330	U	9	360	U	9	350	U	9
2-Chloronaphthalene	µg/Kg	340	U	9	340	U	9	330	U	9	360	U	9	350	U	9
2-Nitroaniline	µg/Kg	860	U	7	860	UJ	7	840	UJ	7	900	U	7	890	U	7
Dimethyl Phthalate	µg/Kg	340	U	9	340	U	9	330	U	9	360	U	9	350	U	9
2,6-Dinitrotoluene	µg/Kg	340	U	10	340	U	10	330	U	10	360	U	10	350	U	10
Acenaphthylene	µg/Kg	340	U	8	340	U	8	330	U	8	360	U	8	350	U	8
3-Nitroaniline	µg/Kg	860	U	9	860	U	9	840	U	9	900	U	9	890	U	9
Acenaphthene	µg/Kg	340	U	9	340	U	9	330	U	9	360	U	9	350	U	9
2,4-Dinitrophenol	µg/Kg	860	U	150	860	UJ	150	840	UJ	150	900	U	150	890	U	150
4-Nitrophenol	µg/Kg	860	UJ	55	860	UJ	55	840	UJ	55	900	UJ	55	890	UJ	55

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB23-66 Date Sampled: 9/18/2002 Lab ID: R2732-3 % Solids: 97.5			Sample Point SB24-06 Date Sampled: 9/25/2002 Lab ID: Y2732-13 % Solids: 95.9			Sample Point SB24-66 Date Sampled: 9/25/2002 Lab ID: Y2732-14 % Solids: 98.6			Sample Point SB25-06 Date Sampled: 9/19/2002 Lab ID: R2732-17 %Solids: 92.3			Sample Point SB25-186 Date Sampled: 9/19/2002 Lab ID: R2732-18 %Solids: 93.3		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dibenzofuran	µg/Kg	340	U	7	340	U	7	330	U	7	360	U	7	350	U	7
2,4-Dinitrotoluene	µg/Kg	340	U	7	340	U	7	330	U	7	360	U	7	350	U	7
Diethylphthalate	µg/Kg	340	U	9	340	U	9	330	U	9	10	J	9	350	U	9
Fluorene	µg/Kg	340	U	8	340	U	8	330	U	8	360	U	8	350	U	8
4-Chlorophenyl-phenylether	µg/Kg	340	U	7	340	U	7	330	U	7	360	UJ	7	350	UJ	7
4-Nitroaniline	µg/Kg	860	U	17	860	U	17	840	U	17	900	U	17	890	U	17
4,6-Dinitro-2-methylphenol	µg/Kg	860	U	14	860	U	14	840	U	14	900	U	14	890	U	14
N-Nitrosodiphenylamine	µg/Kg	340	U	10	340	U	10	330	U	10	360	U	10	350	U	10
4-Bromophenyl-phenylether	µg/Kg	340	U	10	340	U	10	330	U	10	360	UJ	10	350	UJ	10
Hexachlorobenzene	µg/Kg	340	U	11	340	U	11	330	U	11	360	U	11	350	U	11
Atrazine	µg/Kg	340	U	6	340	U	6	330	U	6	360	U	6	350	U	6
Pentachlorophenol	µg/Kg	860	U	33	860	U	33	840	U	33	900	U	33	890	U	33
Phenanthrene	µg/Kg	340	U	10	340	U	10	330	U	10	360	U	10	350	U	10
Anthracene	µg/Kg	340	U	8	340	U	8	330	U	8	360	U	8	350	U	8
Carbazole	µg/Kg	340	U	9	340	U	9	330	U	9	360	U	9	350	U	9
Di-n-butylphthalate	µg/Kg	340	U	11	340	U	11	330	U	11	18	J	11	350	U	11
Fluoranthene	µg/Kg	340	U	7	340	U	7	330	U	7	360	U	7	350	U	7
Pyrene	µg/Kg	340	U	13	340	U	13	330	U	13	360	U	13	350	U	13
Butylbenzylphthalate	µg/Kg	340	U	9	340	UJ	9	330	UJ	9	15	J	9	350	U	9
3,3'-Dichlorobenzidine	µg/Kg	340	U	20	340	U	20	330	U	20	360	U	20	350	U	20
Benzo(a)Anthracene	µg/Kg	340	U	9	340	U	9	330	U	9	360	U	9	350	U	9
Chrysene	µg/Kg	340	U	8	340	U	8	330	U	8	360	U	8	350	U	8
bis(2-Ethylhexyl)Phthalate	µg/Kg	270	J	10	340	U	10	330	U	10	360	U	10	350	U	10
Di-n-Octyl Phthalate	µg/Kg	340	U	9	340	UJ	9	330	UJ	9	360	U	9	350	U	9
Benzo(b)Fluoranthene	µg/Kg	340	U	13	340	U	13	330	U	13	360	U	13	350	U	13
Benzo(k)Fluoranthene	µg/Kg	340	U	14	340	U	14	330	U	14	360	U	14	350	U	14
Benzo(a)Pyrene	µg/Kg	340	U	8	340	U	8	330	U	8	360	U	8	350	U	8
Indeno(1,2,3-cd)Pyrene	µg/Kg	340	U	8	340	U	8	330	U	8	360	U	8	350	U	8
Dibenz(a,h)Anthracene	µg/Kg	340	U	11	340	U	11	330	U	11	360	U	11	350	U	11
Benzo(g,h,i)Perylene	µg/Kg	340	U	40	340	U	40	330	U	40	360	U	40	350	U	40

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB26-06 Date Sampled: 9/18/2002 Lab ID: R2732-8 % Solids: 92.2			Sample Point SB26-66 Date Sampled: 9/18/2002 Lab ID: R2732-1 % Solids: 95.2			Sample Point SB27-06 Date Sampled: 9/20/2002 Lab ID: T2732-14 % Solids: 95.5			Sample Point SB27-66 Date Sampled: 9/20/2002 Lab ID: T2732-15 %Solids: 98.1			Sample Point SB28-06 Date Sampled: 9/20/2002 Lab ID: T2732-16 %Solids: 97.1		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/Kg	360	U	4	350	U	4	340	U	4	340	U	4	340	U	4
Phenol	µg/Kg	360	U	8	350	U	8	340	U	8	340	U	8	340	U	8
bis(2-Chloroethyl)ether	µg/Kg	360	U	8	350	U	8	340	U	8	340	U	8	340	U	8
2-Chlorophenol	µg/Kg	360	U	8	350	U	8	340	U	8	340	U	8	340	U	8
2-Methylphenol	µg/Kg	360	U	11	350	U	11	340	U	11	340	U	11	340	U	11
2,2'-Oxybis(1-Chloropropane)	µg/Kg	360	U	9	350	U	9	340	U	9	340	U	9	340	U	9
Acetophenone	µg/Kg	360	U	10	350	U	10	340	U	10	340	U	10	340	U	10
4-Methylphenol	µg/Kg	360	U	12	350	U	12	340	U	12	340	U	12	340	U	12
N-Nitroso-di-n-propylamine	µg/Kg	360	U	10	350	U	10	340	U	10	340	U	10	340	U	10
Hexachloroethane	µg/Kg	360	U	8	350	U	8	340	U	8	340	U	8	340	U	8
Nitrobenzene	µg/Kg	360	U	12	350	UJ	12	340	U	12	340	U	12	340	U	12
Isophorone	µg/Kg	360	U	9	350	U	9	340	U	9	340	U	9	340	U	9
2-Nitrophenol	µg/Kg	360	U	10	350	U	10	340	U	10	340	U	10	340	U	10
2,4-Dimethylphenol	µg/Kg	360	U	9	350	U	9	340	U	9	340	U	9	340	U	9
bis(2-Chloroethoxy)Methane	µg/Kg	360	U	9	350	U	9	340	U	9	340	U	9	340	U	9
2,4-Dichlorophenol	µg/Kg	360	U	7	350	U	7	340	U	7	340	U	7	340	U	7
Naphthalene	µg/Kg	360	U	8	350	U	8	340	U	8	340	U	8	340	U	8
4-Chloroaniline	µg/Kg	360	U	2	350	U	2	340	U	2	340	U	2	340	U	2
Hexachlorobutadiene	µg/Kg	360	U	8	350	U	8	340	U	8	340	U	8	340	U	8
4-Chloro-3-Methylphenol	µg/Kg	360	U	12	350	U	12	340	U	12	340	U	12	340	U	12
2-Methylnaphthalene	µg/Kg	360	UJ	10	350	U	10	340	U	10	340	U	10	340	U	10
Hexachlorocyclopentadiene	µg/Kg	360	U	11	350	U	11	340	UJ	11	340	UJ	11	340	UJ	11
Caprolactam	µg/Kg	27	J	14	350	U	14	340	U	14	340	U	14	340	U	14
2,4,6-Trichlorophenol	µg/Kg	360	U	15	350	U	15	340	U	15	340	U	15	340	U	15
2,4,5-Trichlorophenol	µg/Kg	900	U	13	870	U	13	860	U	13	850	U	13	860	U	13
1,1'-Biphenyl	µg/Kg	360	U	9	350	U	9	340	U	9	340	U	9	340	U	9
2-Chloronaphthalene	µg/Kg	360	U	9	350	U	9	340	U	9	340	U	9	340	U	9
2-Nitroaniline	µg/Kg	900	U	7	870	U	7	860	U	7	850	U	7	860	U	7
Dimethyl Phthalate	µg/Kg	360	U	9	350	U	9	340	U	9	340	U	9	340	U	9
2,6-Dinitrotoluene	µg/Kg	360	U	10	350	U	10	340	U	10	340	U	10	340	U	10
Acenaphthylene	µg/Kg	360	U	8	350	U	8	340	U	8	340	U	8	340	U	8
3-Nitroaniline	µg/Kg	900	U	9	870	U	9	860	U	9	850	U	9	860	U	9
Acenaphthene	µg/Kg	360	U	9	350	U	9	340	U	9	340	U	9	340	U	9
2,4-Dinitrophenol	µg/Kg	900	U	150	870	U	150	860	UJ	150	850	UJ	150	860	UJ	150
4-Nitrophenol	µg/Kg	900	UJ	55	870	UJ	55	860	UJ	55	850	UJ	55	860	UJ	55

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB26-06 Date Sampled: 9/18/2002 Lab ID: R2732-8 % Solids: 92.2			Sample Point SB26-66 Date Sampled: 9/18/2002 Lab ID: R2732-1 % Solids: 95.2			Sample Point SB27-06 Date Sampled: 9/20/2002 Lab ID: T2732-14 % Solids: 95.5			Sample Point SB27-66 Date Sampled: 9/20/2002 Lab ID: T2732-15 %Solids: 98.1			Sample Point SB28-06 Date Sampled: 9/20/2002 Lab ID: T2732-16 %Solids: 97.1		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dibenzofuran	µg/Kg	360	U	7	350	U	7	340	U	7	340	U	7	340	U	7
2,4-Dinitrotoluene	µg/Kg	360	U	7	350	U	7	340	UJ	7	340	UJ	7	340	UJ	7
Diethylphthalate	µg/Kg	360	U	9	350	U	9	340	U	9	340	U	9	340	U	9
Fluorene	µg/Kg	360	U	8	350	U	8	340	U	8	340	U	8	340	U	8
4-Chlorophenyl-phenylether	µg/Kg	360	UJ	7	350	U	7	340	U	7	340	U	7	340	U	7
4-Nitroaniline	µg/Kg	900	U	17	870	U	17	860	U	17	850	U	17	860	U	17
4,6-Dinitro-2-methylphenol	µg/Kg	900	U	14	870	U	14	860	U	14	850	U	14	860	U	14
N-Nitrosodiphenylamine	µg/Kg	360	U	10	350	U	10	340	U	10	340	U	10	340	U	10
4-Bromophenyl-phenylether	µg/Kg	360	UJ	10	350	U	10	340	U	10	340	U	10	340	U	10
Hexachlorobenzene	µg/Kg	360	U	11	350	U	11	340	U	11	340	U	11	12	J	11
Atrazine	µg/Kg	360	U	6	350	U	6	340	U	6	340	U	6	340	U	6
Pentachlorophenol	µg/Kg	900	U	33	870	U	33	860	U	33	850	U	33	860	U	33
Phenanthrene	µg/Kg	360	U	10	350	U	10	340	U	10	340	U	10	340	U	10
Anthracene	µg/Kg	360	U	8	350	U	8	340	U	8	340	U	8	340	U	8
Carbazole	µg/Kg	360	U	9	350	U	9	340	U	9	340	U	9	340	U	9
Di-n-butylphthalate	µg/Kg	360	U	11	350	U	11	340	U	11	340	U	11	340	U	11
Fluoranthene	µg/Kg	360	U	7	350	U	7	340	U	7	340	U	7	340	U	7
Pyrene	µg/Kg	360	U	13	350	U	13	340	U	13	340	U	13	340	U	13
Butylbenzylphthalate	µg/Kg	360	U	9	350	U	9	340	U	9	10	J	9	11	J	9
3,3'-Dichlorobenzidine	µg/Kg	360	U	20	350	U	20	340	UJ	20	340	UJ	20	340	UJ	20
Benzo(a)Anthracene	µg/Kg	360	U	9	350	U	9	340	U	9	340	U	9	340	U	9
Chrysene	µg/Kg	360	U	8	350	U	8	340	U	8	340	U	8	340	U	8
bis(2-Ethylhexyl)Phthalate	µg/Kg	360	U	10	350	U	10	340	U	10	340	U	10	340	U	10
Di-n-Octyl Phthalate	µg/Kg	360	U	9	350	U	9	340	U	9	240	J	9	340	U	9
Benzo(b)Fluoranthene	µg/Kg	360	U	13	350	U	13	340	U	13	340	U	13	340	U	13
Benzo(k)Fluoranthene	µg/Kg	360	U	14	350	U	14	340	U	14	340	U	14	340	U	14
Benzo(a)Pyrene	µg/Kg	360	U	8	350	U	8	340	U	8	340	U	8	340	U	8
Indeno(1,2,3-cd)Pyrene	µg/Kg	360	U	8	350	U	8	340	U	8	340	U	8	340	U	8
Dibenz(a,h)Anthracene	µg/Kg	360	U	11	350	U	11	340	U	11	340	U	11	340	U	11
Benzo(g,h,i)Perylene	µg/Kg	360	U	40	350	U	40	340	U	40	340	U	40	340	U	40

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB28-150 Date Sampled: 9/20/2002 Lab ID: T2732-17 % Solids: 93			Sample Point SB29-06 Date Sampled: 9/19/2002 Lab ID: T2732-12 % Solids: 95.7			Sample Point SB29-222 Date Sampled: 9/19/2002 Lab ID: T2732-13 % Solids: 95.3			Sample Point SB30-06 Date Sampled: 9/25/2002 Lab ID: Y2732-15 %Solids: 95.6			Sample Point SB30-66 Date Sampled: 9/25/2002 Lab ID: Y2732-16 %Solids: 96.2		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/Kg	350	U	4	350	U	4	350	U	4	340	U	4	340	U	4
Phenol	µg/Kg	350	U	8	340	U	8	350	U	8	340	U	8	340	U	8
bis(2-Chloroethyl)ether	µg/Kg	350	U	8	340	U	8	350	U	8	340	U	8	340	U	8
2-Chlorophenol	µg/Kg	350	U	8	340	U	8	350	U	8	340	U	8	340	U	8
2-Methylphenol	µg/Kg	350	U	11	340	U	11	350	U	11	340	U	11	340	U	11
2,2'-Oxybis(1-Chloropropane)	µg/Kg	350	U	9	340	U	9	350	U	9	340	U	9	340	U	9
Acetophenone	µg/Kg	350	U	10	340	U	10	350	U	10	340	U	10	340	U	10
4-Methylphenol	µg/Kg	350	U	12	340	U	12	350	U	12	340	U	12	340	U	12
N-Nitroso-di-n-propylamine	µg/Kg	350	U	10	340	U	10	350	U	10	340	U	10	340	U	10
Hexachloroethane	µg/Kg	350	U	8	340	U	8	350	U	8	340	U	8	340	U	8
Nitrobenzene	µg/Kg	350	U	12	340	U	12	350	U	12	340	U	12	340	U	12
Isophorone	µg/Kg	350	U	9	340	U	9	350	U	9	340	U	9	340	U	9
2-Nitrophenol	µg/Kg	350	U	10	340	U	10	350	U	10	340	U	10	340	U	10
2,4-Dimethylphenol	µg/Kg	350	U	9	340	U	9	350	U	9	340	U	9	340	U	9
bis(2-Chloroethoxy)Methane	µg/Kg	350	U	9	340	U	9	350	U	9	340	U	9	340	U	9
2,4-Dichlorophenol	µg/Kg	350	U	7	340	U	7	350	U	7	340	U	7	340	U	7
Naphthalene	µg/Kg	350	U	8	340	U	8	350	U	8	340	U	8	340	U	8
4-Chloroaniline	µg/Kg	350	U	2	340	U	2	350	U	2	340	U	2	340	U	2
Hexachlorobutadiene	µg/Kg	350	U	8	340	U	8	350	U	8	340	U	8	340	U	8
4-Chloro-3-Methylphenol	µg/Kg	350	U	12	340	U	12	350	U	12	340	U	12	340	U	12
2-Methylnaphthalene	µg/Kg	350	U	10	340	U	10	350	U	10	340	U	10	340	U	10
Hexachlorocyclopentadiene	µg/Kg	350	UJ	11	340	UJ	11	350	UJ	11	340	U	11	340	U	11
Caprolactam	µg/Kg	350	U	14	340	U	14	350	U	14	340	U	14	340	U	14
2,4,6-Trichlorophenol	µg/Kg	350	U	15	340	U	15	350	U	15	340	U	15	340	U	15
2,4,5-Trichlorophenol	µg/Kg	890	U	13	860	U	13	870	U	13	860	U	13	860	U	13
1,1'-Biphenyl	µg/Kg	350	U	9	340	U	9	350	U	9	340	U	9	340	U	9
2-Chloronaphthalene	µg/Kg	350	U	9	340	U	9	350	U	9	340	U	9	340	U	9
2-Nitroaniline	µg/Kg	890	U	7	860	U	7	870	U	7	860	UJ	7	860	UJ	7
Dimethyl Phthalate	µg/Kg	350	U	9	340	U	9	350	U	9	340	U	9	340	U	9
2,6-Dinitrotoluene	µg/Kg	350	U	10	340	U	10	350	U	10	340	U	10	340	U	10
Acenaphthylene	µg/Kg	350	U	8	340	U	8	350	U	8	340	U	8	340	U	8
3-Nitroaniline	µg/Kg	890	U	9	860	U	9	870	U	9	860	U	9	860	U	9
Acenaphthene	µg/Kg	350	U	9	340	U	9	350	U	9	340	U	9	340	U	9
2,4-Dinitrophenol	µg/Kg	890	UJ	150	860	UJ	150	870	UJ	150	860	UJ	150	860	UJ	150
4-Nitrophenol	µg/Kg	890	UJ	55	860	UJ	55	870	UJ	55	860	UJ	55	860	UJ	55

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB28-150 Date Sampled: 9/20/2002 Lab ID: T2732-17 % Solids: 93			Sample Point SB29-06 Date Sampled: 9/19/2002 Lab ID: T2732-12 % Solids: 95.7			Sample Point SB29-222 Date Sampled: 9/19/2002 Lab ID: T2732-13 % Solids: 95.3			Sample Point SB30-06 Date Sampled: 9/25/2002 Lab ID: Y2732-15 %Solids: 95.6			Sample Point SB30-66 Date Sampled: 9/25/2002 Lab ID: Y2732-16 %Solids: 96.2		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dibenzofuran	µg/Kg	350	U	7	340	U	7	350	U	7	340	U	7	340	U	7
2,4-Dinitrotoluene	µg/Kg	350	UJ	7	340	UJ	7	350	UJ	7	340	U	7	340	U	7
Diethylphthalate	µg/Kg	350	U	9	340	U	9	350	U	9	340	U	9	340	U	9
Fluorene	µg/Kg	350	U	8	340	U	8	350	U	8	340	U	8	340	U	8
4-Chlorophenyl-phenylether	µg/Kg	350	U	7	340	U	7	350	U	7	340	U	7	340	U	7
4-Nitroaniline	µg/Kg	890	U	17	860	U	17	870	U	17	860	U	17	860	U	17
4,6-Dinitro-2-methylphenol	µg/Kg	890	U	14	860	U	14	870	U	14	860	U	14	860	U	14
N-Nitrosodiphenylamine	µg/Kg	350	U	10	340	U	10	350	U	10	340	U	10	340	U	10
4-Bromophenyl-phenylether	µg/Kg	350	U	10	340	U	10	350	U	10	340	U	10	340	U	10
Hexachlorobenzene	µg/Kg	350	U	11	340	U	11	350	U	11	340	U	11	340	U	11
Atrazine	µg/Kg	350	U	6	340	U	6	350	U	6	340	U	6	340	U	6
Pentachlorophenol	µg/Kg	890	U	33	860	U	33	870	U	33	860	U	33	860	U	33
Phenanthrene	µg/Kg	350	U	10	340	U	10	350	U	10	340	U	10	340	U	10
Anthracene	µg/Kg	350	U	8	340	U	8	350	U	8	340	U	8	340	U	8
Carbazole	µg/Kg	350	U	9	340	U	9	350	U	9	340	U	9	340	U	9
Di-n-butylphthalate	µg/Kg	350	U	11	140	J	11	88	J	11	340	U	11	340	U	11
Fluoranthene	µg/Kg	350	U	7	340	U	7	350	U	7	340	U	7	340	U	7
Pyrene	µg/Kg	350	U	13	340	U	13	350	U	13	340	U	13	340	U	13
Butylbenzylphthalate	µg/Kg	350	U	9	340	U	9	350	U	9	340	UJ	9	340	UJ	9
3,3'-Dichlorobenzidine	µg/Kg	350	UJ	20	340	UJ	20	350	UJ	20	340	U	20	340	U	20
Benzo(a)Anthracene	µg/Kg	350	U	9	340	U	9	350	U	9	340	U	9	340	U	9
Chrysene	µg/Kg	350	U	8	340	U	8	350	U	8	340	U	8	340	U	8
bis(2-Ethylhexyl)Phthalate	µg/Kg	350	U	10	460	U	10	350	U	10	340	U	10	340	U	10
Di-n-Octyl Phthalate	µg/Kg	140	J	9	10	J	9	350	U	9	32	J	9	340	UJ	9
Benzo(b)Fluoranthene	µg/Kg	350	U	13	340	U	13	350	U	13	340	U	13	340	U	13
Benzo(k)Fluoranthene	µg/Kg	350	U	14	340	U	14	350	U	14	340	U	14	340	U	14
Benzo(a)Pyrene	µg/Kg	350	U	8	340	U	8	350	U	8	340	U	8	340	U	8
Indeno(1,2,3-cd)Pyrene	µg/Kg	350	U	8	340	U	8	350	U	8	340	U	8	340	U	8
Dibenz(a,h)Anthracene	µg/Kg	350	U	11	340	U	11	350	U	11	340	U	11	340	U	11
Benzo(g,h,i)Perylene	µg/Kg	350	U	40	340	U	40	350	U	40	340	U	40	340	U	40

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB31-06 Date Sampled: 9/25/2002 Lab ID: Y2732-17 % Solids: 92.5			Sample Point SB31-198 Date Sampled: 9/25/2002 Lab ID: Y2732-18 % Solids: 96.2			Sample Point DSB31-198 Date Sampled: 9/25/2002 Lab ID: Y2732-19 % Solids: 95.1			Sample Point SB32-06 Date Sampled: 9/25/2002 Lab ID: Y2732-20 %Solids: 95.1			Sample Point SB32-66 Date Sampled: 11/21/2002 Lab ID: C2732-11 %Solids: 97		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/Kg	360	U	4	340	U	4	350	U	4	350	U	4	340	U	4
Phenol	µg/Kg	360	U	8	340	U	8	350	U	8	350	U	8	340	U	8
bis(2-Chloroethyl)ether	µg/Kg	360	U	8	340	U	8	350	U	8	350	U	8	340	U	8
2-Chlorophenol	µg/Kg	360	U	8	340	U	8	350	U	8	350	U	8	340	U	8
2-Methylphenol	µg/Kg	360	U	11	340	U	11	350	U	11	350	U	11	340	U	11
2,2'-Oxybis(1-Chloropropane)	µg/Kg	360	U	9	340	U	9	350	U	9	350	U	9	340	U	9
Acetophenone	µg/Kg	360	U	10	340	U	10	350	U	10	350	U	10	340	U	10
4-Methylphenol	µg/Kg	360	U	12	340	U	12	350	U	12	350	U	12	340	U	12
N-Nitroso-di-n-propylamine	µg/Kg	360	U	10	340	U	10	350	U	10	350	U	10	340	U	10
Hexachloroethane	µg/Kg	360	U	8	340	U	8	350	U	8	350	U	8	340	U	8
Nitrobenzene	µg/Kg	360	U	12	340	U	12	350	U	12	350	U	12	340	U	12
Isophorone	µg/Kg	360	U	9	340	U	9	350	U	9	20	J	9	340	U	9
2-Nitrophenol	µg/Kg	360	U	10	340	U	10	350	U	10	350	U	10	340	U	10
2,4-Dimethylphenol	µg/Kg	360	U	9	340	U	9	350	U	9	350	U	9	340	U	9
bis(2-Chloroethoxy)Methane	µg/Kg	360	U	9	340	U	9	350	U	9	350	U	9	340	U	9
2,4-Dichlorophenol	µg/Kg	360	U	7	340	U	7	350	U	7	350	U	7	340	U	7
Naphthalene	µg/Kg	360	U	8	340	U	8	350	U	8	350	U	8	340	U	8
4-Chloroaniline	µg/Kg	360	U	2	340	U	2	350	U	2	350	U	2	340	U	2
Hexachlorobutadiene	µg/Kg	360	U	8	340	U	8	350	U	8	350	U	8	340	U	8
4-Chloro-3-Methylphenol	µg/Kg	360	U	12	340	U	12	350	U	12	350	U	12	340	U	12
2-Methylnaphthalene	µg/Kg	360	U	10	340	U	10	350	U	10	350	U	10	340	U	10
Hexachlorocyclopentadiene	µg/Kg	360	U	11	340	U	11	350	U	11	350	U	11	340	UJ	11
Caprolactam	µg/Kg	360	U	14	340	U	14	350	U	14	350	U	14	340	U	14
2,4,6-Trichlorophenol	µg/Kg	360	U	15	340	U	15	350	U	15	350	U	15	340	U	15
2,4,5-Trichlorophenol	µg/Kg	900	U	13	860	U	13	870	U	13	870	U	13	860	U	13
1,1'-Biphenyl	µg/Kg	360	U	9	340	U	9	350	U	9	350	U	9	340	U	9
2-Chloronaphthalene	µg/Kg	360	U	9	340	U	9	350	U	9	350	U	9	340	U	9
2-Nitroaniline	µg/Kg	900	UJ	7	860	UJ	7	870	UJ	7	870	UJ	7	860	U	7
Dimethyl Phthalate	µg/Kg	360	U	9	340	U	9	350	U	9	350	U	9	340	U	9
2,6-Dinitrotoluene	µg/Kg	360	U	10	340	U	10	350	U	10	350	U	10	340	U	10
Acenaphthylene	µg/Kg	360	U	8	340	U	8	350	U	8	350	U	8	340	U	8
3-Nitroaniline	µg/Kg	900	U	9	860	U	9	870	U	9	870	U	9	860	U	9
Acenaphthene	µg/Kg	360	U	9	340	U	9	350	U	9	350	U	9	340	U	9
2,4-Dinitrophenol	µg/Kg	900	UJ	150	860	UJ	150	870	UJ	150	870	UJ	150	860	UJ	150
4-Nitrophenol	µg/Kg	900	UJ	55	860	UJ	55	870	UJ	55	870	UJ	55	860	U	55

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB31-06 Date Sampled: 9/25/2002 Lab ID: Y2732-17 % Solids: 92.5			Sample Point SB31-198 Date Sampled: 9/25/2002 Lab ID: Y2732-18 % Solids: 96.2			Sample Point DSB31-198 Date Sampled: 9/25/2002 Lab ID: Y2732-19 % Solids: 95.1			Sample Point SB32-06 Date Sampled: 9/25/2002 Lab ID: Y2732-20 %Solids: 95.1			Sample Point SB32-66 Date Sampled: 11/21/2002 Lab ID: C2732-11 %Solids: 97		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dibenzofuran	µg/Kg	360	U	7	340	U	7	350	U	7	350	U	7	340	U	7
2,4-Dinitrotoluene	µg/Kg	360	U	7	340	U	7	350	U	7	350	U	7	340	U	7
Diethylphthalate	µg/Kg	360	U	9	340	U	9	350	U	9	85	J	9	340	U	9
Fluorene	µg/Kg	360	U	8	340	U	8	350	U	8	350	U	8	340	U	8
4-Chlorophenyl-phenylether	µg/Kg	360	U	7	340	U	7	350	U	7	350	U	7	340	U	7
4-Nitroaniline	µg/Kg	900	U	17	860	U	17	870	U	17	870	U	17	860	U	17
4,6-Dinitro-2-methylphenol	µg/Kg	900	U	14	860	U	14	870	U	14	870	U	14	860	UJ	14
N-Nitrosodiphenylamine	µg/Kg	360	U	10	340	U	10	350	U	10	350	U	10	340	U	10
4-Bromophenyl-phenylether	µg/Kg	360	U	10	340	U	10	350	U	10	350	U	10	340	U	10
Hexachlorobenzene	µg/Kg	360	U	11	340	U	11	350	U	11	350	U	11	340	U	11
Atrazine	µg/Kg	360	U	6	340	U	6	350	U	6	350	U	6	340	U	6
Pentachlorophenol	µg/Kg	900	U	33	860	U	33	870	U	33	870	U	33	860	UJ	33
Phenanthrene	µg/Kg	360	U	10	340	U	10	350	U	10	350	U	10	340	U	10
Anthracene	µg/Kg	360	U	8	340	U	8	350	U	8	350	U	8	340	U	8
Carbazole	µg/Kg	360	U	9	340	U	9	350	U	9	350	U	9	340	U	9
Di-n-butylphthalate	µg/Kg	360	U	11	340	U	11	350	U	11	220	J	11	340	U	11
Fluoranthene	µg/Kg	360	U	7	340	U	7	350	U	7	350	U	7	340	U	7
Pyrene	µg/Kg	360	U	13	340	U	13	350	U	13	350	U	13	340	U	13
Butylbenzylphthalate	µg/Kg	360	UJ	9	340	UJ	9	350	UJ	9	32	J	9	340	U	9
3,3'-Dichlorobenzidine	µg/Kg	360	U	20	340	U	20	350	U	20	350	U	20	340	U	20
Benzo(a)Anthracene	µg/Kg	360	U	9	340	U	9	350	U	9	350	U	9	340	U	9
Chrysene	µg/Kg	360	U	8	340	U	8	350	U	8	350	U	8	340	U	8
bis(2-Ethylhexyl)Phthalate	µg/Kg	850		10	340	U	10	170	J	10	630		10	340	U	10
Di-n-Octyl Phthalate	µg/Kg	500	J	9	340	UJ	9	120	J	9	350	UJ	9	87	J	9
Benzo(b)Fluoranthene	µg/Kg	360	U	13	340	U	13	350	U	13	350	U	13	340	U	13
Benzo(k)Fluoranthene	µg/Kg	360	U	14	340	U	14	350	U	14	350	U	14	340	U	14
Benzo(a)Pyrene	µg/Kg	360	U	8	340	U	8	350	U	8	350	U	8	340	U	8
Indeno(1,2,3-cd)Pyrene	µg/Kg	360	U	8	340	U	8	350	U	8	350	U	8	340	U	8
Dibenz(a,h)Anthracene	µg/Kg	360	U	11	340	U	11	350	U	11	350	U	11	340	U	11
Benzo(g,h,i)Perylene	µg/Kg	360	U	40	340	U	40	350	U	40	350	U	40	340	U	40

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB33-06 Date Sampled: 9/18/2002 Lab ID: R2732-6 % Solids: 94.8			Sample Point SB33-66 Date Sampled: 9/18/2002 Lab ID: R2732-7 % Solids: 97.1			Sample Point SB34-06 Date Sampled: 9/24/2002 Lab ID: W2732-9 % Solids: 95.1			Sample Point SB34-66 Date Sampled: 9/24/2002 Lab ID: W2732-10 %Solids: 95.4			Sample Point SB35-06 Date Sampled: 9/24/2002 Lab ID: W2732-11 %Solids: 94.4		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/Kg	11	J	4	340	U	4	350	UJ	4	350	U	4	350	U	4
Phenol	µg/Kg	350	U	8	340	U	8	350	UJ	8	350	U	8	350	U	8
bis(2-Chloroethyl)ether	µg/Kg	350	U	8	340	U	8	350	UJ	8	350	U	8	350	U	8
2-Chlorophenol	µg/Kg	350	U	8	340	U	8	350	UJ	8	350	U	8	350	U	8
2-Methylphenol	µg/Kg	350	U	11	340	U	11	350	UJ	11	350	U	11	350	U	11
2,2'-Oxybis(1-Chloropropane)	µg/Kg	350	U	9	340	U	9	350	UJ	9	350	U	9	350	U	9
Acetophenone	µg/Kg	350	U	10	340	U	10	350	UJ	10	350	U	10	350	U	10
4-Methylphenol	µg/Kg	350	U	12	340	U	12	350	UJ	12	350	U	12	350	U	12
N-Nitroso-di-n-propylamine	µg/Kg	350	U	10	340	U	10	350	UJ	10	350	U	10	350	U	10
Hexachloroethane	µg/Kg	350	U	8	340	U	8	350	UJ	8	350	U	8	350	U	8
Nitrobenzene	µg/Kg	350	U	12	340	U	12	350	UJ	12	350	U	12	350	U	12
Isophorone	µg/Kg	350	U	9	340	U	9	350	UJ	9	350	U	9	350	U	9
2-Nitrophenol	µg/Kg	350	U	10	340	U	10	350	UJ	10	350	U	10	350	U	10
2,4-Dimethylphenol	µg/Kg	350	U	9	340	U	9	350	UJ	9	350	U	9	350	U	9
bis(2-Chloroethoxy)Methane	µg/Kg	350	U	9	340	U	9	350	UJ	9	350	U	9	350	U	9
2,4-Dichlorophenol	µg/Kg	350	U	7	340	U	7	350	UJ	7	350	U	7	350	U	7
Naphthalene	µg/Kg	350	U	8	340	U	8	350	UJ	8	350	U	8	350	U	8
4-Chloroaniline	µg/Kg	350	U	2	340	U	2	350	UJ	2	350	U	2	350	U	2
Hexachlorobutadiene	µg/Kg	350	U	8	340	U	8	350	UJ	8	350	U	8	350	U	8
4-Chloro-3-Methylphenol	µg/Kg	350	U	12	340	U	12	350	UJ	12	350	U	12	350	U	12
2-Methylnaphthalene	µg/Kg	350	UJ	10	340	UJ	10	350	UJ	10	350	U	10	350	U	10
Hexachlorocyclopentadiene	µg/Kg	350	U	11	340	U	11	350	UJ	11	350	U	11	350	U	11
Caprolactam	µg/Kg	350	U	14	340	U	14	350	UJ	14	350	U	14	350	U	14
2,4,6-Trichlorophenol	µg/Kg	350	U	15	340	U	15	350	UJ	15	350	U	15	350	U	15
2,4,5-Trichlorophenol	µg/Kg	870	U	13	860	U	13	870	UJ	13	870	U	13	880	U	13
1,1'-Biphenyl	µg/Kg	350	U	9	340	U	9	350	UJ	9	350	U	9	350	U	9
2-Chloronaphthalene	µg/Kg	350	U	9	340	U	9	350	UJ	9	350	U	9	350	U	9
2-Nitroaniline	µg/Kg	870	U	7	860	U	7	870	UJ	7	870	U	7	880	U	7
Dimethyl Phthalate	µg/Kg	350	U	9	340	U	9	350	UJ	9	350	U	9	350	U	9
2,6-Dinitrotoluene	µg/Kg	350	U	10	340	U	10	350	UJ	10	350	U	10	350	U	10
Acenaphthylene	µg/Kg	350	U	8	340	U	8	350	UJ	8	350	U	8	350	U	8
3-Nitroaniline	µg/Kg	870	U	9	860	U	9	870	UJ	9	870	U	9	880	U	9
Acenaphthene	µg/Kg	350	U	9	340	U	9	350	UJ	9	350	U	9	350	U	9
2,4-Dinitrophenol	µg/Kg	870	U	150	860	U	150	870	UJ	150	870	UJ	150	880	UJ	150
4-Nitrophenol	µg/Kg	870	UJ	55	860	UJ	55	870	UJ	55	870	UJ	55	880	UJ	55

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB33-06 Date Sampled: 9/18/2002 Lab ID: R2732-6 % Solids: 94.8			Sample Point SB33-66 Date Sampled: 9/18/2002 Lab ID: R2732-7 % Solids: 97.1			Sample Point SB34-06 Date Sampled: 9/24/2002 Lab ID: W2732-9 % Solids: 95.1			Sample Point SB34-66 Date Sampled: 9/24/2002 Lab ID: W2732-10 %Solids: 95.4			Sample Point SB35-06 Date Sampled: 9/24/2002 Lab ID: W2732-11 %Solids: 94.4		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dibenzofuran	µg/Kg	350	U	7	340	U	7	350	UJ	7	350	U	7	350	U	7
2,4-Dinitrotoluene	µg/Kg	350	U	7	340	U	7	350	UJ	7	350	U	7	350	U	7
Diethylphthalate	µg/Kg	350	U	9	340	U	9	350	UJ	9	350	U	9	350	U	9
Fluorene	µg/Kg	350	U	8	340	U	8	350	UJ	8	350	U	8	350	U	8
4-Chlorophenyl-phenylether	µg/Kg	350	UJ	7	340	UJ	7	350	UJ	7	350	UJ	7	350	UJ	7
4-Nitroaniline	µg/Kg	870	U	17	860	U	17	870	UJ	17	870	UJ	17	880	UJ	17
4,6-Dinitro-2-methylphenol	µg/Kg	870	U	14	860	U	14	870	UJ	14	870	U	14	880	U	14
N-Nitrosodiphenylamine	µg/Kg	350	U	10	340	U	10	350	UJ	10	350	U	10	350	U	10
4-Bromophenyl-phenylether	µg/Kg	350	UJ	10	340	UJ	10	350	UJ	10	350	U	10	350	U	10
Hexachlorobenzene	µg/Kg	350	U	11	340	U	11	350	UJ	11	350	U	11	350	U	11
Atrazine	µg/Kg	350	U	6	340	U	6	350	UJ	6	350	U	6	350	U	6
Pentachlorophenol	µg/Kg	870	U	33	860	U	33	870	UJ	33	870	U	33	880	U	33
Phenanthrene	µg/Kg	350	U	10	340	U	10	350	UJ	10	350	U	10	350	U	10
Anthracene	µg/Kg	350	U	8	340	U	8	350	UJ	8	350	U	8	350	U	8
Carbazole	µg/Kg	350	U	9	340	U	9	350	UJ	9	350	U	9	350	U	9
Di-n-butylphthalate	µg/Kg	350	U	11	340	U	11	350	UJ	11	350	U	11	51	J	11
Fluoranthene	µg/Kg	10	J	7	340	U	7	350	UJ	7	350	U	7	350	U	7
Pyrene	µg/Kg	14	J	13	340	U	13	350	UJ	13	350	UJ	13	350	UJ	13
Butylbenzylphthalate	µg/Kg	12	J	9	340	U	9	350	UJ	9	350	UJ	9	29	J	9
3,3'-Dichlorobenzidine	µg/Kg	350	U	20	340	U	20	350	UJ	20	350	U	20	350	U	20
Benzo(a)Anthracene	µg/Kg	350	U	9	340	U	9	350	UJ	9	350	U	9	350	U	9
Chrysene	µg/Kg	13	J	8	340	U	8	350	UJ	8	350	U	8	350	U	8
bis(2-Ethylhexyl)Phthalate	µg/Kg	200	J	10	340	U	10	260	J	10	350	U	10	1500	J	10
Di-n-Octyl Phthalate	µg/Kg	350	U	9	340	U	9	29	J	9	350	UJ	9	29	J	9
Benzo(b)Fluoranthene	µg/Kg	350	U	13	340	U	13	350	UJ	13	350	U	13	350	U	13
Benzo(k)Fluoranthene	µg/Kg	350	U	14	340	U	14	350	UJ	14	350	U	14	350	U	14
Benzo(a)Pyrene	µg/Kg	350	U	8	340	U	8	350	UJ	8	350	U	8	350	U	8
Indeno(1,2,3-cd)Pyrene	µg/Kg	350	U	8	340	U	8	350	UJ	8	350	U	8	350	U	8
Dibenz(a,h)Anthracene	µg/Kg	350	U	11	340	U	11	350	UJ	11	350	U	11	350	U	11
Benzo(g,h,i)Perylene	µg/Kg	350	U	40	340	U	40	350	UJ	40	350	U	40	350	U	40

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB35-66 Date Sampled: 9/24/2002 Lab ID: W2732-12 % Solids: 95.1			Sample Point SB36-06 Date Sampled: 9/24/2002 Lab ID: W2732-13 % Solids: 93.7			Sample Point SB36-66 Date Sampled: 9/24/2002 Lab ID: W2732-14 % Solids: 96			Sample Point SB37-06 Date Sampled: 9/24/2002 Lab ID: W2732-15 %Solids: 93.2			Sample Point SB37-66 Date Sampled: 9/24/2002 Lab ID: W2732-16 %Solids: 97.3		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/Kg	350	U	4	350	U	4	340	U	4	350	UJ	4	340	U	4
Phenol	µg/Kg	350	U	8	350	U	8	340	U	8	350	UJ	8	340	U	8
bis(2-Chloroethyl)ether	µg/Kg	350	U	8	350	U	8	340	U	8	350	UJ	8	340	U	8
2-Chlorophenol	µg/Kg	350	U	8	350	U	8	340	U	8	350	UJ	8	340	U	8
2-Methylphenol	µg/Kg	350	U	11	350	U	11	340	U	11	350	UJ	11	340	U	11
2,2'-Oxybis(1-Chloropropane)	µg/Kg	350	U	9	350	U	9	340	U	9	350	UJ	9	340	U	9
Acetophenone	µg/Kg	350	U	10	350	U	10	340	U	10	350	UJ	10	340	U	10
4-Methylphenol	µg/Kg	350	U	12	350	U	12	340	U	12	350	UJ	12	340	U	12
N-Nitroso-di-n-propylamine	µg/Kg	350	U	10	350	U	10	340	U	10	350	UJ	10	340	U	10
Hexachloroethane	µg/Kg	350	U	8	350	U	8	340	U	8	350	UJ	8	340	U	8
Nitrobenzene	µg/Kg	350	U	12	350	U	12	340	U	12	350	UJ	12	340	U	12
Isophorone	µg/Kg	350	U	9	350	U	9	340	U	9	350	UJ	9	340	U	9
2-Nitrophenol	µg/Kg	350	U	10	350	U	10	340	U	10	350	UJ	10	340	U	10
2,4-Dimethylphenol	µg/Kg	350	U	9	350	U	9	340	U	9	350	UJ	9	340	U	9
bis(2-Chloroethoxy)Methane	µg/Kg	350	U	9	350	U	9	340	U	9	350	UJ	9	340	U	9
2,4-Dichlorophenol	µg/Kg	350	U	7	350	U	7	340	U	7	350	UJ	7	340	U	7
Naphthalene	µg/Kg	350	U	8	350	U	8	340	U	8	350	UJ	8	340	U	8
4-Chloroaniline	µg/Kg	350	U	2	350	U	2	340	U	2	350	UJ	2	340	U	2
Hexachlorobutadiene	µg/Kg	350	U	8	350	U	8	340	U	8	350	UJ	8	340	U	8
4-Chloro-3-Methylphenol	µg/Kg	350	U	12	350	U	12	340	U	12	350	UJ	12	340	U	12
2-Methylnaphthalene	µg/Kg	350	U	10	350	U	10	340	U	10	350	UJ	10	340	U	10
Hexachlorocyclopentadiene	µg/Kg	350	U	11	350	U	11	340	U	11	350	UJ	11	340	U	11
Caprolactam	µg/Kg	350	U	14	350	U	14	340	U	14	350	UJ	14	340	U	14
2,4,6-Trichlorophenol	µg/Kg	350	U	15	350	U	15	340	U	15	350	UJ	15	340	U	15
2,4,5-Trichlorophenol	µg/Kg	870	U	13	880	U	13	860	U	13	890	UJ	13	860	U	13
1,1'-Biphenyl	µg/Kg	350	U	9	350	U	9	340	U	9	350	UJ	9	340	U	9
2-Chloronaphthalene	µg/Kg	350	U	9	350	U	9	340	U	9	350	UJ	9	340	U	9
2-Nitroaniline	µg/Kg	870	U	7	880	U	7	860	U	7	890	UJ	7	860	U	7
Dimethyl Phthalate	µg/Kg	350	U	9	350	U	9	340	U	9	350	UJ	9	340	U	9
2,6-Dinitrotoluene	µg/Kg	350	U	10	350	U	10	340	U	10	350	UJ	10	340	U	10
Acenaphthylene	µg/Kg	350	U	8	350	U	8	340	U	8	350	UJ	8	340	U	8
3-Nitroaniline	µg/Kg	870	U	9	880	U	9	860	U	9	890	UJ	9	860	U	9
Acenaphthene	µg/Kg	350	U	9	350	U	9	340	U	9	350	UJ	9	340	U	9
2,4-Dinitrophenol	µg/Kg	870	UJ	150	880	UJ	150	860	UJ	150	890	UJ	150	860	U	150
4-Nitrophenol	µg/Kg	870	UJ	55	880	UJ	55	860	UJ	55	890	UJ	55	860	U	55

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB35-66 Date Sampled: 9/24/2002 Lab ID: W2732-12 % Solids: 95.1			Sample Point SB36-06 Date Sampled: 9/24/2002 Lab ID: W2732-13 % Solids: 93.7			Sample Point SB36-66 Date Sampled: 9/24/2002 Lab ID: W2732-14 % Solids: 96			Sample Point SB37-06 Date Sampled: 9/24/2002 Lab ID: W2732-15 %Solids: 93.2			Sample Point SB37-66 Date Sampled: 9/24/2002 Lab ID: W2732-16 %Solids: 97.3		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dibenzofuran	µg/Kg	350	U	7	350	U	7	340	U	7	350	UJ	7	340	U	7
2,4-Dinitrotoluene	µg/Kg	350	U	7	350	U	7	340	U	7	350	UJ	7	340	U	7
Diethylphthalate	µg/Kg	350	U	9	350	U	9	340	U	9	350	UJ	9	340	U	9
Fluorene	µg/Kg	350	U	8	350	U	8	340	U	8	350	UJ	8	340	U	8
4-Chlorophenyl-phenylether	µg/Kg	350	UJ	7	350	UJ	7	340	UJ	7	350	UJ	7	340	U	7
4-Nitroaniline	µg/Kg	870	UJ	17	880	UJ	17	860	UJ	17	890	UJ	17	860	U	17
4,6-Dinitro-2-methylphenol	µg/Kg	870	U	14	880	U	14	860	U	14	890	UJ	14	860	U	14
N-Nitrosodiphenylamine	µg/Kg	350	U	10	350	U	10	340	U	10	350	UJ	10	340	U	10
4-Bromophenyl-phenylether	µg/Kg	350	U	10	350	U	10	340	U	10	350	UJ	10	340	U	10
Hexachlorobenzene	µg/Kg	350	U	11	350	U	11	340	U	11	350	UJ	11	340	U	11
Atrazine	µg/Kg	350	U	6	350	U	6	340	U	6	350	UJ	6	340	U	6
Pentachlorophenol	µg/Kg	870	U	33	880	U	33	860	U	33	890	UJ	33	860	U	33
Phenanthrene	µg/Kg	350	U	10	350	U	10	340	U	10	350	UJ	10	340	U	10
Anthracene	µg/Kg	350	U	8	350	U	8	340	U	8	350	UJ	8	340	U	8
Carbazole	µg/Kg	350	U	9	350	U	9	340	U	9	350	UJ	9	340	U	9
Di-n-butylphthalate	µg/Kg	350	U	11	350	U	11	340	U	11	350	UJ	11	340	U	11
Fluoranthene	µg/Kg	350	U	7	350	U	7	340	U	7	350	UJ	7	340	U	7
Pyrene	µg/Kg	350	UJ	13	350	UJ	13	340	UJ	13	350	UJ	13	340	U	13
Butylbenzylphthalate	µg/Kg	350	UJ	9	350	UJ	9	340	UJ	9	350	UJ	9	340	UJ	9
3,3'-Dichlorobenzidine	µg/Kg	350	U	20	350	U	20	340	U	20	350	UJ	20	340	U	20
Benzo(a)Anthracene	µg/Kg	350	U	9	350	U	9	340	U	9	350	UJ	9	340	U	9
Chrysene	µg/Kg	350	U	8	350	U	8	340	U	8	350	UJ	8	340	U	8
bis(2-Ethylhexyl)Phthalate	µg/Kg	350	U	10	350	U	10	340	U	10	350	UJ	10	340	U	10
Di-n-Octyl Phthalate	µg/Kg	350	UJ	9	14	J	9	340	UJ	9	20	J	9	340	UJ	9
Benzo(b)Fluoranthene	µg/Kg	350	U	13	350	U	13	340	U	13	350	UJ	13	340	UJ	13
Benzo(k)Fluoranthene	µg/Kg	350	U	14	350	U	14	340	U	14	350	UJ	14	340	U	14
Benzo(a)Pyrene	µg/Kg	350	U	8	350	U	8	340	U	8	350	UJ	8	340	U	8
Indeno(1,2,3-cd)Pyrene	µg/Kg	350	U	8	350	U	8	340	U	8	350	UJ	8	340	U	8
Dibenz(a,h)Anthracene	µg/Kg	350	U	11	350	U	11	340	U	11	350	UJ	11	340	U	11
Benzo(g,h,i)Perylene	µg/Kg	350	U	40	350	U	40	340	U	40	350	UJ	40	340	U	40

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB38-06 Date Sampled: 9/24/2002 Lab ID: W2732-17 % Solids: 96.3			Sample Point SB38-66 Date Sampled: 9/24/2002 Lab ID: W2732-18 % Solids: 94.7			Sample Point SB39-06 Date Sampled: 9/24/2002 Lab ID: W2732-19 % Solids: 94.5			Sample Point SB39-66 Date Sampled: 9/24/2002 Lab ID: W2732-20 %Solids: 94.7			Sample Point SB40-06 Date Sampled: 9/24/2002 Lab ID: Y2732-1 %Solids: 95		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/Kg	340	U	4	350	U	4	350	U	4	350	U	4	350	U	4
Phenol	µg/Kg	340	U	8	350	U	8	350	U	8	350	U	8	350	U	8
bis(2-Chloroethyl)ether	µg/Kg	340	U	8	350	U	8	350	U	8	350	U	8	350	U	8
2-Chlorophenol	µg/Kg	340	U	8	350	U	8	350	U	8	350	U	8	350	U	8
2-Methylphenol	µg/Kg	340	U	11	350	U	11	350	U	11	350	U	11	350	U	11
2,2'-Oxybis(1-Chloropropane)	µg/Kg	340	U	9	350	U	9	350	U	9	350	U	9	350	U	9
Acetophenone	µg/Kg	340	U	10	350	U	10	350	U	10	350	U	10	350	U	10
4-Methylphenol	µg/Kg	340	U	12	350	U	12	350	U	12	350	U	12	350	U	12
N-Nitroso-di-n-propylamine	µg/Kg	340	U	10	350	U	10	350	U	10	350	U	10	350	U	10
Hexachloroethane	µg/Kg	340	U	8	350	U	8	350	U	8	350	U	8	350	U	8
Nitrobenzene	µg/Kg	340	U	12	350	U	12	350	U	12	350	U	12	350	U	12
Isophorone	µg/Kg	340	U	9	350	U	9	350	U	9	350	U	9	350	U	9
2-Nitrophenol	µg/Kg	340	U	10	350	U	10	350	U	10	350	U	10	350	U	10
2,4-Dimethylphenol	µg/Kg	340	U	9	350	U	9	350	U	9	350	U	9	350	U	9
bis(2-Chloroethoxy)Methane	µg/Kg	340	U	9	350	U	9	350	U	9	350	U	9	350	U	9
2,4-Dichlorophenol	µg/Kg	340	U	7	350	U	7	350	U	7	350	U	7	350	U	7
Naphthalene	µg/Kg	340	U	8	350	U	8	350	U	8	350	U	8	350	U	8
4-Chloroaniline	µg/Kg	340	U	2	350	U	2	350	U	2	350	U	2	350	U	2
Hexachlorobutadiene	µg/Kg	340	U	8	350	U	8	350	U	8	350	U	8	350	U	8
4-Chloro-3-Methylphenol	µg/Kg	340	U	12	350	U	12	350	U	12	350	U	12	350	U	12
2-Methylnaphthalene	µg/Kg	340	U	10	350	U	10	350	U	10	350	U	10	350	U	10
Hexachlorocyclopentadiene	µg/Kg	340	U	11	350	U	11	350	U	11	350	U	11	350	U	11
Caprolactam	µg/Kg	340	U	14	350	U	14	350	U	14	350	U	14	350	U	14
2,4,6-Trichlorophenol	µg/Kg	340	U	15	350	U	15	350	U	15	350	U	15	350	U	15
2,4,5-Trichlorophenol	µg/Kg	860	U	13	870	U	13	870	U	13	870	U	13	870	U	13
1,1'-Biphenyl	µg/Kg	340	U	9	350	U	9	350	U	9	350	U	9	350	U	9
2-Chloronaphthalene	µg/Kg	340	U	9	350	U	9	350	U	9	350	U	9	350	U	9
2-Nitroaniline	µg/Kg	860	U	7	870	U	7	870	U	7	870	U	7	870	U	7
Dimethyl Phthalate	µg/Kg	340	U	9	350	U	9	350	U	9	350	U	9	350	U	9
2,6-Dinitrotoluene	µg/Kg	340	U	10	350	U	10	350	U	10	350	U	10	350	U	10
Acenaphthylene	µg/Kg	340	U	8	350	U	8	350	U	8	350	U	8	350	U	8
3-Nitroaniline	µg/Kg	860	U	9	870	U	9	870	U	9	870	U	9	870	U	9
Acenaphthene	µg/Kg	340	U	9	350	U	9	350	U	9	350	U	9	350	U	9
2,4-Dinitrophenol	µg/Kg	860	U	150	870	U	150	870	U	150	870	U	150	870	U	150
4-Nitrophenol	µg/Kg	860	U	55	870	U	55	870	U	55	870	U	55	870	U	55

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB38-06 Date Sampled: 9/24/2002 Lab ID: W2732-17 % Solids: 96.3			Sample Point SB38-66 Date Sampled: 9/24/2002 Lab ID: W2732-18 % Solids: 94.7			Sample Point SB39-06 Date Sampled: 9/24/2002 Lab ID: W2732-19 % Solids: 94.5			Sample Point SB39-66 Date Sampled: 9/24/2002 Lab ID: W2732-20 %Solids: 94.7			Sample Point SB40-06 Date Sampled: 9/24/2002 Lab ID: Y2732-1 %Solids: 95		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dibenzofuran	µg/Kg	340	U	7	350	U	7	350	U	7	350	U	7	350	U	7
2,4-Dinitrotoluene	µg/Kg	340	U	7	350	U	7	350	U	7	350	U	7	350	U	7
Diethylphthalate	µg/Kg	340	U	9	350	U	9	350	U	9	350	U	9	350	U	9
Fluorene	µg/Kg	340	U	8	350	U	8	350	U	8	350	U	8	350	U	8
4-Chlorophenyl-phenylether	µg/Kg	340	U	7	350	U	7	350	U	7	350	U	7	350	U	7
4-Nitroaniline	µg/Kg	860	U	17	870	U	17	870	U	17	870	U	17	870	U	17
4,6-Dinitro-2-methylphenol	µg/Kg	860	U	14	870	U	14	870	U	14	870	U	14	870	U	14
N-Nitrosodiphenylamine	µg/Kg	340	U	10	350	U	10	350	U	10	350	U	10	350	U	10
4-Bromophenyl-phenylether	µg/Kg	340	U	10	350	U	10	350	U	10	350	U	10	350	U	10
Hexachlorobenzene	µg/Kg	340	U	11	350	U	11	350	U	11	350	U	11	350	U	11
Atrazine	µg/Kg	340	U	6	350	U	6	350	U	6	350	U	6	350	U	6
Pentachlorophenol	µg/Kg	860	U	33	870	U	33	870	U	33	870	U	33	870	U	33
Phenanthrene	µg/Kg	340	U	10	350	U	10	350	U	10	350	U	10	350	U	10
Anthracene	µg/Kg	340	U	8	350	U	8	350	U	8	350	U	8	350	U	8
Carbazole	µg/Kg	340	U	9	350	U	9	350	U	9	350	U	9	350	U	9
Di-n-butylphthalate	µg/Kg	150	J	11	11	J	11	350	U	11	350	U	11	350	U	11
Fluoranthene	µg/Kg	340	U	7	350	U	7	350	U	7	350	U	7	350	U	7
Pyrene	µg/Kg	19	J	13	350	U	13	350	U	13	350	U	13	350	U	13
Butylbenzylphthalate	µg/Kg	130	J	9	350	UJ	9	350	UJ	9	350	UJ	9	350	U	9
3,3'-Dichlorobenzidine	µg/Kg	340	U	20	350	U	20	350	U	20	350	U	20	350	U	20
Benzo(a)Anthracene	µg/Kg	340	U	9	350	U	9	350	U	9	350	U	9	350	U	9
Chrysene	µg/Kg	340	U	8	350	U	8	350	U	8	350	U	8	350	U	8
bis(2-Ethylhexyl)Phthalate	µg/Kg	4500	J	10	350	U	10	260	J	10	580	J	10	350	U	10
Di-n-Octyl Phthalate	µg/Kg	43	J	9	350	UJ	9	33	J	9	350	UJ	9	350	U	9
Benzo(b)Fluoranthene	µg/Kg	340	UJ	13	350	UJ	13	350	UJ	13	350	UJ	13	350	U	13
Benzo(k)Fluoranthene	µg/Kg	340	U	14	350	U	14	350	U	14	350	U	14	350	U	14
Benzo(a)Pyrene	µg/Kg	340	U	8	350	U	8	350	U	8	350	U	8	350	U	8
Indeno(1,2,3-cd)Pyrene	µg/Kg	340	U	8	350	U	8	350	U	8	350	U	8	350	U	8
Dibenz(a,h)Anthracene	µg/Kg	340	U	11	350	U	11	350	U	11	350	U	11	350	U	11
Benzo(g,h,i)Perylene	µg/Kg	340	U	40	350	U	40	350	U	40	350	U	40	350	U	40

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB40-66 Date Sampled: 9/24/2002 Lab ID: Y2732-2 % Solids: 97.3			Sample Point SS01-06 Date Sampled: 11/21/2002 Lab ID: C2732-1 % Solids: 89			Sample Point SS02-06 Date Sampled: 11/21/2002 Lab ID: C2732-2 % Solids: 82			Sample Point SS03-06 Date Sampled: 11/21/2002 Lab ID: C2732-3 %Solids: 86			Sample Point DSS03-06 Date Sampled: 11/21/2002 Lab ID: C2732-10 %Solids: 86		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/Kg	340	U	4	370	U	4	400	U	4	380	U	4	380	U	4
Phenol	µg/Kg	340	U	8	370	U	8	400	U	8	380	U	8	380	U	8
bis(2-Chloroethyl)ether	µg/Kg	340	U	8	370	U	8	400	U	8	380	U	8	380	U	8
2-Chlorophenol	µg/Kg	340	U	8	370	U	8	400	U	8	380	U	8	380	U	8
2-Methylphenol	µg/Kg	340	U	11	370	U	11	400	U	11	380	U	11	380	U	11
2,2'-Oxybis(1-Chloropropane)	µg/Kg	340	U	9	370	U	9	400	U	9	380	U	9	380	U	9
Acetophenone	µg/Kg	340	U	10	370	U	10	400	U	10	380	U	10	380	U	10
4-Methylphenol	µg/Kg	340	U	12	370	U	12	400	U	12	380	U	12	380	U	12
N-Nitroso-di-n-propylamine	µg/Kg	340	U	10	370	U	10	400	U	10	380	U	10	380	U	10
Hexachloroethane	µg/Kg	340	U	8	370	U	8	400	U	8	380	U	8	380	U	8
Nitrobenzene	µg/Kg	340	U	12	370	U	12	400	U	12	380	U	12	380	U	12
Isophorone	µg/Kg	340	U	9	370	U	9	400	U	9	380	U	9	380	U	9
2-Nitrophenol	µg/Kg	340	U	10	370	U	10	400	U	10	380	U	10	380	U	10
2,4-Dimethylphenol	µg/Kg	340	U	9	370	U	9	400	U	9	380	U	9	380	U	9
bis(2-Chloroethoxy)Methane	µg/Kg	340	U	9	370	U	9	400	U	9	380	U	9	380	U	9
2,4-Dichlorophenol	µg/Kg	340	U	7	370	U	7	400	U	7	380	U	7	380	U	7
Naphthalene	µg/Kg	340	U	8	370	U	8	400	U	8	380	U	8	380	U	8
4-Chloroaniline	µg/Kg	340	U	2	370	U	2	400	U	2	380	U	2	380	U	2
Hexachlorobutadiene	µg/Kg	340	U	8	370	U	8	400	U	8	380	U	8	380	U	8
4-Chloro-3-Methylphenol	µg/Kg	340	U	12	370	U	12	400	U	12	380	U	12	380	U	12
2-Methylnaphthalene	µg/Kg	340	U	10	370	U	10	400	U	10	380	U	10	380	U	10
Hexachlorocyclopentadiene	µg/Kg	340	U	11	370	UJ	11	400	UJ	11	380	UJ	11	380	UJ	11
Caprolactam	µg/Kg	340	U	14	370	U	14	400	U	14	380	U	14	380	U	14
2,4,6-Trichlorophenol	µg/Kg	340	U	15	370	U	15	400	U	15	380	U	15	380	U	15
2,4,5-Trichlorophenol	µg/Kg	860	U	13	930	U	13	1000	U	13	970	U	13	970	U	13
1,1'-Biphenyl	µg/Kg	340	U	9	370	U	9	400	U	9	380	U	9	380	U	9
2-Chloronaphthalene	µg/Kg	340	U	9	370	U	9	400	U	9	380	U	9	380	U	9
2-Nitroaniline	µg/Kg	860	U	7	930	U	7	1000	U	7	970	U	7	970	U	7
Dimethyl Phthalate	µg/Kg	340	U	9	370	U	9	400	U	9	380	U	9	380	U	9
2,6-Dinitrotoluene	µg/Kg	340	U	10	370	U	10	400	U	10	380	U	10	380	U	10
Acenaphthylene	µg/Kg	340	U	8	370	U	8	400	U	8	380	U	8	380	U	8
3-Nitroaniline	µg/Kg	860	U	9	930	U	9	1000	U	9	970	U	9	970	U	9
Acenaphthene	µg/Kg	340	U	9	370	U	9	400	U	9	380	U	9	380	U	9
2,4-Dinitrophenol	µg/Kg	860	U	150	930	UJ	150	1000	UJ	150	970	UJ	150	970	UJ	150
4-Nitrophenol	µg/Kg	860	U	55	930	U	55	1000	U	55	970	U	55	970	U	55

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

		Sample Point SB40-66 Date Sampled: 9/24/2002 Lab ID: Y2732-2 % Solids: 97.3			Sample Point SS01-06 Date Sampled: 11/21/2002 Lab ID: C2732-1 % Solids: 89			Sample Point SS02-06 Date Sampled: 11/21/2002 Lab ID: C2732-2 % Solids: 82			Sample Point SS03-06 Date Sampled: 11/21/2002 Lab ID: C2732-3 %Solids: 86			Sample Point DSS03-06 Date Sampled: 11/21/2002 Lab ID: C2732-10 %Solids: 86		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dibenzofuran	µg/Kg	340	U	7	370	U	7	400	U	7	380	U	7	380	U	7
2,4-Dinitrotoluene	µg/Kg	340	U	7	370	U	7	400	U	7	380	U	7	380	U	7
Diethylphthalate	µg/Kg	340	U	9	370	U	9	400	U	9	380	U	9	380	U	9
Fluorene	µg/Kg	340	U	8	370	U	8	400	U	8	380	U	8	380	U	8
4-Chlorophenyl-phenylether	µg/Kg	340	U	7	370	U	7	400	U	7	380	U	7	380	U	7
4-Nitroaniline	µg/Kg	860	U	17	930	U	17	1000	U	17	970	U	17	970	U	17
4,6-Dinitro-2-methylphenol	µg/Kg	860	U	14	930	UJ	14	1000	UJ	14	970	UJ	14	970	UJ	14
N-Nitrosodiphenylamine	µg/Kg	340	U	10	370	U	10	400	U	10	380	U	10	380	U	10
4-Bromophenyl-phenylether	µg/Kg	340	U	10	370	U	10	400	U	10	380	U	10	380	UJ	10
Hexachlorobenzene	µg/Kg	340	U	11	370	U	11	400	U	11	380	U	11	380	U	11
Atrazine	µg/Kg	340	U	6	370	U	6	400	U	6	380	U	6	380	U	6
Pentachlorophenol	µg/Kg	860	U	33	930	UJ	33	1000	UJ	33	970	UJ	33	970	UJ	33
Phenanthrene	µg/Kg	340	U	10	18	J	10	400	U	10	380	U	10	380	U	10
Anthracene	µg/Kg	340	U	8	370	U	8	400	U	8	380	U	8	380	U	8
Carbazole	µg/Kg	340	U	9	370	U	9	400	U	9	380	U	9	380	U	9
Di-n-butylphthalate	µg/Kg	340	U	11	370	U	11	400	U	11	380	U	11	380	U	11
Fluoranthene	µg/Kg	340	U	7	26	J	7	21	J	7	380	U	7	380	U	7
Pyrene	µg/Kg	340	U	13	25	J	13	16	J	13	380	U	13	380	U	13
Butylbenzylphthalate	µg/Kg	340	U	9	370	U	9	400	U	9	380	U	9	380	U	9
3,3'-Dichlorobenzidine	µg/Kg	340	U	20	370	U	20	400	U	20	380	U	20	380	U	20
Benzo(a)Anthracene	µg/Kg	340	U	9	12	J	9	400	U	9	380	U	9	380	U	9
Chrysene	µg/Kg	340	U	8	18	J	8	400	U	8	380	U	8	380	U	8
bis(2-Ethylhexyl)Phthalate	µg/Kg	340	U	10	370	U	10	400	U	10	380	U	10	380	U	10
Di-n-Octyl Phthalate	µg/Kg	340	U	9	370	U	9	200	J	9	380	U	9	80	J	9
Benzo(b)Fluoranthene	µg/Kg	340	U	13	370	U	13	400	U	13	380	U	13	380	U	13
Benzo(k)Fluoranthene	µg/Kg	340	U	14	370	U	14	400	U	14	380	U	14	380	U	14
Benzo(a)Pyrene	µg/Kg	340	U	8	13	J	8	400	U	8	380	U	8	380	U	8
Indeno(1,2,3-cd)Pyrene	µg/Kg	340	U	8	13	J	8	400	U	8	380	U	8	380	U	8
Dibenz(a,h)Anthracene	µg/Kg	340	U	11	370	U	11	400	U	11	380	U	11	380	U	11
Benzo(g,h,i)Perylene	µg/Kg	340	U	40	370	U	40	400	U	40	380	U	40	380	U	40

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SS04-06 Date Sampled: 11/21/2002 Lab ID: C2732-4 % Solids: 92			Sample Point SS05-06 Date Sampled: 11/21/2002 Lab ID: C2732-5 % Solids: 91			Sample Point SS06-06 Date Sampled: 11/21/2002 Lab ID: C2732-6 % Solids: 87			Sample Point SS07-06 Date Sampled: 11/21/2002 Lab ID: C2732-7 %Solids: 93			Sample Point SS08-06 Date Sampled: 11/21/2002 Lab ID: C2732-8 %Solids: 95		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/Kg	360	U	4	360	U	4	380	U	4	350	U	4	350	U	4
Phenol	µg/Kg	360	U	8	360	U	8	380	U	8	350	U	8	350	U	8
bis(2-Chloroethyl)ether	µg/Kg	360	U	8	360	U	8	380	U	8	350	U	8	350	U	8
2-Chlorophenol	µg/Kg	360	U	8	360	U	8	380	U	8	350	U	8	350	U	8
2-Methylphenol	µg/Kg	360	U	11	360	U	11	380	U	11	350	U	11	350	U	11
2,2'-Oxybis(1-Chloropropane)	µg/Kg	360	U	9	360	U	9	380	U	9	350	U	9	350	U	9
Acetophenone	µg/Kg	360	U	10	360	U	10	380	U	10	350	U	10	350	U	10
4-Methylphenol	µg/Kg	360	U	12	360	U	12	380	U	12	350	U	12	350	U	12
N-Nitroso-di-n-propylamine	µg/Kg	360	U	10	360	U	10	380	U	10	350	U	10	350	U	10
Hexachloroethane	µg/Kg	360	U	8	360	U	8	380	U	8	350	U	8	350	U	8
Nitrobenzene	µg/Kg	360	U	12	360	U	12	380	U	12	350	U	12	350	U	12
Isophorone	µg/Kg	360	U	9	360	U	9	380	U	9	350	U	9	350	U	9
2-Nitrophenol	µg/Kg	360	U	10	360	U	10	380	U	10	350	U	10	350	U	10
2,4-Dimethylphenol	µg/Kg	360	U	9	360	U	9	380	U	9	350	U	9	350	U	9
bis(2-Chloroethoxy)Methane	µg/Kg	360	U	9	360	U	9	380	U	9	350	U	9	350	U	9
2,4-Dichlorophenol	µg/Kg	360	U	7	360	U	7	380	U	7	350	U	7	350	U	7
Naphthalene	µg/Kg	360	U	8	360	U	8	380	U	8	350	U	8	350	U	8
4-Chloroaniline	µg/Kg	360	U	2	360	U	2	380	U	2	350	U	2	350	U	2
Hexachlorobutadiene	µg/Kg	360	U	8	360	U	8	380	U	8	350	U	8	350	U	8
4-Chloro-3-Methylphenol	µg/Kg	360	U	12	360	U	12	380	U	12	350	U	12	350	U	12
2-Methylnaphthalene	µg/Kg	360	U	10	360	U	10	380	U	10	350	U	10	350	U	10
Hexachlorocyclopentadiene	µg/Kg	360	UJ	11	360	UJ	11	380	UJ	11	350	UJ	11	350	UJ	11
Caprolactam	µg/Kg	360	U	14	360	U	14	380	U	14	350	U	14	350	U	14
2,4,6-Trichlorophenol	µg/Kg	360	U	15	360	U	15	380	U	15	350	U	15	350	U	15
2,4,5-Trichlorophenol	µg/Kg	900	U	13	910	U	13	950	U	13	890	U	13	870	U	13
1,1'-Biphenyl	µg/Kg	360	U	9	360	U	9	380	U	9	350	U	9	350	U	9
2-Chloronaphthalene	µg/Kg	360	U	9	360	U	9	380	U	9	350	U	9	350	U	9
2-Nitroaniline	µg/Kg	900	U	7	910	U	7	950	U	7	890	U	7	870	U	7
Dimethyl Phthalate	µg/Kg	360	U	9	360	U	9	380	U	9	350	U	9	350	U	9
2,6-Dinitrotoluene	µg/Kg	360	U	10	360	U	10	380	U	10	350	U	10	350	U	10
Acenaphthylene	µg/Kg	360	U	8	360	U	8	380	U	8	350	U	8	350	U	8
3-Nitroaniline	µg/Kg	900	U	9	910	U	9	950	U	9	890	U	9	870	U	9
Acenaphthene	µg/Kg	360	U	9	360	U	9	380	U	9	350	U	9	350	U	9
2,4-Dinitrophenol	µg/Kg	900	U	150	910	U	150	950	U	150	890	U	150	870	U	150
4-Nitrophenol	µg/Kg	900	U	55	910	U	55	950	U	55	890	U	55	870	U	55

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SS04-06 Date Sampled: 11/21/2002 Lab ID: C2732-4 % Solids: 92			Sample Point SS05-06 Date Sampled: 11/21/2002 Lab ID: C2732-5 % Solids: 91			Sample Point SS06-06 Date Sampled: 11/21/2002 Lab ID: C2732-6 % Solids: 87			Sample Point SS07-06 Date Sampled: 11/21/2002 Lab ID: C2732-7 %Solids: 93			Sample Point SS08-06 Date Sampled: 11/21/2002 Lab ID: C2732-8 %Solids: 95		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dibenzofuran	µg/Kg	360	U	7	360	U	7	380	U	7	350	U	7	350	U	7
2,4-Dinitrotoluene	µg/Kg	360	U	7	360	U	7	380	U	7	350	U	7	350	U	7
Diethylphthalate	µg/Kg	360	U	9	360	U	9	380	U	9	350	U	9	350	U	9
Fluorene	µg/Kg	360	U	8	360	U	8	380	U	8	350	U	8	350	U	8
4-Chlorophenyl-phenylether	µg/Kg	360	U	7	360	U	7	380	U	7	350	U	7	350	U	7
4-Nitroaniline	µg/Kg	900	U	17	910	U	17	950	U	17	890	U	17	870	U	17
4,6-Dinitro-2-methylphenol	µg/Kg	900	UJ	14	910	UJ	14	950	UJ	14	890	UJ	14	870	UJ	14
N-Nitrosodiphenylamine	µg/Kg	360	U	10	360	U	10	380	U	10	350	U	10	350	U	10
4-Bromophenyl-phenylether	µg/Kg	360	U	10	360	U	10	380	U	10	350	U	10	350	U	10
Hexachlorobenzene	µg/Kg	360	U	11	360	U	11	380	U	11	350	U	11	350	U	11
Atrazine	µg/Kg	360	U	6	360	U	6	380	U	6	350	U	6	350	U	6
Pentachlorophenol	µg/Kg	900	UJ	33	910	U	33	950	UJ	33	890	UJ	33	870	UJ	33
Phenanthrene	µg/Kg	12	J	10	360	U	10	380	U	10	350	U	10	350	U	10
Anthracene	µg/Kg	360	U	8	360	U	8	380	U	8	350	U	8	350	U	8
Carbazole	µg/Kg	360	U	9	360	U	9	380	U	9	350	U	9	350	U	9
Di-n-butylphthalate	µg/Kg	360	U	11	360	U	11	380	U	11	350	U	11	350	U	11
Fluoranthene	µg/Kg	10	J	7	16	J	7	380	U	7	350	U	7	11	J	7
Pyrene	µg/Kg	360	U	13	16	J	13	380	U	13	350	U	13	350	U	13
Butylbenzylphthalate	µg/Kg	360	U	9	360	U	9	380	U	9	350	U	9	350	U	9
3,3'-Dichlorobenzidine	µg/Kg	360	U	20	360	U	20	380	U	20	350	U	20	350	U	20
Benzo(a)Anthracene	µg/Kg	360	U	9	360	U	9	380	U	9	350	U	9	350	U	9
Chrysene	µg/Kg	360	U	8	360	U	8	380	U	8	350	U	8	350	U	8
bis(2-Ethylhexyl)Phthalate	µg/Kg	360	U	10	360	U	10	380	U	10	350	U	10	350	U	10
Di-n-Octyl Phthalate	µg/Kg	34	J	9	450		9	380	U	9	350	U	9	350	U	9
Benzo(b)Fluoranthene	µg/Kg	360	U	13	360	U	13	380	U	13	350	U	13	350	U	13
Benzo(k)Fluoranthene	µg/Kg	360	U	14	360	U	14	380	U	14	350	U	14	350	U	14
Benzo(a)Pyrene	µg/Kg	360	U	8	11	J	8	380	U	8	350	U	8	350	U	8
Indeno(1,2,3-cd)Pyrene	µg/Kg	360	U	8	360	U	8	380	U	8	350	U	8	350	U	8
Dibenz(a,h)Anthracene	µg/Kg	360	U	11	360	U	11	380	U	11	350	U	11	350	U	11
Benzo(g,h,i)Perylene	µg/Kg	360	U	40	360	U	40	380	U	40	350	U	40	350	U	40

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SS09-06 Date Sampled: 11/21/2002 Lab ID: C2732-9 % Solids: 94			Sample Point Date Sampled: Lab ID: % Solids:			Sample Point Date Sampled: Lab ID: % Solids:			Sample Point Date Sampled: Lab ID: %Solids:			Sample Point Date Sampled: Lab ID: %Solids:		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/Kg	65	U	4												
Phenol	µg/Kg	350	U	8												
bis(2-Chloroethyl)ether	µg/Kg	350	U	8												
2-Chlorophenol	µg/Kg	350	U	8												
2-Methylphenol	µg/Kg	350	U	11												
2,2'-Oxybis(1-Chloropropane)	µg/Kg	350	U	9												
Acetophenone	µg/Kg	350	U	10												
4-Methylphenol	µg/Kg	350	U	12												
N-Nitroso-di-n-propylamine	µg/Kg	350	U	10												
Hexachloroethane	µg/Kg	350	U	8												
Nitrobenzene	µg/Kg	350	U	12												
Isophorone	µg/Kg	350	U	9												
2-Nitrophenol	µg/Kg	350	U	10												
2,4-Dimethylphenol	µg/Kg	350	U	9												
bis(2-Chloroethoxy)Methane	µg/Kg	350	U	9												
2,4-Dichlorophenol	µg/Kg	350	U	7												
Naphthalene	µg/Kg	350	U	8												
4-Chloroaniline	µg/Kg	350	U	2												
Hexachlorobutadiene	µg/Kg	350	U	8												
4-Chloro-3-Methylphenol	µg/Kg	350	U	12												
2-Methylnaphthalene	µg/Kg	350	U	10												
Hexachlorocyclopentadiene	µg/Kg	350	UJ	11												
Caprolactam	µg/Kg	350	U	14												
2,4,6-Trichlorophenol	µg/Kg	350	U	15												
2,4,5-Trichlorophenol	µg/Kg	880	U	13												
1,1'-Biphenyl	µg/Kg	350	U	9												
2-Chloronaphthalene	µg/Kg	350	U	9												
2-Nitroaniline	µg/Kg	880	U	7												
Dimethyl Phthalate	µg/Kg	350	U	9												
2,6-Dinitrotoluene	µg/Kg	350	U	10												
Acenaphthylene	µg/Kg	350	U	8												
3-Nitroaniline	µg/Kg	880	U	9												
Acenaphthene	µg/Kg	350	U	9												
2,4-Dinitrophenol	µg/Kg	880	UJ	150												
4-Nitrophenol	µg/Kg	880	U	55												

Table E-2 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SS09-06 Date Sampled: 11/21/2002 Lab ID: C2732-9 % Solids: 94			Sample Point Date Sampled: Lab ID: % Solids:			Sample Point Date Sampled: Lab ID: % Solids:			Sample Point Date Sampled: Lab ID: %Solids:			Sample Point Date Sampled: Lab ID: %Solids:		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dibenzofuran	µg/Kg	350	U	7												
2,4-Dinitrotoluene	µg/Kg	350	U	7												
Diethylphthalate	µg/Kg	350	U	9												
Fluorene	µg/Kg	350	U	8												
4-Chlorophenyl-phenylether	µg/Kg	350	U	7												
4-Nitroaniline	µg/Kg	880	U	17												
4,6-Dinitro-2-methylphenol	µg/Kg	880	UJ	14												
N-Nitrosodiphenylamine	µg/Kg	350	U	10												
4-Bromophenyl-phenylether	µg/Kg	350	U	10												
Hexachlorobenzene	µg/Kg	350	U	11												
Atrazine	µg/Kg	350	U	6												
Pentachlorophenol	µg/Kg	880	UJ	33												
Phenanthrene	µg/Kg	350	U	10												
Anthracene	µg/Kg	350	U	8												
Carbazole	µg/Kg	350	U	9												
Di-n-butylphthalate	µg/Kg	350	U	11												
Fluoranthene	µg/Kg	26	J	7												
Pyrene	µg/Kg	23	J	13												
Butylbenzylphthalate	µg/Kg	350	U	9												
3,3'-Dichlorobenzidine	µg/Kg	350	U	20												
Benzo(a)Anthracene	µg/Kg	10	J	9												
Chrysene	µg/Kg	18	J	8												
bis(2-Ethylhexyl)Phthalate	µg/Kg	350	U	10												
Di-n-Octyl Phthalate	µg/Kg	98	J	9												
Benzo(b)Fluoranthene	µg/Kg	350	U	13												
Benzo(k)Fluoranthene	µg/Kg	350	U	14												
Benzo(a)Pyrene	µg/Kg	14	J	8												
Indeno(1,2,3-cd)Pyrene	µg/Kg	12	J	8												
Dibenz(a,h)Anthracene	µg/Kg	350	U	11												
Benzo(g,h,i)Perylene	µg/Kg	350	U	40												

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (c)
Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB01-06 Date Sampled: 9/18/2002 Lab ID: R2732-15 % Solids: 97.1			Sample Point SB01-66 Date Sampled: 9/18/2002 Lab ID: R2732-16 % Solids: 93			Sample Point SB02-06 Date Sampled: 9/18/2002 Lab ID: R2732-11 % Solids: 95.4			Sample Point SB02-66 Date Sampled: 9/18/2002 Lab ID: R2732-12 %Solids: 97.6			Sample Point SB03-06 Date Sampled: 9/19/2002 Lab ID: T2732-1 %Solids: 95.4		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/Kg	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38	1.7	U	0.38	1.8	U	0.38
beta-BHC	µg/Kg	1.8	U	1	1.8	U	1	1.8	U	1	1.7	U	1	1.8	U	1
delta-BHC	µg/Kg	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9	1.7	U	0.9	1.8	U	0.9
gamma-BHC (Lindane)	µg/Kg	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37	1.7	U	0.37	1.8	U	0.37
Heptachlor	µg/Kg	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68	1.7	U	0.68	1.8	U	0.68
Aldrin	µg/Kg	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73	1.7	U	0.73	1.8	U	0.73
Heptachlor epoxide	µg/Kg	1.8	U	0.48	1.8	U	0.48	1	J	0.48	1.7	U	0.48	1.8	U	0.48
Endosulfan I	µg/Kg	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3	1.7	U	0.3	1.8	U	0.3
Dieldrin	µg/Kg	3.4	U	1.3	3.5	U	1.3	3.5	U	1.3	3.4	U	1.3	3.5	U	1.3
4,4'-DDE	µg/Kg	3.4	U	0.9	3.5	U	0.9	3.5	U	0.9	3.4	U	0.9	3.5	U	0.9
Endrin	µg/Kg	3.4	U	1.8	3.5	U	1.8	3.5	U	1.8	3.4	U	1.8	3.5	U	1.8
Endosulfan II	µg/Kg	3.4	U	1.1	3.5	U	1.1	3.5	U	1.1	3.4	U	1.1	3.5	U	1.1
4,4'-DDD	µg/Kg	3.4	U	0.97	3.5	U	0.97	3.5	U	0.97	3.4	U	0.97	3.5	U	0.97
Endosulfan sulfate	µg/Kg	3.4	U	1	3.5	U	1	3.5	U	1	3.4	U	1	3.5	U	1
4,4'-DDT	µg/Kg	3.4	U	1.6	3.5	U	1.6	3.5	U	1.6	3.4	U	1.6	3.5	U	1.6
Methoxychlor	µg/Kg	18	U	13	18	U	13	18	U	13	17	U	13	18	U	13
Endrin ketone	µg/Kg	3.4	U	1.1	3.5	U	1.1	3.5	U	1.1	3.4	U	1.1	3.5	U	1.1
Endrin aldehyde	µg/Kg	3.4	U	0.87	3.5	U	0.87	3.5	U	0.87	3.4	U	0.87	3.5	U	0.87
alpha-Chlordane	µg/Kg	4.6	JN	0.78	2.7	J	0.78	25	JN	0.78	1.7	U	0.78	1.8	U	0.78
gamma-Chlordane	µg/Kg	3.2		0.72	1.9		0.72	20		0.72	1.7	U	0.72	1.8	U	0.72
Toxaphene	µg/Kg	180	U	58	180	U	58	180	U	58	170	U	58	180	U	58
Aroclor-1016	µg/Kg	34	U	16	35	U	16	35	U	16	34	U	16	35	U	16
Aroclor-1221	µg/Kg	69	U	22	72	U	22	71	U	22	68	U	22	71	U	22
Aroclor-1232	µg/Kg	34	U	17	35	U	17	35	U	17	34	U	17	35	U	17
Aroclor-1242	µg/Kg	34	U	23	35	U	23	35	U	23	34	U	23	35	U	23
Aroclor-1248	µg/Kg	34	U	6.7	35	U	6.7	35	U	6.7	34	U	6.7	35	U	6.7
Aroclor-1254	µg/Kg	34	U	3.7	35	U	3.7	35	U	3.7	34	U	3.7	35	U	3.7
Aroclor-1260	µg/Kg	34	U	5.8	35	U	5.8	35	U	5.8	34	U	5.8	35	U	5.8

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (c)
Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB03-132 Date Sampled: 9/19/2002 Lab ID: T2732-2 % Solids: 95			Sample Point SB04-06 Date Sampled: 9/19/2002 Lab ID: T2732-3 % Solids: 94.9			Sample Point SB04-66 Date Sampled: 9/19/2002 Lab ID: T2732-4 % Solids: 95.6			Sample Point SB05-06 Date Sampled: 9/19/2002 Lab ID: T2732-5 %Solids: 93.8			Sample Point SB05-66 Date Sampled: 9/19/2002 Lab ID: T2732-6 %Solids: 97.8		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/Kg	1.8	UJ	0.38	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38	1.7	U	0.38
beta-BHC	µg/Kg	1.8	UJ	1	1.8	U	1	1.8	U	1	1.8	U	1	1.7	U	1
delta-BHC	µg/Kg	1.8	UJ	0.9	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9	1.7	U	0.9
gamma-BHC (Lindane)	µg/Kg	1.8	UJ	0.37	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37	1.7	U	0.37
Heptachlor	µg/Kg	1.8	UJ	0.68	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68	1.7	U	0.68
Aldrin	µg/Kg	1.8	UJ	0.73	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73	1.7	U	0.73
Heptachlor epoxide	µg/Kg	1.8	UJ	0.48	1.8	U	0.48	1.8	U	0.48	1.8	U	0.48	1.7	U	0.48
Endosulfan I	µg/Kg	1.8	UJ	0.3	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3	1.7	U	0.3
Dieldrin	µg/Kg	3.5	UJ	1.3	3.5	U	1.3	3.4	U	1.3	3.5	U	1.3	3.4	U	1.3
4,4'-DDE	µg/Kg	3.5	UJ	0.9	3.5	U	0.9	3.4	U	0.9	3.5	U	0.9	3.4	U	0.9
Endrin	µg/Kg	3.5	UJ	1.8	3.5	U	1.8	3.4	U	1.8	3.5	U	1.8	3.4	U	1.8
Endosulfan II	µg/Kg	3.5	UJ	1.1	3.5	U	1.1	3.4	U	1.1	3.5	U	1.1	3.4	U	1.1
4,4'-DDD	µg/Kg	1.5	J	0.97	3.5	U	0.97	3.4	U	0.97	3.5	U	0.97	3.4	U	0.97
Endosulfan sulfate	µg/Kg	3.5	UJ	1	3.5	U	1	3.4	U	1	3.5	U	1	3.4	U	1
4,4'-DDT	µg/Kg	3	J	1.6	3.5	U	1.6	3.4	U	1.6	3.5	U	1.6	3.4	U	1.6
Methoxychlor	µg/Kg	18	UJ	13	18	U	13	18	U	13	18	U	13	17	U	13
Endrin ketone	µg/Kg	3.5	UJ	1.1	3.5	U	1.1	3.4	U	1.1	3.5	U	1.1	3.4	U	1.1
Endrin aldehyde	µg/Kg	3.5	UJ	0.87	3.5	U	0.87	3.4	U	0.87	3.5	U	0.87	3.4	U	0.87
alpha-Chlordane	µg/Kg	1.8	UJ	0.78	1.8	U	0.78	1.8	U	0.78	4.8	JN	0.78	1.7	U	0.78
gamma-Chlordane	µg/Kg	1.8	UJ	0.72	1.8	U	0.72	1.8	U	0.72	3.9		0.72	1.7	U	0.72
Toxaphene	µg/Kg	180	UJ	58	180	U	58	180	U	58	180	U	58	170	U	58
Aroclor-1016	µg/Kg	35	UJ	16	35	U	16	34	U	16	35	U	16	34	U	16
Aroclor-1221	µg/Kg	71	UJ	22	71	U	22	70	U	22	71	U	22	68	U	22
Aroclor-1232	µg/Kg	35	UJ	17	35	U	17	34	U	17	35	U	17	34	U	17
Aroclor-1242	µg/Kg	35	UJ	23	35	U	23	34	U	23	35	U	23	34	U	23
Aroclor-1248	µg/Kg	35	UJ	6.7	35	U	6.7	34	U	6.7	35	U	6.7	34	U	6.7
Aroclor-1254	µg/Kg	35	UJ	3.7	35	U	3.7	34	U	3.7	35	U	3.7	34	U	3.7
Aroclor-1260	µg/Kg	35	UJ	5.8	35	U	5.8	34	U	5.8	35	U	5.8	34	U	5.8

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (c)
Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB06-06 Date Sampled: 9/19/2002 Lab ID: R2732-19 % Solids: 95.7			Sample Point SB06-66 Date Sampled: 9/19/2002 Lab ID: R2732-20 % Solids: 96.9			Sample Point SB07-06 Date Sampled: 9/19/2002 Lab ID: T2732-7 % Solids: 87.3			Sample Point DSB07-06 Date Sampled: 9/19/2002 Lab ID: T2732-9 %Solids: 88.1			Sample Point SB07-66 Date Sampled: 9/19/2002 Lab ID: T2732-8 %Solids: 96.7		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/Kg	1.8	U	0.38	1.8	U	0.38	2	U	0.38	1.9	U	0.38	1.8	U	0.38
beta-BHC	µg/Kg	1.8	U	1	1.8	U	1	2	U	1	1.9	U	1	1.8	U	1
delta-BHC	µg/Kg	1.8	U	0.9	1.8	U	0.9	2	U	0.9	1.9	U	0.9	1.8	U	0.9
gamma-BHC (Lindane)	µg/Kg	1.8	U	0.37	1.8	U	0.37	2	U	0.37	1.9	U	0.37	1.8	U	0.37
Heptachlor	µg/Kg	1.8	U	0.68	1.8	U	0.68	3.3		0.68	5.7	JN	0.68	1.8	U	0.68
Aldrin	µg/Kg	1.8	U	0.73	1.8	U	0.73	2	U	0.73	1.9	U	0.73	1.8	U	0.73
Heptachlor epoxide	µg/Kg	14	R	0.48	1.8	U	0.48	2	U	0.48	1.9	R	0.48	1.8	U	0.48
Endosulfan I	µg/Kg	8		0.3	1.8	U	0.3	2	U	0.3	1.9	U	0.3	1.8	U	0.3
Dieldrin	µg/Kg	9.1		1.3	3.4	U	1.3	3.8	U	1.3	3.8	U	1.3	3.4	U	1.3
4,4'-DDE	µg/Kg	12	J	0.9	3.4	U	0.9	3.9	R	0.9	3.8	U	0.9	3.4	U	0.9
Endrin	µg/Kg	3.4	U	1.8	3.4	U	1.8	3.8	U	1.8	3.8	U	1.8	3.4	U	1.8
Endosulfan II	µg/Kg	3.4	U	1.1	3.4	U	1.1	3.8	U	1.1	3.8	U	1.1	3.4	U	1.1
4,4'-DDD	µg/Kg	3.4	U	0.97	3.4	U	0.97	3.8	U	0.97	3.8	U	0.97	3.4	U	0.97
Endosulfan sulfate	µg/Kg	3.4	U	1	3.4	U	1	3.8	U	1	3.8	U	1	3.4	U	1
4,4'-DDT	µg/Kg	14	J	1.6	3.4	U	1.6	3.8	U	1.6	3.8	U	1.6	3.4	U	1.6
Methoxychlor	µg/Kg	18	U	13	18	U	13	20	U	13	19	U	13	18	U	13
Endrin ketone	µg/Kg	3.4	U	1.1	3.4	U	1.1	3.8	U	1.1	3.8	U	1.1	3.4	U	1.1
Endrin aldehyde	µg/Kg	3.7		0.87	3.4	U	0.87	3.8	U	0.87	3.8	U	0.87	3.4	U	0.87
alpha-Chlordane	µg/Kg	97	JN	0.78	1.8	U	0.78	15	JN	0.78	10	JN	0.78	1.8	U	0.78
gamma-Chlordane	µg/Kg	89		0.72	1.8	U	0.72	14		0.72	18		0.72	1.8	U	0.72
Toxaphene	µg/Kg	180	U	58	180	U	58	200	U	58	190	U	58	180	U	58
Aroclor-1016	µg/Kg	34	U	16	34	U	16	38	U	16	38	U	16	34	U	16
Aroclor-1221	µg/Kg	70	U	22	69	U	22	77	U	22	76	U	22	69	U	22
Aroclor-1232	µg/Kg	34	U	17	34	U	17	38	U	17	38	U	17	34	U	17
Aroclor-1242	µg/Kg	34	U	23	34	U	23	38	U	23	38	U	23	34	U	23
Aroclor-1248	µg/Kg	34	U	6.7	34	U	6.7	38	U	6.7	38	U	6.7	34	U	6.7
Aroclor-1254	µg/Kg	34	U	3.7	34	U	3.7	38	U	3.7	38	U	3.7	34	U	3.7
Aroclor-1260	µg/Kg	34	U	5.8	34	U	5.8	38	U	5.8	38	U	5.8	34	U	5.8

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (c)
Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB08-06 Date Sampled: 9/19/2002 Lab ID: T2732-10 % Solids: 95			Sample Point SB08-66 Date Sampled: 9/19/2002 Lab ID: T2732-11 % Solids: 95.2			Sample Point SB09-06 Date Sampled: 9/20/2002 Lab ID: W2732-6 % Solids: 89.7			Sample Point SB09-66 Date Sampled: 9/20/2002 Lab ID: W2732-7 %Solids: 96.3			Sample Point SB10-06 Date Sampled: 9/20/2002 Lab ID: W2732-4 %Solids: 84.8		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/Kg	1.8	U	0.38	1.8	U	0.38	1.9	U	0.38	1.8	U	0.38	2	U	0.38
beta-BHC	µg/Kg	1.8	U	1	1.8	U	1	1.9	U	1	1.8	U	1	2	U	1
delta-BHC	µg/Kg	1.8	U	0.9	1.8	U	0.9	1.9	U	0.9	1.8	U	0.9	2	U	0.9
gamma-BHC (Lindane)	µg/Kg	1.8	U	0.37	1.8	U	0.37	1.9	U	0.37	1.8	U	0.37	2	U	0.37
Heptachlor	µg/Kg	4.8	R	0.68	1.8	U	0.68	1.9	U	0.68	1.8	U	0.68	2	U	0.68
Aldrin	µg/Kg	1.8	U	0.73	1.8	U	0.73	1.9	U	0.73	1.8	U	0.73	2	U	0.73
Heptachlor epoxide	µg/Kg	1.8	U	0.48	1.8	U	0.48	1.9	U	0.48	1.8	U	0.48	2	U	0.48
Endosulfan I	µg/Kg	1.8	U	0.3	1.8	U	0.3	1.9	U	0.3	1.8	U	0.3	2	U	0.3
Dieldrin	µg/Kg	4.8	J	1.3	3.5	U	1.3	3.7	U	1.3	3.4	U	1.3	3.9	U	1.3
4,4'-DDE	µg/Kg	11	J	0.9	3.5	U	0.9	3	J	0.9	3.4	U	0.9	3.9	U	0.9
Endrin	µg/Kg	3.5	U	1.8	3.5	U	1.8	3.7	U	1.8	3.4	U	1.8	3.9	U	1.8
Endosulfan II	µg/Kg	3.5	U	1.1	3.5	U	1.1	3.7	U	1.1	3.4	U	1.1	3.9	U	1.1
4,4'-DDD	µg/Kg	3.5	U	0.97	3.5	U	0.97	3.7	U	0.97	3.4	U	0.97	2	U	0.97
Endosulfan sulfate	µg/Kg	3.5	U	1	3.5	U	1	3.7	U	1	3.4	U	1	3.9	U	1
4,4'-DDT	µg/Kg	7.4	R	1.6	3.5	U	1.6	3.2	J	1.6	3.4	U	1.6	3.9	U	1.6
Methoxychlor	µg/Kg	18	U	13	18	U	13	19	U	13	18	U	13	20	U	13
Endrin ketone	µg/Kg	3.5	U	1.1	3.5	U	1.1	3.7	U	1.1	3.4	U	1.1	3.9	U	1.1
Endrin aldehyde	µg/Kg	3.9	J	0.87	3.5	U	0.87	3.7	U	0.87	3.4	U	0.87	3.9	U	0.87
alpha-Chlordane	µg/Kg	160	J	0.78	1.8	U	0.78	5.8	JN	0.78	1.8	U	0.78	14	JN	0.78
gamma-Chlordane	µg/Kg	120		0.72	1.8	U	0.72	4.8		0.72	1.8	U	0.72	14		0.72
Toxaphene	µg/Kg	180	U	58	180	U	58	190	U	58	180	U	58	200	U	58
Aroclor-1016	µg/Kg	35	U	16	35	U	16	37	U	16	34	U	16	39	U	16
Aroclor-1221	µg/Kg	71	U	22	71	U	22	74	U	22	70	U	22	79	U	22
Aroclor-1232	µg/Kg	35	U	17	35	U	17	37	U	17	34	U	17	39	U	17
Aroclor-1242	µg/Kg	35	U	23	35	U	23	37	U	23	34	U	23	39	U	23
Aroclor-1248	µg/Kg	35	U	6.7	35	U	6.7	37	U	6.7	34	U	6.7	39	U	6.7
Aroclor-1254	µg/Kg	35	U	3.7	35	U	3.7	37	U	3.7	34	U	3.7	39	U	3.7
Aroclor-1260	µg/Kg	35	U	5.8	35	U	5.8	37	U	5.8	34	U	5.8	39	U	5.8

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (c)
Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB10-66 Date Sampled: 9/20/2002 Lab ID: W2732-5 % Solids: 98			Sample Point SB11-06 Date Sampled: 9/25/2002 Lab ID: Y2732-3 % Solids: 94.8			Sample Point SB11-66 Date Sampled: 9/25/2002 Lab ID: Y2732-4 % Solids: 97.9			Sample Point SB12-06 Date Sampled: 9/24/2002 Lab ID: W2732-8 %Solids: 95.8			Sample Point SB13-06 Date Sampled: 9/20/2002 Lab ID: W2732-2 %Solids: 93.3		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/Kg	1.7	U	0.38	1.8	U	0.38	1.7	U	0.38	1.8	U	0.38	1.8	U	0.38
beta-BHC	µg/Kg	1.7	U	1	1.8	U	1	1.7	U	1	1.8	U	1	1.8	U	1
delta-BHC	µg/Kg	1.7	U	0.9	1.8	U	0.9	1.7	U	0.9	1.8	U	0.9	1.8	U	0.9
gamma-BHC (Lindane)	µg/Kg	1.7	U	0.37	1.8	U	0.37	1.7	U	0.37	1.8	U	0.37	1.8	U	0.37
Heptachlor	µg/Kg	1.7	U	0.68	1.8	U	0.68	1.7	U	0.68	1.8	U	0.68	1.8	U	0.68
Aldrin	µg/Kg	1.7	U	0.73	1.8	U	0.73	1.7	U	0.73	1.8	U	0.73	1.8	U	0.73
Heptachlor epoxide	µg/Kg	1.7	U	0.48	1.3	J	0.48	1.7	U	0.48	1.8	U	0.48	1.8	U	0.48
Endosulfan I	µg/Kg	1.7	U	0.3	1.8	U	0.3	1.7	U	0.3	1.8	U	0.3	1.8	U	0.3
Dieldrin	µg/Kg	3.4	U	1.3	3.5	U	1.3	3.4	U	1.3	3.4	U	1.3	3.5	U	1.3
4,4'-DDE	µg/Kg	3.4	U	0.9	3.5	U	0.9	3.4	U	0.9	3.4	U	0.9	3.5	U	0.9
Endrin	µg/Kg	3.4	U	1.8	3.5	U	1.8	3.4	U	1.8	3.4	U	1.8	3.5	U	1.8
Endosulfan II	µg/Kg	3.4	U	1.1	3.5	U	1.1	3.4	U	1.1	3.4	U	1.1	3.5	U	1.1
4,4'-DDD	µg/Kg	3.4	U	0.97	3.5	U	0.97	3.4	U	0.97	3.4	U	0.97	3.5	U	0.97
Endosulfan sulfate	µg/Kg	3.4	U	1	3.5	U	1	3.4	U	1	3.4	U	1	3.5	U	1
4,4'-DDT	µg/Kg	3.4	U	1.6	3.5	U	1.6	3.4	U	1.6	3.4	U	1.6	3.5	U	1.6
Methoxychlor	µg/Kg	17	U	13	18	U	13	17	U	13	18	U	13	18	U	13
Endrin ketone	µg/Kg	3.4	U	1.1	3.5	U	1.1	3.4	U	1.1	3.4	U	1.1	3.5	U	1.1
Endrin aldehyde	µg/Kg	3.4	U	0.87	3.5	U	0.87	3.4	U	0.87	3.4	U	0.87	3.5	U	0.87
alpha-Chlordane	µg/Kg	1.7	U	0.78	3.5	J	0.78	1.7	U	0.78	1.8	U	0.78	9.3	J	0.78
gamma-Chlordane	µg/Kg	1.7	U	0.72	2.3		0.72	1.7	U	0.72	1.8	U	0.72	6.6		0.72
Toxaphene	µg/Kg	170	U	58	180	U	58	170	U	58	180	U	58	180	U	58
Aroclor-1016	µg/Kg	34	U	16	35	U	16	34	U	16	34	U	16	35	U	16
Aroclor-1221	µg/Kg	68	U	22	71	U	22	68	U	22	70	U	22	72	U	22
Aroclor-1232	µg/Kg	34	U	17	35	U	17	34	U	17	34	U	17	35	U	17
Aroclor-1242	µg/Kg	34	U	23	35	U	23	34	U	23	34	U	23	35	U	23
Aroclor-1248	µg/Kg	34	U	6.7	35	U	6.7	34	U	6.7	34	U	6.7	35	U	6.7
Aroclor-1254	µg/Kg	34	U	3.7	35	U	3.7	34	U	3.7	34	U	3.7	35	U	3.7
Aroclor-1260	µg/Kg	34	U	5.8	35	U	5.8	34	U	5.8	34	U	5.8	35	U	5.8

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (c)
Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB13-102 Date Sampled: 9/20/2002 Lab ID: W2732-3 % Solids: 96.4			Sample Point SB14-06 Date Sampled: 9/25/2002 Lab ID: Y2732-5 % Solids: 95.5			Sample Point SB14-66 Date Sampled: 9/25/2002 Lab ID: Y2732-6 % Solids: 97.7			Sample Point SB15-06 Date Sampled: 9/20/2002 Lab ID: T2732-20 %Solids: 94.8			Sample Point SB15-66 Date Sampled: 9/20/2002 Lab ID: W2732-1 %Solids: 97.3		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/Kg	1.8	U	0.38	1.8	U	0.38	1.7	U	0.38	1.8	U	0.38	1.8	U	0.38
beta-BHC	µg/Kg	1.8	U	1	1.8	U	1	1.7	U	1	1.8	U	1	1.8	U	1
delta-BHC	µg/Kg	1.8	U	0.9	1.8	U	0.9	1.7	U	0.9	1.8	U	0.9	1.8	U	0.9
gamma-BHC (Lindane)	µg/Kg	1.8	U	0.37	1.8	U	0.37	1.7	U	0.37	1.8	U	0.37	1.8	U	0.37
Heptachlor	µg/Kg	1.8	U	0.68	1.8	U	0.68	1.7	U	0.68	1.8	U	0.68	1.8	U	0.68
Aldrin	µg/Kg	1.8	U	0.73	1.8	U	0.73	1.7	U	0.73	1.8	U	0.73	1.8	U	0.73
Heptachlor epoxide	µg/Kg	1.8	U	0.48	1.8	U	0.48	1.7	U	0.48	1.8	U	0.48	1.8	U	0.48
Endosulfan I	µg/Kg	1.8	U	0.3	1.8	U	0.3	1.7	U	0.3	1.8	U	0.3	1.8	U	0.3
Dieldrin	µg/Kg	3.4	U	1.3	3.4	U	1.3	3.4	U	1.3	3.5	U	1.3	3.4	U	1.3
4,4'-DDE	µg/Kg	3.4	U	0.9	3.4	U	0.9	3.4	U	0.9	3.5	U	0.9	3.4	U	0.9
Endrin	µg/Kg	3.4	U	1.8	3.4	U	1.8	3.4	U	1.8	3.5	U	1.8	3.4	U	1.8
Endosulfan II	µg/Kg	3.4	U	1.1	3.4	U	1.1	3.4	U	1.1	3.5	U	1.1	3.4	U	1.1
4,4'-DDD	µg/Kg	3.4	U	0.97	3.4	U	0.97	3.4	U	0.97	3.5	U	0.97	3.4	U	0.97
Endosulfan sulfate	µg/Kg	3.4	U	1	3.4	U	1	3.4	U	1	3.5	U	1	3.4	U	1
4,4'-DDT	µg/Kg	3.4	U	1.6	3.4	U	1.6	3.4	U	1.6	3.5	U	1.6	3.4	U	1.6
Methoxychlor	µg/Kg	18	U	13	18	U	13	17	U	13	18	U	13	18	U	13
Endrin ketone	µg/Kg	3.4	U	1.1	3.4	U	1.1	3.4	U	1.1	3.5	U	1.1	3.4	U	1.1
Endrin aldehyde	µg/Kg	3.4	U	0.87	3.4	U	0.87	3.4	U	0.87	3.5	U	0.87	3.4	U	0.87
alpha-Chlordane	µg/Kg	1.8	U	0.78	1.8	U	0.78	1.7	U	0.78	15	JN	0.78	1.8	U	0.78
gamma-Chlordane	µg/Kg	1.8	U	0.72	1.8	U	0.72	1.7	U	0.72	13		0.72	1.8	U	0.72
Toxaphene	µg/Kg	180	U	58	180	U	58	170	U	58	180	U	58	180	U	58
Aroclor-1016	µg/Kg	34	U	16	34	U	16	34	U	16	35	U	16	34	U	16
Aroclor-1221	µg/Kg	70	U	22	70	U	22	68	U	22	71	U	22	69	U	22
Aroclor-1232	µg/Kg	34	U	17	34	U	17	34	U	17	35	U	17	34	U	17
Aroclor-1242	µg/Kg	34	U	23	34	U	23	34	U	23	35	U	23	34	U	23
Aroclor-1248	µg/Kg	34	U	6.7	34	U	6.7	34	U	6.7	35	U	6.7	34	U	6.7
Aroclor-1254	µg/Kg	34	U	3.7	34	U	3.7	34	U	3.7	35	U	3.7	34	U	3.7
Aroclor-1260	µg/Kg	34	U	5.8	34	U	5.8	34	U	5.8	35	U	5.8	34	U	5.8

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (c)
Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB16-06 Date Sampled: 9/18/2002 Lab ID: R2732-13 % Solids: 91.6			Sample Point SB16-66 Date Sampled: 9/18/2002 Lab ID: R2732-14 % Solids: 95.8			Sample Point SB17-06 Date Sampled: 9/18/2002 Lab ID: R2732-4 % Solids: 94.7			Sample Point SB17-66 Date Sampled: 9/18/2002 Lab ID: R2732-5 %Solids: 96.3			Sample Point SB18-06 Date Sampled: 9/25/2002 Lab ID: Y2732-7 %Solids: 96.7		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/Kg	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38
beta-BHC	µg/Kg	1.8	U	1	1.8	U	1	1.8	U	1	1.8	U	1	1.8	U	1
delta-BHC	µg/Kg	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9
gamma-BHC (Lindane)	µg/Kg	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37
Heptachlor	µg/Kg	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68	1.1	J	0.68
Aldrin	µg/Kg	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73
Heptachlor epoxide	µg/Kg	1.8	U	0.48	1.8	U	0.48	1.8	U	0.48	1.8	U	0.48	3.2	R	0.48
Endosulfan I	µg/Kg	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3
Dieldrin	µg/Kg	3.6	U	1.3	3.4	U	1.3	3.5	U	1.3	3.4	U	1.3	3.4	U	1.3
4,4'-DDE	µg/Kg	3.6	U	0.9	3.4	U	0.9	2.8	J	0.9	3.4	U	0.9	3.8	J	0.9
Endrin	µg/Kg	3.6	U	1.8	3.4	U	1.8	3.5	U	1.8	3.4	U	1.8	3.4	U	1.8
Endosulfan II	µg/Kg	3.6	U	1.1	3.4	U	1.1	3.5	U	1.1	3.4	U	1.1	4.3	JN	1.1
4,4'-DDD	µg/Kg	3.6	U	0.97	3.4	U	0.97	3.5	U	0.97	3.4	U	0.97	3.4	U	0.97
Endosulfan sulfate	µg/Kg	3.6	U	1	3.4	U	1	3.5	U	1	3.4	U	1	3.4	U	1
4,4'-DDT	µg/Kg	3.6	U	1.6	3.4	U	1.6	3.5	U	1.6	3.4	U	1.6	6.8	JN	1.6
Methoxychlor	µg/Kg	18	U	13	18	U	13	18	U	13	18	U	13	18	U	13
Endrin ketone	µg/Kg	3.6	U	1.1	3.4	U	1.1	3.5	U	1.1	3.4	U	1.1	3.4	U	1.1
Endrin aldehyde	µg/Kg	3.6	U	0.87	3.4	U	0.87	3.5	U	0.87	3.4	U	0.87	3.4	U	0.87
alpha-Chlordane	µg/Kg	1.8	U	0.78	1.8	U	0.78	1.8	U	0.78	1.8	U	0.78	27	JN	0.78
gamma-Chlordane	µg/Kg	1.8	U	0.72	1.8	U	0.72	1.8	U	0.72	1.8	U	0.72	27		0.72
Toxaphene	µg/Kg	180	U	58	180	U	58	180	U	58	180	U	58	180	U	58
Aroclor-1016	µg/Kg	36	U	16	34	U	16	35	U	16	34	U	16	34	U	16
Aroclor-1221	µg/Kg	73	U	22	70	U	22	71	U	22	70	U	22	69	U	22
Aroclor-1232	µg/Kg	36	U	17	34	U	17	35	U	17	34	U	17	34	U	17
Aroclor-1242	µg/Kg	36	U	23	34	U	23	35	U	23	34	U	23	34	U	23
Aroclor-1248	µg/Kg	36	U	6.7	34	U	6.7	35	U	6.7	34	U	6.7	34	U	6.7
Aroclor-1254	µg/Kg	36	U	3.7	34	U	3.7	35	U	3.7	34	U	3.7	34	U	3.7
Aroclor-1260	µg/Kg	36	U	5.8	34	U	5.8	35	U	5.8	34	U	5.8	34	U	5.8

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (c)
Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB18-66 Date Sampled: 9/25/2002 Lab ID: Y2732-8 % Solids: 96.7			Sample Point SB19-06 Date Sampled: 9/18/2002 Lab ID: R2732-9 % Solids: 94.8			Sample Point SB19-66 Date Sampled: 9/18/2002 Lab ID: R2732-10 % Solids: 96.8			Sample Point SB20-06 Date Sampled: 9/25/2002 Lab ID: Y2732-9 %Solids: 96.4			Sample Point SB20-66 Date Sampled: 9/25/2002 Lab ID: Y2732-10 %Solids: 97.4		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/Kg	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38	1.8	UJ	0.38	1.8	U	0.38
beta-BHC	µg/Kg	1.8	U	1	1.8	U	1	1.8	U	1	1.8	UJ	1	1.8	U	1
delta-BHC	µg/Kg	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9	1.8	UJ	0.9	1.8	U	0.9
gamma-BHC (Lindane)	µg/Kg	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37	1.8	UJ	0.37	1.8	U	0.37
Heptachlor	µg/Kg	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68	1.8	UJ	0.68	1.8	U	0.68
Aldrin	µg/Kg	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73	1.8	UJ	0.73	1.8	U	0.73
Heptachlor epoxide	µg/Kg	1.8	U	0.48	1.8	U	0.48	1.8	U	0.48	1.8	UJ	0.48	1.8	U	0.48
Endosulfan I	µg/Kg	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3	1.8	UJ	0.3	1.8	U	0.3
Dieldrin	µg/Kg	3.4	U	1.3	3.5	U	1.3	3.4	U	1.3	3.4	UJ	1.3	3.4	U	1.3
4,4'-DDE	µg/Kg	3.4	U	0.9	7.2		0.9	3.4	U	0.9	3.4	UJ	0.9	3.4	U	0.9
Endrin	µg/Kg	3.4	U	1.8	3.5	U	1.8	3.4	U	1.8	3.4	UJ	1.8	3.4	U	1.8
Endosulfan II	µg/Kg	3.4	U	1.1	3.5	U	1.1	3.4	U	1.1	3.4	UJ	1.1	3.4	U	1.1
4,4'-DDD	µg/Kg	3.4	U	0.97	2.6	J	0.97	3.4	U	0.97	3.4	UJ	0.97	3.4	U	0.97
Endosulfan sulfate	µg/Kg	3.4	U	1	3.5	U	1	3.4	U	1	3.4	UJ	1	3.4	U	1
4,4'-DDT	µg/Kg	3.4	U	1.6	10		1.6	3.4	U	1.6	3.4	UJ	1.6	3.4	U	1.6
Methoxychlor	µg/Kg	18	U	13	18	U	13	18	U	13	18	UJ	13	18	U	13
Endrin ketone	µg/Kg	3.4	U	1.1	3.5	U	1.1	3.4	U	1.1	3.4	UJ	1.1	3.4	U	1.1
Endrin aldehyde	µg/Kg	3.4	U	0.87	3.5	U	0.87	3.4	U	0.87	3.4	UJ	0.87	3.4	U	0.87
alpha-Chlordane	µg/Kg	1.8	U	0.78	1.8	U	0.78	1.8	U	0.78	1.8	UJ	0.78	1.8	U	0.78
gamma-Chlordane	µg/Kg	1.8	U	0.72	1.8	U	0.72	1.8	U	0.72	1.8	UJ	0.72	1.8	U	0.72
Toxaphene	µg/Kg	180	U	58	180	U	58	180	U	58	180	UJ	58	180	U	58
Aroclor-1016	µg/Kg	34	U	16	35	U	16	34	U	16	34	UJ	16	34	U	16
Aroclor-1221	µg/Kg	69	U	22	71	U	22	69	U	22	70	UJ	22	69	U	22
Aroclor-1232	µg/Kg	34	U	17	35	U	17	34	U	17	34	UJ	17	34	U	17
Aroclor-1242	µg/Kg	34	U	23	35	U	23	34	U	23	34	UJ	23	34	U	23
Aroclor-1248	µg/Kg	34	U	6.7	35	U	6.7	34	U	6.7	34	UJ	6.7	34	U	6.7
Aroclor-1254	µg/Kg	34	U	3.7	35	U	3.7	34	U	3.7	34	UJ	3.7	34	U	3.7
Aroclor-1260	µg/Kg	34	U	5.8	35	U	5.8	34	U	5.8	34	UJ	5.8	34	U	5.8

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (c)
Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB21-06 Date Sampled: 9/25/2002 Lab ID: Y2732-11 % Solids: 96.2			Sample Point SB21-66 Date Sampled: 9/25/2002 Lab ID: Y2732-12 % Solids: 98.5			Sample Point SB22-06 Date Sampled: 9/20/2002 Lab ID: T2732-18 % Solids: 93.2			Sample Point SB22-66 Date Sampled: 9/20/2002 Lab ID: T2732-19 %Solids: 96.7			Sample Point SB23-06 Date Sampled: 9/18/2002 Lab ID: R2732-2 %Solids: 85.8		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/Kg	1.8	U	0.38	1.7	U	0.38	1.8	U	0.38	1.8	U	0.38	2	U	0.38
beta-BHC	µg/Kg	1.8	U	1	1.7	U	1	1.8	U	1	1.8	U	1	2	U	1
delta-BHC	µg/Kg	1.8	U	0.9	1.7	U	0.9	1.8	U	0.9	1.8	U	0.9	2	U	0.9
gamma-BHC (Lindane)	µg/Kg	1.8	U	0.37	1.7	U	0.37	1.8	U	0.37	1.8	U	0.37	2	U	0.37
Heptachlor	µg/Kg	1.8	U	0.68	1.7	U	0.68	1.8	U	0.68	1.8	U	0.68	2	U	0.68
Aldrin	µg/Kg	1.8	U	0.73	1.7	U	0.73	1.8	U	0.73	1.8	U	0.73	2	U	0.73
Heptachlor epoxide	µg/Kg	1.8	U	0.48	1.7	U	0.48	1.8	U	0.48	1.8	U	0.48	2	U	0.48
Endosulfan I	µg/Kg	1.8	U	0.3	1.7	U	0.3	1.8	U	0.3	1.8	U	0.3	2	U	0.3
Dieldrin	µg/Kg	3.4	U	1.3	3.4	U	1.3	3.5	U	1.3	3.4	U	1.3	3.8	U	1.3
4,4'-DDE	µg/Kg	3.4	U	0.9	3.4	U	0.9	3.5	U	0.9	3.4	U	0.9	25		0.9
Endrin	µg/Kg	3.4	U	1.8	3.4	U	1.8	3.5	U	1.8	3.4	U	1.8	3.8	U	1.8
Endosulfan II	µg/Kg	3.4	U	1.1	3.4	U	1.1	3.5	U	1.1	3.4	U	1.1	3.8	U	1.1
4,4'-DDD	µg/Kg	3.4	U	0.97	3.4	U	0.97	3.5	U	0.97	3.4	U	0.97	3.8	U	0.97
Endosulfan sulfate	µg/Kg	3.4	U	1	3.4	U	1	3.5	U	1	3.4	U	1	3.8	U	1
4,4'-DDT	µg/Kg	3.4	U	1.6	3.4	U	1.6	3.5	U	1.6	3.4	U	1.6	15		1.6
Methoxychlor	µg/Kg	18	U	13	17	U	13	18	U	13	18	U	13	20	U	13
Endrin ketone	µg/Kg	3.4	U	1.1	3.4	U	1.1	3.5	U	1.1	3.4	U	1.1	3.8	U	1.1
Endrin aldehyde	µg/Kg	3.4	U	0.87	3.4	U	0.87	3.5	U	0.87	3.4	U	0.87	3.8	U	0.87
alpha-Chlordane	µg/Kg	1.8	U	0.78	1.7	U	0.78	1.8	U	0.78	1.8	U	0.78	2	U	0.78
gamma-Chlordane	µg/Kg	1.8	U	0.72	1.7	U	0.72	1.8	U	0.72	1.8	U	0.72	2	U	0.72
Toxaphene	µg/Kg	180	U	58	170	U	58	180	U	58	180	U	58	200	U	58
Aroclor-1016	µg/Kg	34	U	16	34	U	16	35	U	16	34	U	16	38	U	16
Aroclor-1221	µg/Kg	70	U	22	68	U	22	72	U	22	69	U	22	78	U	22
Aroclor-1232	µg/Kg	34	U	17	34	U	17	35	U	17	34	U	17	38	U	17
Aroclor-1242	µg/Kg	34	U	23	34	U	23	35	U	23	34	U	23	38	U	23
Aroclor-1248	µg/Kg	34	U	6.7	34	U	6.7	35	U	6.7	34	U	6.7	38	U	6.7
Aroclor-1254	µg/Kg	34	U	3.7	34	U	3.7	35	U	3.7	34	U	3.7	38	U	3.7
Aroclor-1260	µg/Kg	34	U	5.8	34	U	5.8	35	U	5.8	34	U	5.8	38	U	5.8

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (c)
Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB23-66 Date Sampled: 9/18/2002 Lab ID: R2732-3 % Solids: 97.5			Sample Point SB24-06 Date Sampled: 9/25/2002 Lab ID: Y2732-13 % Solids: 95.9			Sample Point SB24-66 Date Sampled: 9/25/2002 Lab ID: Y2732-14 % Solids: 98.6			Sample Point SB25-06 Date Sampled: 9/19/2002 Lab ID: R2732-17 %Solids: 92.3			Sample Point SB25-186 Date Sampled: 9/19/2002 Lab ID: R2732-18 %Solids: 93.3		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/Kg	1.8	U	0.38	1.8	U	0.38	1.7	U	0.38	1.8	U	0.38	1.8	U	0.38
beta-BHC	µg/Kg	1.8	U	1	1.8	U	1	1.7	U	1	1.8	U	1	1.8	U	1
delta-BHC	µg/Kg	1.8	U	0.9	1.8	U	0.9	1.7	U	0.9	1.8	U	0.9	1.8	U	0.9
gamma-BHC (Lindane)	µg/Kg	1.8	U	0.37	1.8	U	0.37	1.7	U	0.37	1.8	U	0.37	1.8	U	0.37
Heptachlor	µg/Kg	1.8	U	0.68	1.8	U	0.68	1.7	U	0.68	1.8	U	0.68	1.8	U	0.68
Aldrin	µg/Kg	1.8	U	0.73	1.8	U	0.73	1.7	U	0.73	1.8	U	0.73	1.8	U	0.73
Heptachlor epoxide	µg/Kg	1.8	U	0.48	1.8	U	0.48	1.7	U	0.48	1.8	U	0.48	1.8	U	0.48
Endosulfan I	µg/Kg	1.8	U	0.3	1.8	U	0.3	1.7	U	0.3	1.8	U	0.3	1.8	U	0.3
Dieldrin	µg/Kg	3.4	U	1.3	3.4	U	1.3	3.3	U	1.3	3.6	U	1.3	3.5	U	1.3
4,4'-DDE	µg/Kg	3.4	U	0.9	3.4	U	0.9	3.3	U	0.9	3.6	U	0.9	3.5	U	0.9
Endrin	µg/Kg	3.4	U	1.8	3.4	U	1.8	3.3	U	1.8	3.6	U	1.8	3.5	U	1.8
Endosulfan II	µg/Kg	3.4	U	1.1	3.4	U	1.1	3.3	U	1.1	3.6	U	1.1	3.5	U	1.1
4,4'-DDD	µg/Kg	3.4	U	0.97	3.4	U	0.97	3.3	U	0.97	3.6	U	0.97	3.5	U	0.97
Endosulfan sulfate	µg/Kg	3.4	U	1	3.4	U	1	3.3	U	1	3.6	U	1	3.5	U	1
4,4'-DDT	µg/Kg	3.4	U	1.6	3.4	U	1.6	3.3	U	1.6	3.6	U	1.6	3.5	U	1.6
Methoxychlor	µg/Kg	18	U	13	18	U	13	17	U	13	18	U	13	18	U	13
Endrin ketone	µg/Kg	3.4	U	1.1	3.4	U	1.1	3.3	U	1.1	3.6	U	1.1	3.5	U	1.1
Endrin aldehyde	µg/Kg	3.4	U	0.87	3.4	U	0.87	3.3	U	0.87	3.6	U	0.87	3.5	U	0.87
alpha-Chlordane	µg/Kg	1.8	U	0.78	1.8	U	0.78	1.7	U	0.78	6.2	JN	0.78	1.8	U	0.78
gamma-Chlordane	µg/Kg	1.8	U	0.72	1.8	U	0.72	1.7	U	0.72	5.8	J	0.72	1.8	U	0.72
Toxaphene	µg/Kg	180	U	58	180	U	58	170	U	58	180	U	58	180	U	58
Aroclor-1016	µg/Kg	34	U	16	34	U	16	33	U	16	36	U	16	35	U	16
Aroclor-1221	µg/Kg	69	U	22	70	U	22	68	U	22	73	U	22	72	U	22
Aroclor-1232	µg/Kg	34	U	17	34	U	17	33	U	17	36	U	17	35	U	17
Aroclor-1242	µg/Kg	34	U	23	34	U	23	33	U	23	36	U	23	35	U	23
Aroclor-1248	µg/Kg	34	U	6.7	34	U	6.7	33	U	6.7	36	U	6.7	35	U	6.7
Aroclor-1254	µg/Kg	34	U	3.7	34	U	3.7	33	U	3.7	36	U	3.7	35	U	3.7
Aroclor-1260	µg/Kg	34	U	5.8	34	U	5.8	33	U	5.8	36	U	5.8	35	U	5.8

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (c)
Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB26-06 Date Sampled: 9/18/2002 Lab ID: R2732-8 % Solids: 92.2			Sample Point SB26-66 Date Sampled: 9/18/2002 Lab ID: R2732-1 % Solids: 95.2			Sample Point SB27-06 Date Sampled: 9/20/2002 Lab ID: T2732-14 % Solids: 95.5			Sample Point SB27-66 Date Sampled: 9/20/2002 Lab ID: T2732-15 %Solids: 98.1			Sample Point SB28-06 Date Sampled: 9/20/2002 Lab ID: T2732-16 %Solids: 97		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/Kg	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38	1.7	U	0.38	1.8	UJ	0.38
beta-BHC	µg/Kg	1.8	U	1	1.8	U	1	1.8	U	1	1.7	U	1	2.4	J	1
delta-BHC	µg/Kg	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9	1.7	U	0.9	1.8	UJ	0.9
gamma-BHC (Lindane)	µg/Kg	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37	1.7	U	0.37	1.8	UJ	0.37
Heptachlor	µg/Kg	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68	1.7	U	0.68	1.8	UJ	0.68
Aldrin	µg/Kg	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73	1.7	U	0.73	1.8	UJ	0.73
Heptachlor epoxide	µg/Kg	1.8	U	0.48	1.8	U	0.48	1.8	U	0.48	1.7	U	0.48	1.8	UJ	0.48
Endosulfan I	µg/Kg	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3	1.7	U	0.3	1.8	UJ	0.3
Dieldrin	µg/Kg	3.6	U	1.3	3.5	U	1.3	3.4	U	1.3	3.4	U	1.3	3.4	UJ	1.3
4,4'-DDE	µg/Kg	3.6	U	0.9	3.5	U	0.9	3.4	U	0.9	3.4	U	0.9	3.4	UJ	0.9
Endrin	µg/Kg	3.6	U	1.8	3.5	U	1.8	3.4	U	1.8	3.4	U	1.8	3.4	UJ	1.8
Endosulfan II	µg/Kg	3.6	U	1.1	3.5	U	1.1	3.4	U	1.1	3.4	U	1.1	3.4	UJ	1.1
4,4'-DDD	µg/Kg	3.6	U	0.97	3.5	U	0.97	3.4	U	0.97	3.4	U	0.97	3.4	UJ	0.97
Endosulfan sulfate	µg/Kg	3.6	U	1	3.5	U	1	3.4	U	1	3.4	U	1	3.4	UJ	1
4,4'-DDT	µg/Kg	3.6	U	1.6	3.5	U	1.6	3.4	U	1.6	3.4	U	1.6	2.5	J	1.6
Methoxychlor	µg/Kg	18	U	13	18	U	13	18	U	13	17	U	13	18	UJ	13
Endrin ketone	µg/Kg	3.6	U	1.1	3.5	U	1.1	3.4	U	1.1	3.4	U	1.1	3.4	UJ	1.1
Endrin aldehyde	µg/Kg	3.6	U	0.87	3.5	U	0.87	3.4	U	0.87	3.4	U	0.87	3.4	UJ	0.87
alpha-Chlordane	µg/Kg	1.8	U	0.78	1.8	U	0.78	1.8	U	0.78	1.7	U	0.78	1.8	UJ	0.78
gamma-Chlordane	µg/Kg	1.8	U	0.72	1.8	U	0.72	1.8	U	0.72	1.7	U	0.72	1.8	UJ	0.72
Toxaphene	µg/Kg	180	U	58	180	U	58	180	U	58	170	U	58	180	UJ	58
Aroclor-1016	µg/Kg	36	U	16	35	U	16	34	U	16	34	U	16	34	UJ	16
Aroclor-1221	µg/Kg	73	U	22	71	U	22	70	U	22	68	U	22	69	UJ	22
Aroclor-1232	µg/Kg	36	U	17	35	U	17	34	U	17	34	U	17	34	UJ	17
Aroclor-1242	µg/Kg	36	U	23	35	U	23	34	U	23	34	U	23	34	UJ	23
Aroclor-1248	µg/Kg	36	U	6.7	35	U	6.7	34	U	6.7	34	U	6.7	34	UJ	6.7
Aroclor-1254	µg/Kg	36	U	3.7	35	U	3.7	34	U	3.7	34	U	3.7	34	UJ	3.7
Aroclor-1260	µg/Kg	36	U	5.8	35	U	5.8	34	U	5.8	34	U	5.8	34	UJ	5.8

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (c)
Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB28-150 Date Sampled: 9/20/2002 Lab ID: T2732-17 % Solids: 93			Sample Point SB29-06 Date Sampled: 9/19/2002 Lab ID: T2732-12 % Solids: 95.7			Sample Point SB29-222 Date Sampled: 9/19/2002 Lab ID: T2732-13 % Solids: 95.3			Sample Point SB30-06 Date Sampled: 9/25/2002 Lab ID: Y2732-15 %Solids: 95.6			Sample Point SB30-66 Date Sampled: 9/25/2002 Lab ID: Y2732-16 %Solids: 96.2		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/Kg	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38
beta-BHC	µg/Kg	1.8	U	1	1.8	U	1	1.8	U	1	1.8	U	1	1.8	U	1
delta-BHC	µg/Kg	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9
gamma-BHC (Lindane)	µg/Kg	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37
Heptachlor	µg/Kg	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68
Aldrin	µg/Kg	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73
Heptachlor epoxide	µg/Kg	1.8	U	0.48	1.8	U	0.48	1.8	U	0.48	1.8	U	0.48	1.8	U	0.48
Endosulfan I	µg/Kg	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3
Dieldrin	µg/Kg	3.5	U	1.3	5.5		1.3	3.5	U	1.3	3.4	U	1.3	3.4	U	1.3
4,4'-DDE	µg/Kg	3.5	U	0.9	3.4	U	0.9	3.5	U	0.9	3.4	U	0.9	3.4	U	0.9
Endrin	µg/Kg	3.5	U	1.8	3.4	U	1.8	3.5	U	1.8	3.4	U	1.8	3.4	U	1.8
Endosulfan II	µg/Kg	3.5	U	1.1	5.3	R	1.1	3.5	U	1.1	3.4	U	1.1	3.4	U	1.1
4,4'-DDD	µg/Kg	3.5	U	0.97	3.4	U	0.97	3.5	U	0.97	3.4	U	0.97	3.4	U	0.97
Endosulfan sulfate	µg/Kg	3.5	U	1	3.4	U	1	3.5	U	1	3.4	U	1	3.4	U	1
4,4'-DDT	µg/Kg	3.5	U	1.6	3.4	U	1.6	3.5	U	1.6	3.4	U	1.6	3.4	U	1.6
Methoxychlor	µg/Kg	18	U	13	18	U	13	18	U	13	18	U	13	18	U	13
Endrin ketone	µg/Kg	3.5	U	1.1	3.4	U	1.1	3.5	U	1.1	3.4	U	1.1	3.4	U	1.1
Endrin aldehyde	µg/Kg	3.5	U	0.87	3.4	U	0.87	3.5	U	0.87	3.4	U	0.87	3.4	U	0.87
alpha-Chlordane	µg/Kg	1.8	U	0.78	50	JN	0.78	3	JN	0.78	1.8	U	0.78	1.8	U	0.78
gamma-Chlordane	µg/Kg	1.8	U	0.72	20		0.72	2.4		0.72	1.8	U	0.72	1.8	U	0.72
Toxaphene	µg/Kg	180	U	58	180	U	58	180	U	58	180	U	58	180	U	58
Aroclor-1016	µg/Kg	35	U	16	34	U	16	35	U	16	34	U	16	34	U	16
Aroclor-1221	µg/Kg	72	U	22	70	U	22	71	U	22	70	U	22	70	U	22
Aroclor-1232	µg/Kg	35	U	17	34	U	17	35	U	17	34	U	17	34	U	17
Aroclor-1242	µg/Kg	35	U	23	34	U	23	35	U	23	34	U	23	34	U	23
Aroclor-1248	µg/Kg	35	U	6.7	34	U	6.7	35	U	6.7	34	U	6.7	34	U	6.7
Aroclor-1254	µg/Kg	35	U	3.7	34	U	3.7	35	U	3.7	34	U	3.7	34	U	3.7
Aroclor-1260	µg/Kg	35	U	5.8	34	U	5.8	35	U	5.8	34	U	5.8	34	U	5.8

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (c)
Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB31-06 Date Sampled: 9/25/2002 Lab ID: Y2732-17 % Solids: 92.5			Sample Point SB31-198 Date Sampled: 9/25/2002 Lab ID: Y2732-18 % Solids: 96.2			Sample Point DSB31-198 Date Sampled: 9/25/2002 Lab ID: Y2732-19 % Solids: 95.1			Sample Point SB32-06 Date Sampled: 9/25/2002 Lab ID: Y2732-20 %Solids: 95.1			Sample Point SB32-66 Date Sampled: 9/25/2002 Lab ID: Z2732-1 %Solids: 96		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/Kg	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38
beta-BHC	µg/Kg	1.8	U	1	1.8	U	1	1.8	U	1	1.8	U	1	1.8	U	1
delta-BHC	µg/Kg	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9
gamma-BHC (Lindane)	µg/Kg	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37
Heptachlor	µg/Kg	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68
Aldrin	µg/Kg	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73
Heptachlor epoxide	µg/Kg	1.8	U	0.48	1.8	U	0.48	1.8	U	0.48	3.8	J	0.48	1.8	U	0.48
Endosulfan I	µg/Kg	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3
Dieldrin	µg/Kg	3.6	U	1.3	3.4	U	1.3	3.5	U	1.3	2.9	J	1.3	3.4	U	1.3
4,4'-DDE	µg/Kg	3.6	U	0.9	3.4	U	0.9	3.5	U	0.9	3.5	U	0.9	3.4	U	0.9
Endrin	µg/Kg	3.6	U	1.8	3.4	U	1.8	3.5	U	1.8	3.5	U	1.8	3.4	U	1.8
Endosulfan II	µg/Kg	3.6	U	1.1	3.4	U	1.1	3.5	U	1.1	3.5	U	1.1	3.4	U	1.1
4,4'-DDD	µg/Kg	3.6	U	0.97	3.4	U	0.97	3.5	U	0.97	3.5	U	0.97	3.4	U	0.97
Endosulfan sulfate	µg/Kg	3.6	U	1	3.4	U	1	3.5	U	1	3.5	U	1	3.4	U	1
4,4'-DDT	µg/Kg	3.6	U	1.6	3.4	U	1.6	3.5	U	1.6	4.3	J	1.6	3.4	U	1.6
Methoxychlor	µg/Kg	18	U	13	18	U	13	18	U	13	18	U	13	18	U	13
Endrin ketone	µg/Kg	3.6	U	1.1	3.4	U	1.1	3.5	U	1.1	3.5	U	1.1	3.4	U	1.1
Endrin aldehyde	µg/Kg	3.6	U	0.87	3.4	U	0.87	3.5	U	0.87	3.5	U	0.87	3.4	U	0.87
alpha-Chlordane	µg/Kg	1.8	U	0.78	1.8	U	0.78	1.8	U	0.78	110	JN	0.78	4.4	JN	0.78
gamma-Chlordane	µg/Kg	1.8	U	0.72	1.8	U	0.72	1.8	U	0.72	120		0.72	4		0.72
Toxaphene	µg/Kg	180	U	58	180	U	58	180	U	58	180	U	58	180	U	58
Aroclor-1016	µg/Kg	36	U	16	34	U	16	35	U	16	35	U	16	34	U	16
Aroclor-1221	µg/Kg	73	U	22	70	U	22	71	U	22	71	U	22	70	U	22
Aroclor-1232	µg/Kg	36	U	17	34	U	17	35	U	17	35	U	17	34	U	17
Aroclor-1242	µg/Kg	36	U	23	34	U	23	35	U	23	35	U	23	34	U	23
Aroclor-1248	µg/Kg	36	U	6.7	34	U	6.7	35	U	6.7	35	U	6.7	34	U	6.7
Aroclor-1254	µg/Kg	36	U	3.7	34	U	3.7	35	U	3.7	35	U	3.7	34	U	3.7
Aroclor-1260	µg/Kg	36	U	5.8	34	U	5.8	35	U	5.8	35	U	5.8	34	U	5.8

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (c)
Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB33-06 Date Sampled: 9/18/2002 Lab ID: R2732-6 % Solids: 94.8			Sample Point SB33-66 Date Sampled: 9/18/2002 Lab ID: R2732-7 % Solids: 97.1			Sample Point SB34-06 Date Sampled: 9/24/2002 Lab ID: W2732-9 % Solids: 95.1			Sample Point SB34-66 Date Sampled: 9/24/2002 Lab ID: W2732-10 %Solids: 95.4			Sample Point SB35-06 Date Sampled: 9/24/2002 Lab ID: W2732-11 %Solids: 94.4		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/Kg	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38
beta-BHC	µg/Kg	1.8	U	1	1.8	U	1	1.8	U	1	1.8	U	1	18	J	1
delta-BHC	µg/Kg	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9
gamma-BHC (Lindane)	µg/Kg	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37
Heptachlor	µg/Kg	2.3	J	0.68	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68
Aldrin	µg/Kg	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73
Heptachlor epoxide	µg/Kg	1.8	U	0.48	1.8	U	0.48	1.8	U	0.48	1.8	U	0.48	9.5	R	0.48
Endosulfan I	µg/Kg	2	J	0.3	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3
Dieldrin	µg/Kg	4.3		1.3	3.4	U	1.3	3.5	U	1.3	3.5	U	1.3	12		1.3
4,4'-DDE	µg/Kg	20		0.9	3.4	U	0.9	4.2		0.9	3.5	U	0.9	3.9	R	0.9
Endrin	µg/Kg	3.5	U	1.8	3.4	U	1.8	3.5	U	1.8	3.5	U	1.8	11		1.8
Endosulfan II	µg/Kg	3.5	U	1.1	3.4	U	1.1	3.5	U	1.1	3.5	U	1.1	13	J	1.1
4,4'-DDD	µg/Kg	3.6	R	0.97	3.4	U	0.97	3.5	U	0.97	3.5	U	0.97	3.5	U	0.97
Endosulfan sulfate	µg/Kg	2.6	J	1	3.4	U	1	3.5	U	1	3.5	U	1	4.7	R	1
4,4'-DDT	µg/Kg	19		1.6	3.4	U	1.6	4.9	JN	1.6	3.5	U	1.6	3.5	U	1.6
Methoxychlor	µg/Kg	18	U	13	18	U	13	18	U	13	18	U	13	18	U	13
Endrin ketone	µg/Kg	3.5	U	1.1	3.4	U	1.1	3.5	U	1.1	3.5	U	1.1	4.1	R	1.1
Endrin aldehyde	µg/Kg	2.8	J	0.87	3.4	U	0.87	3.5	U	0.87	3.5	U	0.87	4.8	J	0.87
alpha-Chlordane	µg/Kg	31	JN	0.78	1.8	U	0.78	2.5	JN	0.78	1.8	U	0.78	27	J	0.78
gamma-Chlordane	µg/Kg	24		0.72	1.8	U	0.72	2.1		0.72	1.8	U	0.72	25		0.72
Toxaphene	µg/Kg	180	U	58	180	U	58	180	U	58	180	U	58	180	U	58
Aroclor-1016	µg/Kg	35	U	16	34	U	16	35	U	16	35	U	16	35	U	16
Aroclor-1221	µg/Kg	71	U	22	69	U	22	71	U	22	71	U	22	71	U	22
Aroclor-1232	µg/Kg	35	U	17	34	U	17	35	U	17	35	U	17	35	U	17
Aroclor-1242	µg/Kg	35	U	23	34	U	23	35	U	23	35	U	23	35	U	23
Aroclor-1248	µg/Kg	35	U	6.7	34	U	6.7	35	U	6.7	35	U	6.7	35	U	6.7
Aroclor-1254	µg/Kg	35	U	3.7	34	U	3.7	35	U	3.7	35	U	3.7	35	U	3.7
Aroclor-1260	µg/Kg	35	U	5.8	34	U	5.8	35	U	5.8	35	U	5.8	35	U	5.8

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (c)
Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB35-66 Date Sampled: 9/24/2002 Lab ID: W2732-12 % Solids: 95.1			Sample Point SB36-06 Date Sampled: 9/24/2002 Lab ID: W2732-13 % Solids: 93.7			Sample Point SB36-66 Date Sampled: 9/24/2002 Lab ID: W2732-14 % Solids: 96			Sample Point SB37-06 Date Sampled: 9/24/2002 Lab ID: W2732-15 %Solids: 93.2			Sample Point SB37-66 Date Sampled: 9/24/2002 Lab ID: W2732-16 %Solids: 97.3		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/Kg	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38
beta-BHC	µg/Kg	1.8	U	1	1.8	U	1	1.8	U	1	1.8	U	1	1.8	U	1
delta-BHC	µg/Kg	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9
gamma-BHC (Lindane)	µg/Kg	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37
Heptachlor	µg/Kg	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68
Aldrin	µg/Kg	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73
Heptachlor epoxide	µg/Kg	1.8	U	0.48	1.8	U	0.48	1.8	U	0.48	1.8	U	0.48	1.8	U	0.48
Endosulfan I	µg/Kg	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3
Dieldrin	µg/Kg	3.5	U	1.3	3.5	U	1.3	3.4	U	1.3	3.5	U	1.3	3.4	U	1.3
4,4'-DDE	µg/Kg	3.5	U	0.9	3.5	U	0.9	3.4	U	0.9	3.5	U	0.9	3.4	U	0.9
Endrin	µg/Kg	3.5	U	1.8	3.5	U	1.8	3.4	U	1.8	3.5	U	1.8	3.4	U	1.8
Endosulfan II	µg/Kg	3.5	U	1.1	3.5	U	1.1	3.4	U	1.1	3.5	U	1.1	3.4	U	1.1
4,4'-DDD	µg/Kg	2.7	J	0.97	3.5	U	0.97	3.4	U	0.97	3.5	U	0.97	3.4	U	0.97
Endosulfan sulfate	µg/Kg	3.5	U	1	2.3	J	1	3.4	U	1	3.5	U	1	3.4	U	1
4,4'-DDT	µg/Kg	3.5	U	1.6	3.5	U	1.6	3.4	U	1.6	3.5	U	1.6	3.4	U	1.6
Methoxychlor	µg/Kg	18	U	13	18	U	13	18	U	13	18	U	13	18	U	13
Endrin ketone	µg/Kg	3.5	U	1.1	3.5	U	1.1	3.4	U	1.1	3.5	U	1.1	3.4	U	1.1
Endrin aldehyde	µg/Kg	3.5	U	0.87	3.5	U	0.87	3.4	U	0.87	3.5	U	0.87	3.4	U	0.87
alpha-Chlordane	µg/Kg	3.6	JN	0.78	11	JN	0.78	1.8	U	0.78	7.6	JN	0.78	2	JN	0.78
gamma-Chlordane	µg/Kg	3.6		0.72	13		0.72	1.8	U	0.72	6.8		0.72	2.4		0.72
Toxaphene	µg/Kg	180	U	58	180	U	58	180	U	58	180	U	58	180	U	58
Aroclor-1016	µg/Kg	35	U	16	35	U	16	34	U	16	35	U	16	34	U	16
Aroclor-1221	µg/Kg	71	U	22	71	U	22	70	U	22	72	U	22	69	U	22
Aroclor-1232	µg/Kg	35	U	17	35	U	17	34	U	17	35	U	17	34	U	17
Aroclor-1242	µg/Kg	35	U	23	35	U	23	34	U	23	35	U	23	34	U	23
Aroclor-1248	µg/Kg	35	U	6.7	35	U	6.7	34	U	6.7	35	U	6.7	34	U	6.7
Aroclor-1254	µg/Kg	35	U	3.7	35	U	3.7	34	U	3.7	35	U	3.7	34	U	3.7
Aroclor-1260	µg/Kg	35	U	5.8	35	U	5.8	34	U	5.8	35	U	5.8	34	U	5.8

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (c)
Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB38-06 Date Sampled: 9/24/2002 Lab ID: W2732-17 % Solids: 96.3			Sample Point SB38-66 Date Sampled: 9/24/2002 Lab ID: W2732-18 % Solids: 94.7			Sample Point SB39-06 Date Sampled: 9/24/2002 Lab ID: W2732-19 % Solids: 94.5			Sample Point SB39-66 Date Sampled: 9/24/2002 Lab ID: W2732-20 %Solids: 94.7			Sample Point SB40-06 Date Sampled: 9/24/2002 Lab ID: Y2732-1 %Solids: 95		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/Kg	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38
beta-BHC	µg/Kg	1.8	U	1	1.8	U	1	1.8	U	1	1.8	U	1	1.8	U	1
delta-BHC	µg/Kg	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9
gamma-BHC (Lindane)	µg/Kg	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37
Heptachlor	µg/Kg	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68
Aldrin	µg/Kg	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73
Heptachlor epoxide	µg/Kg	6.2	R	0.48	1.8	U	0.48	1.8	U	0.48	1.8	U	0.48	1.8	U	0.48
Endosulfan I	µg/Kg	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3
Dieldrin	µg/Kg	3.5	R	1.3	3.5	U	1.3	3.5	U	1.3	3.5	U	1.3	3.5	U	1.3
4,4'-DDE	µg/Kg	3.4	U	0.9	3.5	U	0.9	3.5	U	0.9	3.5	U	0.9	3.5	U	0.9
Endrin	µg/Kg	3.4	U	1.8	3.5	U	1.8	3.5	U	1.8	3.5	U	1.8	3.5	U	1.8
Endosulfan II	µg/Kg	3.4	U	1.1	3.5	U	1.1	3.5	U	1.1	3.5	U	1.1	3.5	U	1.1
4,4'-DDD	µg/Kg	3.4	U	0.97	3.5	U	0.97	3.5	U	0.97	3.5	U	0.97	3.5	U	0.97
Endosulfan sulfate	µg/Kg	3.4	U	1	3.5	U	1	3.5	U	1	3.5	U	1	3.5	U	1
4,4'-DDT	µg/Kg	3.4	U	1.6	3.5	U	1.6	3.5	U	1.6	3.5	U	1.6	3.5	U	1.6
Methoxychlor	µg/Kg	18	U	13	18	U	13	18	U	13	18	U	13	18	U	13
Endrin ketone	µg/Kg	3.4	U	1.1	3.5	U	1.1	3.5	U	1.1	3.5	U	1.1	3.5	U	1.1
Endrin aldehyde	µg/Kg	3.4	U	0.87	3.5	U	0.87	3.5	U	0.87	3.5	U	0.87	3.5	U	0.87
alpha-Chlordane	µg/Kg	3.2	R	0.78	1.8	U	0.78	17	JN	0.78	1.8	U	0.78	1.8	U	0.78
gamma-Chlordane	µg/Kg	4.5	R	0.72	1.8	U	0.72	18		0.72	1.8	U	0.72	1.8	U	0.72
Toxaphene	µg/Kg	180	U	58	180	U	58	180	U	58	180	U	58	180	U	58
Aroclor-1016	µg/Kg	34	U	16	35	U	16	35	U	16	35	U	16	35	U	16
Aroclor-1221	µg/Kg	70	U	22	71	U	22	71	U	22	71	U	22	71	U	22
Aroclor-1232	µg/Kg	34	U	17	35	U	17	35	U	17	35	U	17	35	U	17
Aroclor-1242	µg/Kg	34	U	23	35	U	23	35	U	23	35	U	23	35	U	23
Aroclor-1248	µg/Kg	34	U	6.7	35	U	6.7	35	U	6.7	35	U	6.7	35	U	6.7
Aroclor-1254	µg/Kg	34	U	3.7	35	U	3.7	35	U	3.7	35	U	3.7	35	U	3.7
Aroclor-1260	µg/Kg	34	U	5.8	35	U	5.8	35	U	5.8	35	U	5.8	35	U	5.8

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (c)
Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB40-66 Date Sampled: 9/24/2002 Lab ID: Y2732-2 % Solids: 97.3			Sample Point SS01-06 Date Sampled: 9/26/2002 Lab ID: Z2732-2 % Solids: 95.5			Sample Point SS02-06 Date Sampled: 9/26/2002 Lab ID: Z2732-3 % Solids: 93.4			Sample Point SS03-06 Date Sampled: 9/26/2002 Lab ID: Z2732-4 %Solids: 94			Sample Point SS04-06 Date Sampled: 9/26/2002 Lab ID: Z2732-5 %Solids: 96.9		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/Kg	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38
beta-BHC	µg/Kg	1.8	U	1	1.8	U	1	1.8	U	1	1.8	U	1	1.8	U	1
delta-BHC	µg/Kg	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9
gamma-BHC (Lindane)	µg/Kg	1.8	U	0.37	1.8	U	0.37	1.1	J	0.37	1.8	U	0.37	1.8	U	0.37
Heptachlor	µg/Kg	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68
Aldrin	µg/Kg	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73
Heptachlor epoxide	µg/Kg	1.8	U	0.48	1.8	U	0.48	1.8	U	0.48	1.8	U	0.48	1.8	U	0.48
Endosulfan I	µg/Kg	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3
Dieldrin	µg/Kg	3.4	U	1.3	3.5	U	1.3	3.5	U	1.3	3.5	U	1.3	3.4	U	1.3
4,4'-DDE	µg/Kg	3.4	U	0.9	3.5	U	0.9	3.5	U	0.9	3.5	U	0.9	3.4	U	0.9
Endrin	µg/Kg	3.4	U	1.8	3.5	U	1.8	3.5	U	1.8	3.5	U	1.8	3.4	U	1.8
Endosulfan II	µg/Kg	3.4	U	1.1	3.5	U	1.1	3.5	U	1.1	3.5	U	1.1	3.4	U	1.1
4,4'-DDD	µg/Kg	3.4	U	0.97	3.5	U	0.97	3.5	U	0.97	3.5	U	0.97	3.4	U	0.97
Endosulfan sulfate	µg/Kg	3.4	U	1	3.5	U	1	3.5	U	1	3.5	U	1	3.4	U	1
4,4'-DDT	µg/Kg	3.4	U	1.6	3.5	U	1.6	3.5	U	1.6	3.5	U	1.6	3.4	U	1.6
Methoxychlor	µg/Kg	18	U	13	18	U	13	18	U	13	18	U	13	18	U	13
Endrin ketone	µg/Kg	3.4	U	1.1	3.5	U	1.1	3.5	U	1.1	3.5	U	1.1	3.4	U	1.1
Endrin aldehyde	µg/Kg	3.4	U	0.87	3.5	U	0.87	3.5	U	0.87	3.5	U	0.87	3.4	U	0.87
alpha-Chlordane	µg/Kg	1.8	U	0.78	1.8	U	0.78	1.8	U	0.78	1.8	U	0.78	1.8	U	0.78
gamma-Chlordane	µg/Kg	1.8	U	0.72	1.8	U	0.72	1.8	U	0.72	1.8	U	0.72	1.8	U	0.72
Toxaphene	µg/Kg	180	U	58	180	U	58	180	U	58	180	U	58	180	U	58
Aroclor-1016	µg/Kg	34	U	16	35	U	16	35	U	16	35	U	16	34	U	16
Aroclor-1221	µg/Kg	69	U	22	71	U	22	72	U	22	71	U	22	69	U	22
Aroclor-1232	µg/Kg	34	U	17	35	U	17	35	U	17	35	U	17	34	U	17
Aroclor-1242	µg/Kg	34	U	23	35	U	23	35	U	23	35	U	23	34	U	23
Aroclor-1248	µg/Kg	34	U	6.7	35	U	6.7	35	U	6.7	35	U	6.7	34	U	6.7
Aroclor-1254	µg/Kg	34	U	3.7	35	U	3.7	35	U	3.7	35	U	3.7	34	U	3.7
Aroclor-1260	µg/Kg	34	U	5.8	35	U	5.8	35	U	5.8	35	U	5.8	34	U	5.8

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (c)
Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point DSS04-06 Date Sampled: 9/26/2002 Lab ID: Z2732-6 % Solids: 97.3			Sample Point SS05-06 Date Sampled: 9/26/2002 Lab ID: Z2732-7 % Solids: 96			Sample Point SS06-06 Date Sampled: 9/26/2002 Lab ID: Z2732-8 % Solids: 94.3			Sample Point DSS06-06 Date Sampled: 9/26/2002 Lab ID: Z2732-9 %Solids: 94.5			Sample Point SS07-06 Date Sampled: 9/26/2002 Lab ID: Z2732-10 %Solids: 96.5		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/Kg	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38	1.8	U	0.38
beta-BHC	µg/Kg	1.8	U	1	1.8	U	1	1.8	U	1	1.8	U	1	1.8	U	1
delta-BHC	µg/Kg	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9	1.8	U	0.9
gamma-BHC (Lindane)	µg/Kg	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37	1.8	U	0.37
Heptachlor	µg/Kg	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68	1.8	U	0.68
Aldrin	µg/Kg	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73	1.8	U	0.73
Heptachlor epoxide	µg/Kg	1.8	U	0.48	1.8	U	0.48	1.8	U	0.48	1.9	R	0.48	1.8	U	0.48
Endosulfan I	µg/Kg	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3	1.8	U	0.3
Dieldrin	µg/Kg	3.4	U	1.3	3.4	U	1.3	3.5	U	1.3	3.5	U	1.3	3.4	U	1.3
4,4'-DDE	µg/Kg	3.4	U	0.9	1.8	J	0.9	3.5	U	0.9	3.5	U	0.9	3.4	U	0.9
Endrin	µg/Kg	3.4	U	1.8	3.4	U	1.8	3.5	U	1.8	4.1	JN	1.8	3.4	U	1.8
Endosulfan II	µg/Kg	3.4	U	1.1	3.4	U	1.1	3.5	U	1.1	3.5	U	1.1	3.4	U	1.1
4,4'-DDD	µg/Kg	3.4	U	0.97	3.4	U	0.97	3.5	U	0.97	3.5	U	0.97	3.4	U	0.97
Endosulfan sulfate	µg/Kg	3.4	U	1	3.4	U	1	3.5	U	1	3.5	U	1	3.4	U	1
4,4'-DDT	µg/Kg	3.4	U	1.6	3.4	U	1.6	3.5	U	1.6	3.5	U	1.6	3.4	U	1.6
Methoxychlor	µg/Kg	18	U	13	18	U	13	18	U	13	18	U	13	18	U	13
Endrin ketone	µg/Kg	3.4	U	1.1	3.4	U	1.1	3.5	U	1.1	3.5	U	1.1	3.4	U	1.1
Endrin aldehyde	µg/Kg	3.4	U	0.87	3.4	U	0.87	3.5	U	0.87	3.5	U	0.87	3.4	U	0.87
alpha-Chlordane	µg/Kg	1.8	U	0.78	1.8	U	0.78	1.8	U	0.78	1.8	U	0.78	1.8	U	0.78
gamma-Chlordane	µg/Kg	1.8	U	0.72	1.8	U	0.72	1.8	U	0.72	1.8	U	0.72	1.8	U	0.72
Toxaphene	µg/Kg	180	U	58	180	U	58	180	U	58	180	U	58	180	U	58
Aroclor-1016	µg/Kg	34	U	16	34	U	16	35	U	16	35	U	16	34	U	16
Aroclor-1221	µg/Kg	69	U	22	70	U	22	71	U	22	71	U	22	69	U	22
Aroclor-1232	µg/Kg	34	U	17	34	U	17	35	U	17	35	U	17	34	U	17
Aroclor-1242	µg/Kg	34	U	23	34	U	23	35	U	23	35	U	23	34	U	23
Aroclor-1248	µg/Kg	34	U	6.7	34	U	6.7	35	U	6.7	35	U	6.7	34	U	6.7
Aroclor-1254	µg/Kg	34	U	3.7	34	U	3.7	35	U	3.7	35	U	3.7	34	U	3.7
Aroclor-1260	µg/Kg	34	U	5.8	34	U	5.8	35	U	5.8	35	U	5.8	34	U	5.8

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (c)
Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SS08-06 Date Sampled: 9/26/2002 Lab ID: Z2732-12 % Solids: 96.4			Sample Point SS09-06 Date Sampled: 9/26/2002 Lab ID: Z2732-13 % Solids: 96.8			Sample Point Date Sampled: Lab ID: % Solids:			Sample Point Date Sampled: Lab ID: %Solids:			Sample Point Date Sampled: Lab ID: %Solids:		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/Kg	1.8	U	0.38	1.8	U	0.38									
beta-BHC	µg/Kg	1.8	U	1	1.8	U	1									
delta-BHC	µg/Kg	1.8	U	0.9	1.8	U	0.9									
gamma-BHC (Lindane)	µg/Kg	1.8	U	0.37	1.8	U	0.37									
Heptachlor	µg/Kg	1.8	U	0.68	1.8	U	0.68									
Aldrin	µg/Kg	1.8	U	0.73	1.8	U	0.73									
Heptachlor epoxide	µg/Kg	1.8	U	0.48	1.8	U	0.48									
Endosulfan I	µg/Kg	1.8	U	0.3	1.8	U	0.3									
Dieldrin	µg/Kg	3.4	U	1.3	3.4	U	1.3									
4,4'-DDE	µg/Kg	3.4	U	0.9	3.4	U	0.9									
Endrin	µg/Kg	3.4	U	1.8	3.4	U	1.8									
Endosulfan II	µg/Kg	3.4	U	1.1	3.4	U	1.1									
4,4'-DDD	µg/Kg	3.4	U	0.97	3.4	U	0.97									
Endosulfan sulfate	µg/Kg	3.4	U	1	3.4	U	1									
4,4'-DDT	µg/Kg	3.4	U	1.6	3.4	U	1.6									
Methoxychlor	µg/Kg	18	U	13	18	U	13									
Endrin ketone	µg/Kg	3.4	U	1.1	3.4	U	1.1									
Endrin aldehyde	µg/Kg	3.4	U	0.87	3.4	U	0.87									
alpha-Chlordane	µg/Kg	1.8	U	0.78	1.8	U	0.78									
gamma-Chlordane	µg/Kg	1.8	U	0.72	1.8	U	0.72									
Toxaphene	µg/Kg	180	U	58	180	U	58									
Aroclor-1016	µg/Kg	34	U	16	34	U	16									
Aroclor-1221	µg/Kg	70	U	22	69	U	22									
Aroclor-1232	µg/Kg	34	U	17	34	U	17									
Aroclor-1242	µg/Kg	34	U	23	34	U	23									
Aroclor-1248	µg/Kg	34	U	6.7	34	U	6.7									
Aroclor-1254	µg/Kg	34	U	3.7	34	U	3.7									
Aroclor-1260	µg/Kg	34	U	5.8	34	U	5.8									

Table checked by: C. Macé Date: 3/10/2005

Table E-2 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB01-06 Date Sampled: 9/18/2002 Lab ID: R2732-15 % Solids: 97.1			Sample Point SB01-66 Date Sampled: 9/18/2002 Lab ID: R2732-16 % Solids: 93			Sample Point SB02-06 Date Sampled: 9/18/2002 Lab ID: R2732-11 % Solids: 95.4			Sample Point SB02-66 Date Sampled: 9/18/2002 Lab ID: R2732-12 %Solids: 97.6			Sample Point SB03-06 Date Sampled: 9/19/2002 Lab ID: T2732-1 %Solids: 95.4		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	mg/Kg	1760		1.4	3300		1.5	3410		1.5	434		1.5	3740		12.1
Antimony	mg/Kg	0.32	U	0.32	0.34	U	0.34	0.34	U	0.34	0.33	U	0.33	0.34	U	0.34
Arsenic	mg/Kg	0.47	U	0.47	0.67	B	0.5	1.6	B	0.5	0.48	U	0.48	1.4	B	0.27
Barium	mg/Kg	7.4	B	0.038	7.4	B	0.04	14.1	B	0.04	1.7	B	0.039	9.5	B	0.042
Beryllium	mg/Kg	0.039	B	0.038	0.076	B	0.04	0.078	B	0.04	0.039	U	0.039	0.13	B	0.042
Cadmium	mg/Kg	0.25	B	0.076	0.08	U	0.08	0.66	B	0.08	0.077	U	0.077	0.042	U	0.042
Calcium	mg/Kg	82.8	B	1.9	96.9	B	2	158	B	2	26.6	B	2	271	B	2.3
Chromium	mg/Kg	8.2		0.076	7.3		0.08	17.3		0.08	3.9		0.077	8.5		0.13
Cobalt	mg/Kg	0.48	B	0.076	0.8	B	0.08	0.95	B	0.08	0.2	B	0.077	0.48	B	0.084
Copper	mg/Kg	2.9	B	0.15	1.6	B	0.16	5.1		0.16	0.5	B	0.15	2.3	B	0.13
Iron	mg/Kg	2410		1.6	4530		1.7	4500		1.7	1930		1.7	6850		1.8
Lead	mg/Kg	7.3	J	0.25	3.5	J	0.26	15.3	J	0.26	0.9	J	0.25	2.7	J	0.15
Magnesium	mg/Kg	94.2	B	1.1	140	B	1.1	158	B	1.1	21.6	B	1.1	200	B	1.3
Manganese	mg/Kg	23.5	J	0.038	37.6	J	0.04	37.8	J	0.04	5	J	0.039	16.1		0.1
Mercury	mg/Kg	0.061	B	0.036	0.047	U	0.047	0.063	B	0.05	0.045	U	0.045	0.052	U	0.052
Nickel	mg/Kg	1.6	B	0.11	1.3	B	0.12	2.9	B	0.12	0.12	U	0.12	1.5	B	0.15
Potassium	mg/Kg	78.4	B	12.7	113	B	13.4	130	B	13.4	21.9	B	13	123	B	5.1
Selenium	mg/Kg	0.33	B	0.32	0.34	U	0.34	0.51	B	0.34	0.33	U	0.33	0.61	U	0.61
Silver	mg/Kg	0.13	B	0.094	0.1	U	0.1	0.1	U	0.1	0.097	U	0.097	0.15	U	0.15
Sodium	mg/Kg	66.5	B	13.3	50.7	B	14	95.7	B	14	64.8	B	13.6	120	B	31.9
Thallium	mg/Kg	0.79	U	0.79	0.84	U	0.84	0.84	U	0.84	0.81	U	0.81	0.55	UJ	0.55
Vanadium	mg/Kg	4.5	B	0.057	8.3	B	0.06	8.5	B	0.06	3.5	B	0.058	9.4	B	0.084
Zinc	mg/Kg	13		0.34	4.2		0.36	35.4		0.36	1.4	B	0.35	4.6		0.15
Cyanide	mg/Kg	0.076	U	0.076	0.079	U	0.079	0.078	U	0.078	0.076	U	0.076	0.079	U	0.079

Table checked by: C. Macé Date: 3/01/2005

Table E-2 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB03-132 Date Sampled: 9/19/2002 Lab ID: T2732-2 % Solids: 95.4			Sample Point SB04-06 Date Sampled: 9/19/2002 Lab ID: T2732-3 % Solids: 94.9			Sample Point SB04-66 Date Sampled: 9/19/2002 Lab ID: T2732-4 % Solids: 95.6			Sample Point SB05-06 Date Sampled: 9/19/2002 Lab ID: T2732-5 %Solids: 93.8			Sample Point SB05-66 Date Sampled: 9/19/2002 Lab ID: T2732-6 %Solids: 97.8		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	mg/Kg	2140		11.9	3640		11.2	2440		11.1	3280		11.5	878		11.1
Antimony	mg/Kg	0.33	U	0.33	0.31	U	0.31	0.31	U	0.31	0.32	U	0.32	0.31	U	0.31
Arsenic	mg/Kg	0.49	B	0.27	0.9	B	0.25	0.76	B	0.25	0.65	B	0.26	0.75	B	0.25
Barium	mg/Kg	8.1	B	0.041	8.3	B	0.039	5.7	B	0.038	11.4	B	0.04	1.7	B	0.039
Beryllium	mg/Kg	0.053	B	0.041	0.093	B	0.039	0.1	B	0.038	0.1	B	0.04	0.04	B	0.039
Cadmium	mg/Kg	0.041	U	0.041	0.039	U	0.039	0.038	U	0.038	0.04	U	0.04	0.039	U	0.039
Calcium	mg/Kg	468	B	2.3	568	B	2.2	13300	B	2.1	469	B	2.2	90.7	B	2.2
Chromium	mg/Kg	17.9		0.12	7.1		0.12	6.2		0.12	6		0.12	3.5		0.12
Cobalt	mg/Kg	0.5	B	0.082	0.4	B	0.077	0.47	B	0.077	0.57	B	0.08	0.11	B	0.077
Copper	mg/Kg	3.1	B	0.12	2.7	B	0.12	1.8	B	0.12	1.9	B	0.12	0.9	B	0.12
Iron	mg/Kg	4970		1.8	4890		1.7	3910		1.7	4110		1.7	3780		1.7
Lead	mg/Kg	2.9	J	0.14	3.1	J	0.14	1.9	J	0.13	4	J	0.14	0.96	J	0.14
Magnesium	mg/Kg	315	B	1.2	184	B	1.2	3420		1.2	302	B	1.2	40.8	B	1.2
Manganese	mg/Kg	21.8		0.1	8.3		0.097	17.8		0.096	16.6		0.1	3		0.096
Mercury	mg/Kg	0.044	U	0.044	0.046	U	0.046	0.04	U	0.04	0.044	U	0.044	0.041	U	0.041
Nickel	mg/Kg	1.8	B	0.14	1.2	B	0.14	1	B	0.13	1.5	B	0.14	0.14	B	0.14
Potassium	mg/Kg	103	B	5	112	B	4.7	105	B	4.6	132	B	4.8	23.5	B	4.7
Selenium	mg/Kg	0.6	U	0.6	0.56	U	0.56	0.56	U	0.56	0.58	U	0.58	0.56	U	0.56
Silver	mg/Kg	0.14	U	0.14	0.14	U	0.14	0.13	U	0.13	0.14	U	0.14	0.14	U	0.14
Sodium	mg/Kg	117	B	31.3	76.7	B	29.4	105	B	29.2	111	B	30.3	71.6	B	29.3
Thallium	mg/Kg	0.53	UJ	0.53	0.5	UJ	0.5	0.5	UJ	0.5	0.52	UJ	0.52	0.5	UJ	0.5
Vanadium	mg/Kg	8.6	B	0.082	8.6	B	0.077	6.4	B	0.077	7.5	B	0.08	5.9	B	0.077
Zinc	mg/Kg	6.4		0.14	2.9	B	0.14	2.2	B	0.13	4.4		0.14	0.79	B	0.14
Cyanide	mg/Kg	0.074	U	0.074	0.13	B	0.074	0.12	B	0.078	0.078	U	0.078	0.074	U	0.074

Table checked by: C. Macé Date: 3/01/2005

Table E-2 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB06-06 Date Sampled: 9/19/2002 Lab ID: R2732-19 % Solids: 95.7			Sample Point SB06-66 Date Sampled: 9/19/2002 Lab ID: R2732-20 % Solids: 96.9			Sample Point SB07-06 Date Sampled: 9/19/2002 Lab ID: T2732-7 % Solids: 87.3			Sample Point DSB07-06 Date Sampled: 9/19/2002 Lab ID: T2732-9 %Solids: 88.1			Sample Point SB07-66 Date Sampled: 9/19/2002 Lab ID: T2732-8 %Solids: 96.7		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	mg/Kg	4260		1.6	1930		1.4	6280		12.6	6250		12.5	1420		11.5
Antimony	mg/Kg	0.35	U	0.35	0.32	U	0.32	0.35	U	0.35	0.53	B	0.35	0.32	U	0.32
Arsenic	mg/Kg	1.1	B	0.52	0.47	U	0.47	1.8	B	0.28	2.2		0.28	0.26	U	0.26
Barium	mg/Kg	17.1	B	0.042	3.9	B	0.038	19.3	B	0.044	20.8	B	0.043	3	B	0.04
Beryllium	mg/Kg	0.11	B	0.042	0.067	B	0.038	0.14	B	0.044	0.15	B	0.043	0.041	B	0.04
Cadmium	mg/Kg	0.38	B	0.084	0.076	U	0.076	0.065	B	0.044	0.084	B	0.043	0.04	U	0.04
Calcium	mg/Kg	3370		2.1	58	B	1.9	191	B	2.4	202	B	2.4	49.1	B	2.2
Chromium	mg/Kg	11.2		0.084	4.5		0.076	14		0.13	13.6		0.13	3.5		0.12
Cobalt	mg/Kg	0.96	B	0.084	0.92	B	0.076	1.1	B	0.087	1.1	B	0.086	0.2	B	0.08
Copper	mg/Kg	3.6	B	0.17	0.48	B	0.15	12.9		0.13	12.6		0.13	1.1	B	0.12
Iron	mg/Kg	5580		1.8	3870		1.6	8730		1.9	8640		1.9	2130		1.7
Lead	mg/Kg	16.1	J	0.27	2.9	J	0.25	17.5	J	0.15	18	J	0.15	1.4	J	0.14
Magnesium	mg/Kg	471	B	1.2	67.4	B	1.1	346	B	1.3	352	B	1.3	39.7	B	1.2
Manganese	mg/Kg	94.9	J	0.042	29.1	J	0.038	31.8		0.11	30.9		0.11	5.3		0.099
Mercury	mg/Kg	0.12		0.052	0.049	U	0.049	0.094		0.039	0.076	B	0.039	0.041	U	0.041
Nickel	mg/Kg	2.6	B	0.12	0.51	B	0.11	4.7	B	0.15	4.3	B	0.15	0.36	B	0.14
Potassium	mg/Kg	289	B	14	58.5	B	12.7	140	B	5.3	133	B	5.2	41.8	B	4.8
Selenium	mg/Kg	0.61	B	0.35	0.32	U	0.32	0.73	B	0.63	0.63	U	0.63	0.58	U	0.58
Silver	mg/Kg	0.1	U	0.1	0.095	U	0.095	0.15	U	0.15	0.15	U	0.15	0.14	U	0.14
Sodium	mg/Kg	75.2	B	14.7	49	B	13.3	61.1	B	33.2	76	B	32.9	96.9	B	30.2
Thallium	mg/Kg	0.88	U	0.88	0.8	U	0.8	0.57	UJ	0.57	0.56	UJ	0.56	0.52	UJ	0.52
Vanadium	mg/Kg	10.4		0.063	6.5	B	0.057	13.8		0.087	13.9		0.086	4	B	0.08
Zinc	mg/Kg	14.4		0.38	1.6	B	0.34	34.1		0.15	33		0.15	0.42	B	0.14
Cyanide	mg/Kg	0.078	U	0.078	0.077	U	0.077	0.29	B	0.086	0.34	B	0.083	0.15	B	0.075

Table checked by: C. Macé Date: 3/01/2005

Table E-2 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB08-06 Date Sampled: 9/19/2002 Lab ID: T2732-10 % Solids: 95			Sample Point SB08-66 Date Sampled: 9/19/2002 Lab ID: T2732-11 % Solids: 95.2			Sample Point SB09-06 Date Sampled: 9/20/2002 Lab ID: W2732-6 % Solids: 89.7			Sample Point SB09-66 Date Sampled: 9/20/2002 Lab ID: W2732-7 %Solids: 96.3			Sample Point SB10-06 Date Sampled: 9/20/2002 Lab ID: W2732-4 %Solids: 84.8		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	mg/Kg	5700		11.1	1470		11.8	6340		1.6	1020		1.5	6450		1.7
Antimony	mg/Kg	0.31	U	0.31	0.33	U	0.33	0.41	B	0.36	0.35	U	0.35	0.44	B	0.38
Arsenic	mg/Kg	1.8	B	0.25	0.48	B	0.27	2.4		0.54	1.4	B	0.51	2.3		0.55
Barium	mg/Kg	19.6	B	0.039	2.9	B	0.041	18.6	B	0.043	1.8	B	0.041	19.5	B	0.044
Beryllium	mg/Kg	0.13	B	0.039	0.093	B	0.041	0.16	B	0.043	0.14	B	0.041	0.13	B	0.044
Cadmium	mg/Kg	0.12	B	0.039	0.041	U	0.041	0.086	U	0.086	0.081	U	0.081	0.088	U	0.088
Calcium	mg/Kg	55	B	2.2	23.2	B	2.3	71.9	B	2.2	23	B	2.1	134	B	2.2
Chromium	mg/Kg	18.1		0.12	5.1		0.12	35.4		0.086	26.2		0.081	13.4		0.088
Cobalt	mg/Kg	0.69	B	0.077	0.24	B	0.082	1	B	0.086	0.48	B	0.081	0.5	B	0.088
Copper	mg/Kg	8.9		0.12	1.2	B	0.12	6.5		0.17	0.92	B	0.16	4.2	B	0.18
Iron	mg/Kg	7540		1.7	3060		1.8	7600		1.8	7460		1.8	8250		1.9
Lead	mg/Kg	48	J	0.14	3.7	J	0.14	8.5		0.28	2.5		0.27	15.6		0.29
Magnesium	mg/Kg	265	B	1.2	46.6	B	1.2	380	B	1.2	35.9	B	1.1	259	B	1.2
Manganese	mg/Kg	18.3		0.097	5.1		0.1	27.2		0.043	6.9		0.041	18.3		0.044
Mercury	mg/Kg	0.087	B	0.048	0.046	U	0.046	0.051	U	0.051	0.042	U	0.042	0.041	U	0.041
Nickel	mg/Kg	3	B	0.14	0.34	B	0.14	3.7	B	0.13	0.29	B	0.12	2.8	B	0.13
Potassium	mg/Kg	91.9	B	4.7	37.8	B	4.9	181	B	14.4	18.3	B	13.7	166	B	14.8
Selenium	mg/Kg	0.56	U	0.56	0.59	U	0.59	1	J	0.36	1.2	J	0.35	0.91	J	0.38
Silver	mg/Kg	0.14	U	0.14	0.14	U	0.14	0.11	U	0.11	0.1	U	0.1	0.22	B	0.11
Sodium	mg/Kg	45.5	B	29.4	113	B	31	109	B	15.1	70.5	B	14.3	122	B	15.5
Thallium	mg/Kg	0.5	UJ	0.5	0.53	UJ	0.53	0.9	U	0.9	0.85	U	0.85	0.93	U	0.93
Vanadium	mg/Kg	13.4		0.077	5.8	B	0.082	13		0.064	7.7	B	0.061	15.6		0.066
Zinc	mg/Kg	15.7		0.14	1.7	B	0.14	16.2		0.39	2.4	B	0.37	12		0.4
Cyanide	mg/Kg	0.14	B	0.077	0.078	U	0.078	0.081	U	0.081	0.074	U	0.074	0.088	U	0.088

Table checked by: C. Macé Date: 3/01/2005

Table E-2 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB10-66 Date Sampled: 9/20/2002 Lab ID: W2732-5 % Solids: 98			Sample Point SB11-06 Date Sampled: 9/25/2002 Lab ID: Y2732-3 % Solids: 94.8			Sample Point SB11-66 Date Sampled: 9/25/2002 Lab ID: Y2732-4 % Solids: 97.9			Sample Point SB12-06 Date Sampled: 9/24/2002 Lab ID: W2732-8 %Solids: 95.8			Sample Point SB13-06 Date Sampled: 9/20/2002 Lab ID: W2732-2 %Solids: 93.3		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	mg/Kg	1100		1.5	8110		11.7	1600		11.7	1120		1.6	6620		1.5
Antimony	mg/Kg	0.34	U	0.34	0.33	U	0.33	0.33	B	0.32	0.35	U	0.35	0.34	U	0.34
Arsenic	mg/Kg	1.2	B	0.51	2.1		0.26	0.26	U	0.26	0.87	B	0.52	2.2		0.5
Barium	mg/Kg	2.5	B	0.04	29.9	B	0.041	4.1	B	0.04	3.8	B	0.042	24	B	0.04
Beryllium	mg/Kg	0.04	U	0.04	0.2	B	0.041	0.057	B	0.04	0.042	U	0.042	0.17	B	0.04
Cadmium	mg/Kg	0.081	U	0.081	0.35	B	0.041	0.04	U	0.04	0.084	U	0.084	0.12	B	0.079
Calcium	mg/Kg	22.6	B	2.1	52.4	B	2.3	2.3	U	2.3	47.5	B	2.1	369	B	2
Chromium	mg/Kg	4.5		0.081	19.8		0.12	3.7		0.12	4.1		0.084	14.1		0.079
Cobalt	mg/Kg	0.081	U	0.081	1.1	B	0.081	0.3	B	0.081	0.44	B	0.084	1.1	B	0.079
Copper	mg/Kg	0.66	B	0.16	6		0.12	1	B	0.12	0.44	B	0.17	8.2		0.16
Iron	mg/Kg	2850		1.7	9800		1.8	2240		1.8	1800		1.8	7740		1.7
Lead	mg/Kg	2.9		0.26	54.5		0.14	2.2		0.14	2.2		0.27	14.4		0.26
Magnesium	mg/Kg	36.8	B	1.1	525	B	1.2	45.7	B	1.2	72.2	B	1.2	406	B	1.1
Manganese	mg/Kg	4.6		0.04	32.7		0.1	6		0.1	10.1		0.042	30.1		0.04
Mercury	mg/Kg	0.044	U	0.044	0.085	B	0.05	0.046	U	0.046	0.052	U	0.052	0.045	B	0.043
Nickel	mg/Kg	0.21	B	0.12	4.6	B	0.14	0.58	B	0.14	0.58	B	0.12	4	B	0.12
Potassium	mg/Kg	46.1	B	13.6	140	B	4.9	54.5	B	4.9	61.8	B	14	195	B	13.3
Selenium	mg/Kg	0.65	J	0.34	0.59	U	0.59	0.59	U	0.59	1	J	0.35	0.58	J	0.34
Silver	mg/Kg	0.1	U	0.1	0.14	U	0.14	0.14	U	0.14	0.1	U	0.1	0.099	U	0.099
Sodium	mg/Kg	91.8	B	14.2	83	B	30.9	120	B	30.8	77.6	B	14.7	115	B	14
Thallium	mg/Kg	0.85	U	0.85	0.53	UJ	0.53	0.53	UJ	0.53	0.88	U	0.88	0.83	U	0.83
Vanadium	mg/Kg	4.6	B	0.061	16.8		0.081	4.1	B	0.081	3.8	B	0.063	13.4		0.06
Zinc	mg/Kg	1.4	B	0.36	21.1		0.14	0.5	B	0.14	2.3	B	0.38	14.3		0.36
Cyanide	mg/Kg	0.076	U	0.076	0.2	B	0.078	0.075	U	0.075	0.078	U	0.078	0.08	U	0.08

Table checked by: C. Macé Date: 3/01/2005

Table E-2 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB13-102 Date Sampled: 9/20/2002 Lab ID: W2732-3 % Solids: 96.4			Sample Point SB14-06 Date Sampled: 9/25/2002 Lab ID: Y2732-5 % Solids: 95.5			Sample Point SB14-66 Date Sampled: 9/25/2002 Lab ID: Y2732-6 % Solids: 97.7			Sample Point SB15-06 Date Sampled: 9/20/2002 Lab ID: T2732-20 %Solids: 94.8			Sample Point SB15-66 Date Sampled: 9/20/2002 Lab ID: W2732-1 %Solids: 97.3		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	mg/Kg	1780		1.4	6480		11.7	1030		11.4	5050		11.9	1710		1.5
Antimony	mg/Kg	0.32	U	0.32	0.33	U	0.33	0.32	U	0.32	0.33	U	0.33	0.33	U	0.33
Arsenic	mg/Kg	0.85	B	0.48	1.6	B	0.26	0.26	U	0.26	1.5	B	0.27	0.49	U	0.49
Barium	mg/Kg	5.1	B	0.038	22.8	B	0.041	3.3	B	0.039	19	B	0.041	2.6	B	0.039
Beryllium	mg/Kg	0.053	B	0.038	0.15	B	0.041	0.046	B	0.039	0.13	B	0.041	0.046	B	0.039
Cadmium	mg/Kg	0.076	U	0.076	0.041	U	0.041	0.039	U	0.039	0.041	U	0.041	0.078	U	0.078
Calcium	mg/Kg	215	B	1.9	25.7	B	2.3	2.2	U	2.2	96.5	B	2.3	31.8	B	2
Chromium	mg/Kg	12.1		0.076	9.2		0.12	3.8		0.12	10.6		0.12	3.2		0.078
Cobalt	mg/Kg	0.36	B	0.076	0.91	B	0.081	0.14	B	0.079	0.73	B	0.083	0.21	B	0.078
Copper	mg/Kg	2	B	0.15	3.1	B	0.12	0.58	B	0.12	2.7	B	0.12	1.2	B	0.16
Iron	mg/Kg	5160		1.6	7560		1.8	2020		1.7	6010		1.8	2250		1.7
Lead	mg/Kg	3		0.25	8.3		0.14	1.9		0.14	9.6	J	0.14	2.1		0.25
Magnesium	mg/Kg	128	B	1.1	400	B	1.2	28.4	B	1.2	280	B	1.2	40.7	B	1.1
Manganese	mg/Kg	9.2		0.038	29.9		0.1	5		0.099	18.9		0.1	4.1		0.039
Mercury	mg/Kg	0.043	U	0.043	0.05	U	0.05	0.045	U	0.045	0.046	U	0.046	0.047	U	0.047
Nickel	mg/Kg	1	B	0.11	3.2	B	0.14	0.38	B	0.14	2.5	B	0.14	0.48	B	0.12
Potassium	mg/Kg	51.9	B	12.8	107	B	4.9	32	B	4.8	94.3	B	5	13.1	U	13.1
Selenium	mg/Kg	0.68	J	0.32	0.59	U	0.59	0.57	U	0.57	0.65	B	0.6	0.47	J	0.33
Silver	mg/Kg	0.095	U	0.095	0.14	U	0.14	0.14	U	0.14	0.14	U	0.14	0.098	U	0.098
Sodium	mg/Kg	54.5	B	13.4	67.3	B	30.9	91.3	B	30	73.5	B	31.5	70.4	B	13.8
Thallium	mg/Kg	0.8	U	0.8	0.53	UJ	0.53	0.51	UJ	0.51	0.54	UJ	0.54	0.82	U	0.82
Vanadium	mg/Kg	8.8	B	0.057	13.1		0.081	4.4	B	0.079	11.2		0.083	4.3	B	0.059
Zinc	mg/Kg	2.7	B	0.34	13.3		0.14	0.43	B	0.14	7.5		0.14	1.4	B	0.35
Cyanide	mg/Kg	0.078	U	0.078	0.078	U	0.078	0.075	U	0.075	0.078	U	0.078	0.077	U	0.077

Table checked by: C. Macé Date: 3/01/2005

Table E-2 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB16-06 Date Sampled: 9/18/2002 Lab ID: R2732-13 % Solids: 91.6			Sample Point SB16-66 Date Sampled: 9/18/2002 Lab ID: R2732-14 % Solids: 95.8			Sample Point SB17-06 Date Sampled: 9/18/2002 Lab ID: R2732-4 % Solids: 94.7			Sample Point SB17-66 Date Sampled: 9/18/2002 Lab ID: R2732-5 %Solids: 96.3			Sample Point SB18-06 Date Sampled: 9/25/2002 Lab ID: Y2732-7 %Solids: 96.7		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	mg/Kg	9260		1.6	1260		1.5	4520		1.5	1060		1.5	3190		11.2
Antimony	mg/Kg	0.35	U	0.35	0.34	U	0.34	0.34	U	0.34	0.34	U	0.34	0.31	U	0.31
Arsenic	mg/Kg	3.2		0.51	0.5	U	0.5	1.9	B	0.51	0.5	U	0.5	1.2	B	0.25
Barium	mg/Kg	31.1	B	0.041	2.3	B	0.04	17.5	B	0.041	3	B	0.04	16.7	B	0.039
Beryllium	mg/Kg	0.22	B	0.041	0.04	U	0.04	0.12	B	0.041	0.04	U	0.04	0.081	B	0.039
Cadmium	mg/Kg	0.082	U	0.082	0.08	U	0.08	0.081	U	0.081	0.081	U	0.081	0.44	B	0.039
Calcium	mg/Kg	228	B	2.1	24.4	B	2	109	B	2.1	29.3	B	2.1	132	B	2.2
Chromium	mg/Kg	12.7		0.082	3.6		0.08	7.3		0.081	3.3		0.081	27.3		0.12
Cobalt	mg/Kg	1.1	B	0.082	0.37	B	0.08	0.57	B	0.081	0.32	B	0.081	0.74	B	0.077
Copper	mg/Kg	3.2	B	0.16	0.77	B	0.16	2.8	B	0.16	0.79	B	0.16	4.2	B	0.12
Iron	mg/Kg	10000		1.8	2220		1.7	4770		1.7	1740		1.7	4780		1.7
Lead	mg/Kg	7.8	J	0.27	1.9	J	0.26	7.8	J	0.26	1.7	J	0.26	11.2		0.14
Magnesium	mg/Kg	562	B	1.1	37.4	B	1.1	245	B	1.1	43.6	B	1.1	217	B	1.2
Manganese	mg/Kg	37.4	J	0.041	6	J	0.04	32.3	J	0.041	4.4	J	0.04	21.2		0.097
Mercury	mg/Kg	0.06	B	0.038	0.043	U	0.043	0.047	B	0.044	0.037	U	0.037	0.058	B	0.043
Nickel	mg/Kg	3.4	B	0.12	0.2	B	0.12	2.1	B	0.12	0.32	B	0.12	2.7	B	0.14
Potassium	mg/Kg	278	B	13.7	50.1	B	13.3	158	B	13.6	44.9	B	13.5	70.7	B	4.7
Selenium	mg/Kg	0.77	B	0.35	0.34	U	0.34	0.34	U	0.34	0.34	U	0.34	0.56	U	0.56
Silver	mg/Kg	0.1	U	0.1	0.099	U	0.099	0.1	U	0.1	0.1	U	0.1	0.29	B	0.14
Sodium	mg/Kg	81	B	14.3	63.1	B	14	79.7	B	14.3	68.4	B	14.2	190	B	29.4
Thallium	mg/Kg	0.86	U	0.86	0.83	U	0.83	0.85	U	0.85	0.85	U	0.85	0.5	UJ	0.5
Vanadium	mg/Kg	18.6		0.061	4.3	B	0.06	8.8	B	0.061	3.4	B	0.06	6.8	B	0.077
Zinc	mg/Kg	13.2		0.37	1.4	B	0.36	9.7		0.37	2.2	B	0.36	21.2		0.14
Cyanide	mg/Kg	0.081	U	0.081	0.078	U	0.078	0.077	U	0.077	0.077	U	0.077	0.081	B	0.078

Table checked by: C. Macé Date: 3/01/2005

Table E-2 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB18-66 Date Sampled: 9/25/2002 Lab ID: Y2732-8 % Solids: 96.7			Sample Point SB19-06 Date Sampled: 9/18/2002 Lab ID: R2732-9 % Solids: 94.8			Sample Point SB19-66 Date Sampled: 9/18/2002 Lab ID: R2732-10 % Solids: 96.8			Sample Point SB20-06 Date Sampled: 9/25/2002 Lab ID: Y2732-9 %Solids: 96.4			Sample Point SB20-66 Date Sampled: 9/25/2002 Lab ID: Y2732-10 %Solids: 97.4		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	mg/Kg	1210		11.4	3550		1.6	861		1.5	4940		11.2	1960		11.3
Antimony	mg/Kg	0.32	U	0.32	0.35	U	0.35	0.34	U	0.34	0.36	B	0.31	0.31	U	0.31
Arsenic	mg/Kg	0.39	B	0.26	2.2		0.51	0.5	U	0.5	2		0.25	0.45	B	0.25
Barium	mg/Kg	4.7	B	0.039	15.3	B	0.041	1.9	B	0.04	13.8	B	0.039	3.8	B	0.039
Beryllium	mg/Kg	0.044	B	0.039	0.1	B	0.041	0.04	U	0.04	0.11	B	0.039	0.052	B	0.039
Cadmium	mg/Kg	0.039	U	0.039	0.082	U	0.082	0.079	U	0.079	0.039	U	0.039	0.039	U	0.039
Calcium	mg/Kg	39.3	B	2.2	213	B	2.1	33.6	B	2	33	B	2.2	54.4	B	2.2
Chromium	mg/Kg	4.3		0.12	5.7		0.082	2.5		0.079	11.6		0.12	3.1		0.12
Cobalt	mg/Kg	0.15	B	0.079	0.43	B	0.082	0.14	B	0.079	0.41	B	0.078	0.24	B	0.078
Copper	mg/Kg	0.69	B	0.12	4.3	B	0.16	0.16	U	0.16	3.5	B	0.12	0.99	B	0.12
Iron	mg/Kg	2150		1.7	3990		1.8	1310		1.7	9270		1.7	2260		1.7
Lead	mg/Kg	1.7		0.14	12.1	J	0.27	0.73	J	0.26	12.3		0.14	1.4		0.14
Magnesium	mg/Kg	43.8	B	1.2	210	B	1.1	32.2	B	1.1	166	B	1.2	49.3	B	1.2
Manganese	mg/Kg	3.9		0.098	25.7	J	0.041	2.6	J	0.04	13.9		0.097	4.4		0.098
Mercury	mg/Kg	0.043	U	0.043	0.051	B	0.041	0.043	U	0.043	0.047	U	0.047	0.043	U	0.043
Nickel	mg/Kg	0.45	B	0.14	1.7	B	0.12	0.12	U	0.12	3.4	B	0.14	0.6	B	0.14
Potassium	mg/Kg	36.7	B	4.8	168	B	13.7	33.1	B	13.3	92.2	B	4.7	54.1	B	4.7
Selenium	mg/Kg	0.57	U	0.57	0.35	U	0.35	0.34	U	0.34	0.56	U	0.56	0.57	U	0.57
Silver	mg/Kg	0.14	U	0.14	0.1	U	0.1	0.099	U	0.099	0.14	U	0.14	0.14	U	0.14
Sodium	mg/Kg	106	B	30	72.4	B	14.4	57.8	B	14	67	B	29.5	119	B	29.7
Thallium	mg/Kg	0.51	UJ	0.51	0.86	U	0.86	0.83	U	0.83	0.5	UJ	0.5	0.51	UJ	0.51
Vanadium	mg/Kg	4.1	B	0.079	8	B	0.061	2.7	B	0.06	12.9		0.078	4.3	B	0.078
Zinc	mg/Kg	0.45	B	0.14	11.5		0.37	1.3	B	0.36	7.7		0.14	0.59	B	0.14
Cyanide	mg/Kg	0.078	U	0.078	0.077	U	0.077	0.077	U	0.077	0.2	B	0.075	0.075	U	0.075

Table checked by: C. Macé Date: 3/01/2005

Table E-2 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB21-06 Date Sampled: 9/25/2002 Lab ID: Y2732-11 % Solids: 96.2			Sample Point SB21-66 Date Sampled: 9/25/2002 Lab ID: Y2732-12 % Solids: 98.5			Sample Point SB22-06 Date Sampled: 9/20/2002 Lab ID: T2732-18 % Solids: 93.2			Sample Point SB22-66 Date Sampled: 9/20/2002 Lab ID: T2732-19 %Solids: 96.7			Sample Point SB23-06 Date Sampled: 9/18/2002 Lab ID: R2732-2 %Solids: 85.8		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	mg/Kg	4970		12	2380		11.3	4920		12	2000		11	4240		1.7
Antimony	mg/Kg	0.33	U	0.33	0.31	U	0.31	0.33	U	0.33	0.31	U	0.31	0.39	U	0.39
Arsenic	mg/Kg	1.5	B	0.27	0.59	B	0.25	2.3		0.27	0.25	U	0.25	2	B	0.57
Barium	mg/Kg	14.7	B	0.042	6	B	0.039	13.3	B	0.042	4.6	B	0.038	19.6	B	0.046
Beryllium	mg/Kg	0.16	B	0.042	0.097	B	0.039	0.11	B	0.042	0.052	B	0.038	0.13	B	0.046
Cadmium	mg/Kg	0.042	U	0.042	0.039	U	0.039	0.042	U	0.042	0.038	U	0.038	0.091	U	0.091
Calcium	mg/Kg	54.7	B	2.3	34.1	B	2.2	82.5	B	2.3	29.5	B	2.1	250	B	2.3
Chromium	mg/Kg	7.9		0.12	4.6		0.12	66.5		0.12	4.3		0.12	6.5		0.091
Cobalt	mg/Kg	0.59	B	0.083	0.37	B	0.078	0.3	B	0.083	0.47	B	0.077	0.46	B	0.091
Copper	mg/Kg	2.2	B	0.12	1.5	B	0.12	20.9		0.12	1.3	B	0.12	4.3	B	0.18
Iron	mg/Kg	6150		1.8	2970		1.7	7050		1.8	2300		1.7	4820		2
Lead	mg/Kg	5.3		0.15	2.4		0.14	6.4	J	0.15	2.6	J	0.13	14.3	J	0.3
Magnesium	mg/Kg	205	B	1.2	71.5	B	1.2	181	B	1.3	56.9	B	1.1	243	B	1.3
Manganese	mg/Kg	16		0.1	5.7		0.098	13.2		0.1	12.2		0.096	32	J	0.046
Mercury	mg/Kg	0.052	U	0.052	0.048	U	0.048	0.055	B	0.045	0.049	U	0.049	0.051	B	0.051
Nickel	mg/Kg	2.2	B	0.15	1	B	0.14	3.7	B	0.15	0.56	B	0.13	2	B	0.14
Potassium	mg/Kg	97.4	B	5	62.3	B	4.7	96.6	B	5	48.3	B	4.6	177	B	15.3
Selenium	mg/Kg	0.6	U	0.6	0.57	U	0.57	0.6	U	0.6	0.56	U	0.56	0.78	B	0.39
Silver	mg/Kg	0.15	U	0.15	0.14	U	0.14	0.15	U	0.15	0.13	U	0.13	0.11	U	0.11
Sodium	mg/Kg	83.4	B	31.6	95	B	29.7	61.5	B	31.7	45.3	B	29.1	68.4	B	16.1
Thallium	mg/Kg	0.54	UJ	0.54	0.51	UJ	0.51	0.54	UJ	0.54	0.5	UJ	0.5	0.96	U	0.96
Vanadium	mg/Kg	11.2		0.083	5.8	B	0.078	12.3		0.083	5.2	B	0.077	9.4	B	0.069
Zinc	mg/Kg	5.5		0.15	0.99	B	0.14	13		0.15	1	B	0.13	12.3		0.41
Cyanide	mg/Kg	0.078	U	0.078	0.076	U	0.076	0.18	B	0.077	0.077	U	0.077	0.087	U	0.087

Table checked by: C. Macé Date: 3/01/2005

Table E-2 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB23-66 Date Sampled: 9/18/2002 Lab ID: R2732-3 % Solids: 97.5			Sample Point SB24-06 Date Sampled: 9/25/2002 Lab ID: Y2732-13 % Solids: 95.9			Sample Point SB24-66 Date Sampled: 9/25/2002 Lab ID: Y2732-14 % Solids: 98.6			Sample Point SB25-06 Date Sampled: 9/19/2002 Lab ID: R2732-17 %Solids: 92.3			Sample Point SB25-186 Date Sampled: 9/19/2002 Lab ID: R2732-18 %Solids: 93.3		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	mg/Kg	1910		1.5	6160		11.7	2040		11.5	7280		1.6	1770		1.6
Antimony	mg/Kg	0.41	B	0.33	0.32	U	0.32	0.32	U	0.32	0.36	U	0.36	0.35	U	0.35
Arsenic	mg/Kg	0.48	U	0.48	1.9	B	0.26	0.51	B	0.26	1.7	B	0.53	3.1		0.51
Barium	mg/Kg	4	B	0.038	22.7	B	0.04	4.9	B	0.04	30.7	B	0.042	2.6	B	0.041
Beryllium	mg/Kg	0.046	B	0.038	0.18	B	0.04	0.046	B	0.04	0.17	B	0.042	0.043	B	0.041
Cadmium	mg/Kg	0.077	U	0.077	0.04	U	0.04	0.04	U	0.04	0.23	B	0.085	0.082	U	0.082
Calcium	mg/Kg	68.4	B	2	48.2	B	2.3	9.2	B	2.2	75.7	B	2.2	48	B	2.1
Chromium	mg/Kg	4		0.077	8.2		0.12	3.5		0.12	912		0.085	7.3		0.082
Cobalt	mg/Kg	0.5	B	0.077	0.88	B	0.081	0.44	B	0.08	0.96	B	0.085	0.082	U	0.082
Copper	mg/Kg	0.78	B	0.15	2.5	B	0.12	1.4	B	0.12	13.4		0.17	2	B	0.16
Iron	mg/Kg	1890		1.6	7050		1.8	2410		1.7	8400		1.8	6380		1.8
Lead	mg/Kg	2.6	J	0.25	7		0.14	1.9		0.14	14.4	J	0.28	1.3	J	0.27
Magnesium	mg/Kg	54.4	B	1.1	348	B	1.2	51.7	B	1.2	431	B	1.2	31.4	B	1.1
Manganese	mg/Kg	6.8	J	0.038	30.5		0.1	9.7		0.099	22.9	J	0.042	1.9	J	0.041
Mercury	mg/Kg	0.043	U	0.043	0.047	U	0.047	0.048	U	0.048	0.082	B	0.052	0.046	B	0.045
Nickel	mg/Kg	0.47	B	0.12	2.7	B	0.14	0.75	B	0.14	5.4	B	0.13	0.26	B	0.12
Potassium	mg/Kg	92	B	12.9	99.9	B	4.9	58	B	4.8	199	B	14.3	81.3	B	13.7
Selenium	mg/Kg	0.33	U	0.33	0.59	U	0.59	0.58	U	0.58	0.72	B	0.36	0.47	B	0.35
Silver	mg/Kg	0.096	U	0.096	0.14	U	0.14	0.14	U	0.14	0.11	U	0.11	0.1	U	0.1
Sodium	mg/Kg	84.6	B	13.5	109	B	30.8	109	B	30.2	75.9	B	14.9	67.4	B	14.4
Thallium	mg/Kg	0.81	U	0.81	0.53	UJ	0.53	0.52	UJ	0.52	0.89	U	0.89	0.86	U	0.86
Vanadium	mg/Kg	4.9	B	0.058	12		0.081	4.8	B	0.08	14.3		0.064	10.2	B	0.061
Zinc	mg/Kg	2.1	B	0.34	11.6		0.14	0.63	B	0.14	21.5		0.38	2.3	B	0.37
Cyanide	mg/Kg	0.076	U	0.076	0.078	U	0.078	0.075	U	0.075	0.08	U	0.08	0.08	U	0.08

Table checked by: C. Macé Date: 3/01/2005

Table E-2 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB26-06 Date Sampled: 9/18/2002 Lab ID: R2732-8 % Solids: 92.2			Sample Point SB26-66 Date Sampled: 9/18/2002 Lab ID: R2732-1 % Solids: 95.2			Sample Point SB27-06 Date Sampled: 9/20/2002 Lab ID: T2732-14 % Solids: 95.5			Sample Point SB27-66 Date Sampled: 9/20/2002 Lab ID: T2732-15 %Solids: 98.1			Sample Point SB28-06 Date Sampled: 9/20/2002 Lab ID: T2732-16 %Solids: 97.1		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	mg/Kg	5160		1.5	2110		1.6	2480		11.3	3260		11.6	3770		11.7
Antimony	mg/Kg	0.34	U	0.34	0.35	U	0.35	0.31	U	0.31	0.32	U	0.32	0.32	U	0.32
Arsenic	mg/Kg	1.1	B	0.5	0.52	U	0.52	0.72	B	0.25	0.48	B	0.26	1.2	B	0.26
Barium	mg/Kg	18.7	B	0.04	3.2	B	0.042	9.8	B	0.039	7.6	B	0.04	14.4	B	0.04
Beryllium	mg/Kg	0.13	B	0.04	0.069	B	0.042	0.069	B	0.039	0.088	B	0.04	0.1	B	0.04
Cadmium	mg/Kg	0.08	U	0.08	0.083	U	0.083	0.039	U	0.039	0.04	U	0.04	0.04	U	0.04
Calcium	mg/Kg	150	B	2	44.7	B	2.1	50.7	B	2.2	53.8	B	2.3	46.9	B	2.3
Chromium	mg/Kg	8.2		0.08	7.8		0.083	3.8		0.12	5		0.12	7.1		0.12
Cobalt	mg/Kg	0.7	B	0.08	0.41	B	0.083	0.28	B	0.078	0.64	B	0.081	0.44	B	0.081
Copper	mg/Kg	2.1	B	0.16	0.57	B	0.17	2.4	B	0.12	1.9	B	0.12	2.6	B	0.12
Iron	mg/Kg	5770		1.7	4850		1.8	3050		1.7	3340		1.8	4220		1.8
Lead	mg/Kg	7.8	J	0.26	2.8	J	0.27	7.1	J	0.14	2.1	J	0.14	10.2	J	0.14
Magnesium	mg/Kg	297	B	1.1	57.7	B	1.2	132	B	1.2	76.6	B	1.2	192	B	1.2
Manganese	mg/Kg	29.8	J	0.04	8.3	J	0.042	18.8		0.098	11.2		0.1	15.3		0.1
Mercury	mg/Kg	0.055	B	0.049	0.04	U	0.04	0.048	B	0.044	0.041	U	0.041	0.045	U	0.045
Nickel	mg/Kg	2.3	B	0.12	0.43	B	0.12	1.5	B	0.14	0.99	B	0.14	1.7	B	0.14
Potassium	mg/Kg	134	B	13.5	102	B	14	46.8	B	4.7	68	B	4.9	63.6	B	4.9
Selenium	mg/Kg	0.34	U	0.34	0.53	B	0.35	0.57	U	0.57	0.58	U	0.58	0.59	U	0.59
Silver	mg/Kg	0.1	U	0.1	0.1	U	0.1	0.14	U	0.14	0.14	U	0.14	0.14	U	0.14
Sodium	mg/Kg	84	B	14.1	69.1	B	14.6	110	B	29.8	96.2	B	30.7	76.1	B	30.7
Thallium	mg/Kg	0.84	U	0.84	0.87	U	0.87	0.51	UJ	0.51	0.53	UJ	0.53	0.53	UJ	0.53
Vanadium	mg/Kg	9.9	B	0.06	7.2	B	0.062	6.3	B	0.078	6.6	B	0.081	7.7	B	0.081
Zinc	mg/Kg	10.2		0.36	2.5	B	0.37	8.7		0.14	1.5	B	0.14	9.3		0.14
Cyanide	mg/Kg	0.081	U	0.081	0.079	U	0.079	0.076	U	0.076	0.076	U	0.076	0.076	U	0.076

Table checked by: C. Macé Date: 3/01/2005

Table E-2 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB28-150 Date Sampled: 9/20/2002 Lab ID: T2732-17 % Solids: 93			Sample Point SB29-06 Date Sampled: 9/19/2002 Lab ID: T2732-12 % Solids: 95.7			Sample Point SB29-222 Date Sampled: 9/19/2002 Lab ID: T2732-13 % Solids: 95.3			Sample Point SB30-06 Date Sampled: 9/25/2002 Lab ID: Y2732-15 %Solids: 95.6			Sample Point SB30-66 Date Sampled: 9/25/2002 Lab ID: Y2732-16 %Solids: 96.2		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	mg/Kg	1740		11.6	2580		11.6	479		11.5	2450		11.1	2220		11.5
Antimony	mg/Kg	0.32	U	0.32	0.32	U	0.32	0.32	U	0.32	0.31	U	0.31	0.32	U	0.32
Arsenic	mg/Kg	0.39	B	0.26	0.9	B	0.26	0.26	U	0.26	0.8	B	0.25	0.36	B	0.26
Barium	mg/Kg	4.4	B	0.04	11.7	B	0.04	2	B	0.04	9.3	B	0.038	6	B	0.04
Beryllium	mg/Kg	0.053	B	0.04	0.071	B	0.04	0.04	U	0.04	0.071	B	0.038	0.061	B	0.04
Cadmium	mg/Kg	0.04	U	0.04	0.04	U	0.04	0.04	U	0.04	0.038	U	0.038	0.04	U	0.04
Calcium	mg/Kg	35.1	B	2.3	68.2	B	2.3	15.9	B	2.2	14.3	B	2.1	48.3	B	2.2
Chromium	mg/Kg	3.1		0.12	11		0.12	6.9		0.12	4.6		0.12	4.5		0.12
Cobalt	mg/Kg	0.1	B	0.08	0.32	B	0.08	0.083	B	0.08	0.58	B	0.077	0.31	B	0.08
Copper	mg/Kg	1.9	B	0.12	6.3		0.12	1.3	B	0.12	0.94	B	0.12	1	B	0.12
Iron	mg/Kg	1980		1.7	3710		1.7	1540		1.7	3280		1.7	2830		1.7
Lead	mg/Kg	1.1	J	0.14	15.2	J	0.14	2.4	J	0.14	1.9		0.13	2.3		0.14
Magnesium	mg/Kg	30.6	B	1.2	170	B	1.2	14.9	B	1.2	193	B	1.2	93.2	B	1.2
Manganese	mg/Kg	2	B	0.1	11.2		0.1	3		0.1	15.1		0.096	6.8		0.1
Mercury	mg/Kg	0.045	U	0.045	0.042	U	0.042	0.04	U	0.04	0.045	U	0.045	0.047	U	0.047
Nickel	mg/Kg	0.44	B	0.14	3.1	B	0.14	0.29	B	0.14	1.5	B	0.13	0.76	B	0.14
Potassium	mg/Kg	51.9	B	4.9	48.9	B	4.9	12.1	B	4.8	53.4	B	4.6	45.8	B	4.8
Selenium	mg/Kg	0.58	U	0.58	0.58	U	0.58	0.58	U	0.58	0.56	U	0.56	0.58	U	0.58
Silver	mg/Kg	0.14	U	0.14	0.14	U	0.14	0.14	U	0.14	0.13	U	0.13	0.14	U	0.14
Sodium	mg/Kg	145	B	30.6	116	B	30.6	80.7	B	30.4	103	B	29.2	102	B	30.4
Thallium	mg/Kg	0.52	UJ	0.52	0.52	UJ	0.52	0.52	UJ	0.52	0.5	UJ	0.5	0.52	UJ	0.52
Vanadium	mg/Kg	4.2	B	0.08	6.8	B	0.08	3.7	B	0.08	5.5	B	0.077	5.4	B	0.08
Zinc	mg/Kg	0.96	B	0.14	7.9		0.14	0.71	B	0.14	2.9	B	0.13	0.94	B	0.14
Cyanide	mg/Kg	0.078	U	0.078	0.25	B	0.074	0.078	U	0.078	0.076	U	0.076	0.077	U	0.077

Table checked by: C. Macé Date: 3/01/2005

Table E-2 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB31-06 Date Sampled: 9/25/2002 Lab ID: Y2732-17 % Solids: 92.5			Sample Point SB31-198 Date Sampled: 9/25/2002 Lab ID: Y2732-18 % Solids: 96.2			Sample Point DSB31-198 Date Sampled: 9/25/2002 Lab ID: Y2732-19 % Solids: 95.1			Sample Point SB32-06 Date Sampled: 9/25/2002 Lab ID: Y2732-20 %Solids: 95.1			Sample Point SB32-66 Date Sampled: 9/25/2002 Lab ID: Z2732-1 %Solids: 96		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	mg/Kg	4400		11.6	1280		11	1170		11.8	3650		11.1	1740		11.9
Antimony	mg/Kg	0.32	U	0.32	0.3	U	0.3	0.33	U	0.33	0.31	U	0.31	0.33	U	0.33
Arsenic	mg/Kg	1.5	B	0.26	0.25	U	0.25	0.3	B	0.27	1	B	0.25	0.27	U	0.27
Barium	mg/Kg	12	B	0.04	4.8	B	0.038	4.5	B	0.041	15.7	B	0.039	3.8	B	0.041
Beryllium	mg/Kg	0.099	B	0.04	0.038	U	0.038	0.068	B	0.041	0.087	B	0.039	0.061	B	0.041
Cadmium	mg/Kg	0.04	U	0.04	0.038	U	0.038	0.041	U	0.041	0.37	B	0.039	0.041	U	0.041
Calcium	mg/Kg	40.3	B	2.2	24.6	B	2.1	34.5	B	2.3	87.4	B	2.2	20	B	2.3
Chromium	mg/Kg	6.7		0.12	11.1		0.11	11.6		0.12	23.4		0.12	6		0.12
Cobalt	mg/Kg	0.62	B	0.08	0.34	B	0.076	0.29	B	0.082	0.46	B	0.077	0.28	B	0.083
Copper	mg/Kg	2	B	0.12	1.4	B	0.11	1.4	B	0.12	10.2		0.12	0.94	B	0.12
Iron	mg/Kg	5210		1.7	2140		1.7	2060		1.8	4470		1.7	2070		1.8
Lead	mg/Kg	3.9		0.14	2		0.13	1.9		0.14	20.9		0.14	2.3		0.14
Magnesium	mg/Kg	254	B	1.2	57.3	B	1.1	63.9	B	1.2	195	B	1.2	44.8	B	1.2
Manganese	mg/Kg	19.6		0.1	11.8		0.095	10.8		0.1	17		0.096	7.9		0.1
Mercury	mg/Kg	0.045	U	0.045	0.042	U	0.042	0.046	U	0.046	0.046	U	0.046	0.037	U	0.037
Nickel	mg/Kg	2.1	B	0.14	1.6	B	0.13	1.4	B	0.14	4.9	B	0.14	0.64	B	0.14
Potassium	mg/Kg	77	B	4.8	40.2	B	4.6	37.4	B	4.9	84.7	B	4.7	45	B	5
Selenium	mg/Kg	0.58	U	0.58	0.55	U	0.55	0.59	U	0.59	0.56	U	0.56	0.6	UJ	0.6
Silver	mg/Kg	0.14	U	0.14	0.13	U	0.13	0.14	U	0.14	0.14	U	0.14	0.14	U	0.14
Sodium	mg/Kg	113	B	30.5	120	B	29	83.3	B	31.1	124	B	29.3	171	B	31.4
Thallium	mg/Kg	0.52	UJ	0.52	0.5	UJ	0.5	0.53	UJ	0.53	0.5	UJ	0.5	0.54	UJ	0.54
Vanadium	mg/Kg	9	B	0.08	3.7	B	0.076	3.4	B	0.082	7.5	B	0.077	4.5	B	0.083
Zinc	mg/Kg	6.5		0.14	2.2	B	0.13	1.1	B	0.14	196		0.14	4.1	B	0.14
Cyanide	mg/Kg	0.081	U	0.081	0.073	U	0.073	0.078	U	0.078	0.3	B	0.077	0.077	U	0.077

Table checked by: C. Macé Date: 3/01/2005

Table E-2 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB33-06 Date Sampled: 9/18/2002 Lab ID: R2732-6 % Solids: 94.8			Sample Point SB33-66 Date Sampled: 9/18/2002 Lab ID: R2732-7 % Solids: 97.1			Sample Point SB34-06 Date Sampled: 9/24/2002 Lab ID: W2732-9 % Solids: 95.1			Sample Point SB34-66 Date Sampled: 9/24/2002 Lab ID: W2732-10 %Solids: 95.4			Sample Point SB35-06 Date Sampled: 9/24/2002 Lab ID: W2732-11 %Solids: 94.4		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	mg/Kg	2690		1.6	3650		1.5	4160		1.6	2590		1.5	4920		1.6
Antimony	mg/Kg	0.35	U	0.35	0.34	U	0.34	0.35	U	0.35	0.33	U	0.33	0.36	U	0.36
Arsenic	mg/Kg	1	B	0.52	0.97	B	0.5	1.7	B	0.51	1.1	B	0.48	2.1		0.52
Barium	mg/Kg	10.8	B	0.041	9.1	B	0.04	10.8	B	0.041	5.2	B	0.038	17.6	B	0.042
Beryllium	mg/Kg	0.071	B	0.041	0.11	B	0.04	0.081	B	0.041	0.075	B	0.038	0.1	B	0.042
Cadmium	mg/Kg	0.083	U	0.083	0.08	U	0.08	0.082	U	0.082	0.077	U	0.077	0.97	B	0.084
Calcium	mg/Kg	130	B	2.1	113	B	2	83.7	B	2.1	49.1	B	2	96	B	2.1
Chromium	mg/Kg	5.8		0.083	9		0.08	33.5		0.082	6.1		0.077	24		0.084
Cobalt	mg/Kg	0.37	B	0.083	0.59	B	0.08	0.34	B	0.082	0.5	B	0.077	0.68	B	0.084
Copper	mg/Kg	3.4	B	0.17	1.3	B	0.16	4.7	B	0.16	1.5	B	0.15	7.8		0.17
Iron	mg/Kg	3330		1.8	5810		1.7	5120		1.8	3640		1.7	6290		1.8
Lead	mg/Kg	12.6	J	0.27	3.4	J	0.26	19.4		0.27	2.2		0.25	37.3		0.27
Magnesium	mg/Kg	158	B	1.2	141	B	1.1	153	B	1.1	75.8	B	1.1	223	B	1.2
Manganese	mg/Kg	25.4	J	0.041	10.1	J	0.04	16.2		0.041	10.3		0.038	16.9		0.042
Mercury	mg/Kg	0.05	B	0.042	0.038	U	0.038	0.048	U	0.048	0.037	U	0.037	0.1		0.038
Nickel	mg/Kg	1.8	B	0.12	1.6	B	0.12	2.4	B	0.12	0.89	B	0.12	6.1	B	0.13
Potassium	mg/Kg	111	B	13.9	170	B	13.4	76.8	B	13.7	47.2	B	12.9	57.6	B	14.1
Selenium	mg/Kg	0.43	B	0.35	0.84	B	0.34	0.7	J	0.35	1.1	J	0.33	0.75	J	0.36
Silver	mg/Kg	0.1	U	0.1	0.1	U	0.1	0.42	B	0.1	0.096	U	0.096	0.16	B	0.1
Sodium	mg/Kg	70.6	B	14.5	48.5	B	14.1	14.4	U	14.4	78.2	B	13.5	70.2	B	14.7
Thallium	mg/Kg	0.87	U	0.87	0.84	U	0.84	0.86	U	0.86	0.81	U	0.81	0.88	U	0.88
Vanadium	mg/Kg	6.9	B	0.062	10.7		0.06	11.3		0.061	8.6	B	0.058	10.5		0.063
Zinc	mg/Kg	8.6		0.37	3.9	B	0.36	11.8		0.37	3.3	B	0.35	27		0.38
Cyanide	mg/Kg	0.078	U	0.078	0.076	U	0.076	0.079	U	0.079	0.077	U	0.077	0.35	B	0.077

Table checked by: C. Macé Date: 3/01/2005

Table E-2 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB35-66 Date Sampled: 9/24/2002 Lab ID: W2732-12 % Solids: 95.1			Sample Point SB36-06 Date Sampled: 9/24/2002 Lab ID: W2732-13 % Solids: 93.7			Sample Point SB36-66 Date Sampled: 9/24/2002 Lab ID: W2732-14 % Solids: 96			Sample Point SB37-06 Date Sampled: 9/24/2002 Lab ID: W2732-15 %Solids: 93.2			Sample Point SB37-66 Date Sampled: 9/24/2002 Lab ID: W2732-16 %Solids: 97.3		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	mg/Kg	4290		1.5	7850		1.6	2590		1.6	6040		1.6	1690		1.5
Antimony	mg/Kg	0.33	U	0.33	0.35	U	0.35	0.35	U	0.35	0.35	U	0.35	0.43	B	0.33
Arsenic	mg/Kg	1	B	0.48	2.4		0.51	1.1	B	0.51	1.8	B	0.52	0.65	B	0.49
Barium	mg/Kg	8.2	B	0.039	37.2	B	0.041	4.4	B	0.041	24.1	B	0.042	3.6	B	0.039
Beryllium	mg/Kg	0.07	B	0.039	0.18	B	0.041	0.043	B	0.041	0.13	B	0.042	0.039	U	0.039
Cadmium	mg/Kg	0.077	U	0.077	2.2		0.082	0.082	U	0.082	1.4		0.083	0.078	U	0.078
Calcium	mg/Kg	34.9	B	2	195	B	2.1	55.7	B	2.1	99.5	B	2.1	20.2	B	2
Chromium	mg/Kg	8.9		0.077	18.6		0.082	5.2		0.082	13.6		0.083	3.7		0.078
Cobalt	mg/Kg	0.46	B	0.077	1.3	B	0.082	0.41	B	0.082	0.98	B	0.083	0.16	B	0.078
Copper	mg/Kg	2.9	B	0.15	5.5		0.16	1.1	B	0.16	6.1		0.17	1.1	B	0.16
Iron	mg/Kg	3950		1.7	8360		1.8	3020		1.8	4660		1.8	1780		1.7
Lead	mg/Kg	5.7		0.25	12.9		0.27	2.9		0.27	10.1		0.27	2.3		0.25
Magnesium	mg/Kg	80.4	B	1.1	433	B	1.1	74.5	B	1.1	311	B	1.2	71.7	B	1.1
Manganese	mg/Kg	12.8		0.039	34.9		0.041	8.3		0.041	14.3		0.042	2.5	B	0.039
Mercury	mg/Kg	0.05	U	0.05	0.041	U	0.041	0.045	U	0.045	0.037	U	0.037	0.04	U	0.04
Nickel	mg/Kg	1.7	B	0.12	12.2		0.12	0.78	B	0.12	9.2		0.12	0.91	B	0.12
Potassium	mg/Kg	65.3	B	12.9	192	B	13.8	69.3	B	13.7	115	B	14	14.2	B	13.1
Selenium	mg/Kg	0.57	J	0.33	1.1	J	0.35	0.35	UJ	0.35	0.35	UJ	0.35	0.91	J	0.33
Silver	mg/Kg	0.096	U	0.096	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.098	U	0.098
Sodium	mg/Kg	26.7	B	13.6	86.2	B	14.4	76.1	B	14.4	99.4	B	14.6	65.9	B	13.8
Thallium	mg/Kg	0.81	U	0.81	0.86	U	0.86	0.86	U	0.86	0.88	U	0.88	0.82	U	0.82
Vanadium	mg/Kg	8.1	B	0.058	15.7		0.062	6.3	B	0.061	11.5		0.063	3.5	B	0.059
Zinc	mg/Kg	5.9		0.35	57.9		0.37	2.2	B	0.37	58.9		0.38	5.1		0.35
Cyanide	mg/Kg	0.079	U	0.079	0.2	B	0.079	0.074	U	0.074	0.077	U	0.077	0.076	U	0.076

Table checked by: C. Macé Date: 3/01/2005

Table E-2 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB38-06 Date Sampled: 9/24/2002 Lab ID: W2732-17 % Solids: 96.3			Sample Point SB38-66 Date Sampled: 9/24/2002 Lab ID: W2732-18 % Solids: 94.7			Sample Point SB39-06 Date Sampled: 9/24/2002 Lab ID: W2732-19 % Solids: 94.5			Sample Point SB39-66 Date Sampled: 9/24/2002 Lab ID: W2732-20 %Solids: 94.7			Sample Point SB40-06 Date Sampled: 9/24/2002 Lab ID: Y2732-1 %Solids: 95		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	mg/Kg	5340		1.5	1420		1.5	5820		1.6	2230		1.5	3580		11.8
Antimony	mg/Kg	0.35	U	0.35	0.33	U	0.33	0.35	U	0.35	0.34	U	0.34	0.33	U	0.33
Arsenic	mg/Kg	1	B	0.51	0.84	B	0.49	2.3		0.51	1.1	B	0.5	0.88	B	0.27
Barium	mg/Kg	14.9	B	0.041	3.4	B	0.039	19.8	B	0.041	5.7	B	0.04	13.2	B	0.041
Beryllium	mg/Kg	0.083	B	0.041	0.039	U	0.039	0.093	B	0.041	0.04	U	0.04	0.12	B	0.041
Cadmium	mg/Kg	0.39	B	0.081	0.078	U	0.078	1.5		0.082	0.08	U	0.08	0.041	U	0.041
Calcium	mg/Kg	86.5	B	2.1	26.8	B	2	97	B	2.1	32.3	B	2.1	81	B	2.3
Chromium	mg/Kg	15.6		0.081	4.5		0.078	12.9		0.082	5.4		0.08	5.6		0.12
Cobalt	mg/Kg	0.7	B	0.081	0.27	B	0.078	0.79	B	0.082	0.28	B	0.08	0.48	B	0.082
Copper	mg/Kg	3.7	B	0.16	1.1	B	0.16	5	B	0.16	1.5	B	0.16	1.4	B	0.12
Iron	mg/Kg	5030		1.8	2200		1.7	5820		1.8	3180		1.7	4240		1.8
Lead	mg/Kg	37.7		0.27	2.5		0.25	9		0.27	2.2		0.26	3.2		0.14
Magnesium	mg/Kg	206	B	1.1	60.4	B	1.1	281	B	1.2	79.9	B	1.1	245	B	1.2
Manganese	mg/Kg	14.8		0.041	6.7		0.039	13.1		0.041	12.3		0.04	14.4		0.1
Mercury	mg/Kg	0.13		0.047	0.046	U	0.046	0.044	U	0.044	0.048	U	0.048	0.039	U	0.039
Nickel	mg/Kg	3.4	B	0.12	0.63	B	0.12	10.1		0.12	0.67	B	0.12	1.8	B	0.14
Potassium	mg/Kg	71	B	13.7	13.1	U	13.1	73.8	B	13.8	14.1	B	13.5	67.9	B	4.9
Selenium	mg/Kg	1.3	J	0.35	0.66	J	0.33	0.6	J	0.35	0.34	UJ	0.34	0.59	U	0.59
Silver	mg/Kg	0.1	U	0.1	0.098	U	0.098	0.1	U	0.1	0.1	U	0.1	0.14	U	0.14
Sodium	mg/Kg	63.7	B	14.3	47.2	B	13.7	65.1	B	14.4	44.8	B	14.1	91.5	B	31.1
Thallium	mg/Kg	0.85	U	0.85	0.82	U	0.82	0.86	U	0.86	0.84	U	0.84	0.53	UJ	0.53
Vanadium	mg/Kg	10.4		0.061	4.2	B	0.059	10.9		0.062	5.6	B	0.06	8.2	B	0.082
Zinc	mg/Kg	18.4		0.37	3	B	0.35	67.5		0.37	2.7	B	0.36	3.4	B	0.14
Cyanide	mg/Kg	0.078	U	0.078	0.078	U	0.078	0.077	U	0.077	0.077	U	0.077	0.078	U	0.078

Table checked by: C. Macé Date: 3/01/2005

Table E-2 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SB40-66 Date Sampled: 9/24/2002 Lab ID: Y2732-2 % Solids: 97.3			Sample Point SS01-06 Date Sampled: 9/26/2002 Lab ID: Z2732-2 % Solids: 95.5			Sample Point SS02-06 Date Sampled: 9/26/2002 Lab ID: Z2732-3 % Solids: 93.4			Sample Point SS03-06 Date Sampled: 9/26/2002 Lab ID: Z2732-4 %Solids: 94			Sample Point SS04-06 Date Sampled: 9/26/2002 Lab ID: Z2732-5 %Solids: 96.9		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	mg/Kg	1550		11.1	4230		11.7	8460		12.1	8740		12.2	3490		11.5
Antimony	mg/Kg	0.36	B	0.31	0.33	U	0.33	0.34	U	0.34	0.34	U	0.34	0.32	U	0.32
Arsenic	mg/Kg	0.35	B	0.25	3.5		0.26	1.8	B	0.27	1.6	B	0.27	0.66	B	0.26
Barium	mg/Kg	5.1	B	0.038	19.9	B	0.041	25.9	B	0.042	24.9	B	0.042	9	B	0.04
Beryllium	mg/Kg	0.051	B	0.038	0.13	B	0.041	0.19	B	0.042	0.19	B	0.042	0.13	B	0.04
Cadmium	mg/Kg	0.038	U	0.038	0.041	U	0.041	0.042	U	0.042	0.042	U	0.042	0.04	U	0.04
Calcium	mg/Kg	37.6	B	2.2	69.8	B	2.3	93	B	2.4	18.6	B	2.4	34	B	2.2
Chromium	mg/Kg	3.3		0.12	6.3		0.12	9.9		0.13	10.5		0.13	5.3		0.12
Cobalt	mg/Kg	0.18	B	0.077	0.42	B	0.081	0.7	B	0.084	0.8	B	0.084	0.23	B	0.079
Copper	mg/Kg	0.68	B	0.12	3.3	B	0.12	3.2	B	0.13	2.7	B	0.13	1.2	B	0.12
Iron	mg/Kg	1430		1.7	5110		1.8	8810		1.8	9280		1.8	3410		1.7
Lead	mg/Kg	1.9		0.13	11.9		0.14	10.1		0.15	5.6		0.15	3.4		0.14
Magnesium	mg/Kg	99.9	B	1.2	213	B	1.2	382	B	1.3	411	B	1.3	108	B	1.2
Manganese	mg/Kg	3.5		0.096	45.2		0.1	20.2		0.1	22.4		0.1	8.4		0.099
Mercury	mg/Kg	0.049	U	0.049	0.046	U	0.046	0.041	U	0.041	0.048	U	0.048	0.036	U	0.036
Nickel	mg/Kg	0.73	B	0.13	1.7	B	0.14	3.6	B	0.15	3.3	B	0.15	1.3	B	0.14
Potassium	mg/Kg	38	B	4.6	123	B	4.9	101	B	5.1	114	B	5.1	36.8	B	4.8
Selenium	mg/Kg	0.56	U	0.56	0.59	UJ	0.59	0.79	J	0.61	0.89	J	0.61	0.58	UJ	0.58
Silver	mg/Kg	0.13	U	0.13	0.14	U	0.14	0.15	U	0.15	0.15	U	0.15	0.14	U	0.14
Sodium	mg/Kg	113	B	29.2	82	B	30.9	77.9	B	31.9	108	B	32	67.6	B	30.2
Thallium	mg/Kg	0.5	UJ	0.5	0.53	UJ	0.53	0.55	UJ	0.55	0.55	UJ	0.55	0.52	UJ	0.52
Vanadium	mg/Kg	3.3	B	0.077	8.7	B	0.081	15.2		0.084	15.6		0.084	6.4	B	0.079
Zinc	mg/Kg	0.75	B	0.13	11.9		0.14	16.3		0.15	10.1		0.15	4.4		0.14
Cyanide	mg/Kg	0.073	U	0.073	0.086	B	0.079	0.08	U	0.08	0.077	U	0.077	0.077	U	0.077

Table checked by: C. Macé Date: 3/01/2005

Table E-2 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point DSS04-06 Date Sampled: 9/26/2002 Lab ID: Z2732-6 % Solids: 97.3			Sample Point SS05-06 Date Sampled: 9/26/2002 Lab ID: Z2732-7 % Solids: 96			Sample Point SS06-06 Date Sampled: 9/26/2002 Lab ID: Z2732-8 % Solids: 94.3			Sample Point DSS06-06 Date Sampled: 9/26/2002 Lab ID: Z2732-9 %Solids: 94.5			Sample Point SS07-06 Date Sampled: 9/26/2002 Lab ID: Z2732-10 %Solids: 96.5		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	mg/Kg	3370		11.1	1790		11.8	6160		11.5	7090		11.9	437		11.3
Antimony	mg/Kg	0.31	U	0.31	0.33	U	0.33	0.32	U	0.32	0.34	B	0.33	0.31	U	0.31
Arsenic	mg/Kg	0.63	B	0.25	1.8	B	0.27	1.8	B	0.26	2.3		0.27	0.25	U	0.25
Barium	mg/Kg	12.6	B	0.038	9.5	B	0.041	18	B	0.04	21	B	0.041	1.8	B	0.039
Beryllium	mg/Kg	0.085	B	0.038	0.088	B	0.041	0.17	B	0.04	0.2	B	0.041	0.039	U	0.039
Cadmium	mg/Kg	0.038	U	0.038	0.041	U	0.041	0.04	U	0.04	0.041	U	0.041	0.039	U	0.039
Calcium	mg/Kg	144	B	2.2	60.4	B	2.3	96.1	B	2.2	52.1	B	2.3	9.7	B	2.2
Chromium	mg/Kg	5		0.12	3.6		0.12	10.2		0.12	12.1		0.12	1	B	0.12
Cobalt	mg/Kg	0.26	B	0.077	0.18	B	0.082	0.85	B	0.08	1.1	B	0.082	0.078	U	0.078
Copper	mg/Kg	1.3	B	0.12	1.7	B	0.12	3.5	B	0.12	3.7	B	0.12	0.72	B	0.12
Iron	mg/Kg	3260		1.7	2280		1.8	8460		1.7	9770		1.8	644		1.7
Lead	mg/Kg	3.2		0.13	13.1		0.14	7.5		0.14	6.8		0.14	3.9		0.14
Magnesium	mg/Kg	111	B	1.2	96.8	B	1.2	309	B	1.2	381	B	1.2	11	B	1.2
Manganese	mg/Kg	9.4		0.096	14.4		0.1	27.3		0.1	31.1		0.1	1.7	B	0.098
Mercury	mg/Kg	0.047	U	0.047	0.043	U	0.043	0.05	U	0.05	0.047	B	0.046	0.045	U	0.045
Nickel	mg/Kg	1.3	B	0.13	0.92	B	0.14	2.6	B	0.14	3.1	B	0.14	0.22	B	0.14
Potassium	mg/Kg	49.3	B	4.6	44.4	B	4.9	130	B	4.8	147	B	5	7.3	B	4.7
Selenium	mg/Kg	0.69	J	0.56	0.59	UJ	0.59	0.58	UJ	0.58	0.62	J	0.6	0.57	UJ	0.57
Silver	mg/Kg	0.13	U	0.13	0.14	U	0.14	0.14	U	0.14	0.14	U	0.14	0.14	U	0.14
Sodium	mg/Kg	86.2	B	29.2	65.4	B	31.1	60.2	B	30.4	31.3	U	31.3	96.7	B	29.7
Thallium	mg/Kg	0.5	UJ	0.5	0.53	UJ	0.53	0.52	UJ	0.52	0.53	UJ	0.53	0.51	UJ	0.51
Vanadium	mg/Kg	6.2	B	0.077	4.9	B	0.082	14.4		0.08	16.6		0.082	2	B	0.078
Zinc	mg/Kg	4.6		0.13	5.6		0.14	8.4		0.14	9.3		0.14	0.54	B	0.14
Cyanide	mg/Kg	0.073	U	0.073	0.077	U	0.077	0.08	U	0.08	0.079	U	0.079	0.077	U	0.077

Table checked by: C. Macé Date: 3/01/2005

Table E-2 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil

Parameter	Units	Sample Point SS08-06 Date Sampled: 9/26/2002 Lab ID: Z2732-12 % Solids: 96.4			Sample Point SS09-06 Date Sampled: 9/26/2002 Lab ID: Z2732-13 % Solids: 96.8			Sample Point Date Sampled: Lab ID: % Solids:			Sample Point Date Sampled: Lab ID: %Solids:			Sample Point Date Sampled: Lab ID: %Solids:		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	mg/Kg	998		11.5	72		11.9									
Antimony	mg/Kg	0.32	U	0.32	0.33	U	0.33									
Arsenic	mg/Kg	0.54	B	0.26	0.27	U	0.27									
Barium	mg/Kg	2.5	B	0.04	1.3	B	0.041									
Beryllium	mg/Kg	0.04	U	0.04	0.055	B	0.041									
Cadmium	mg/Kg	0.04	U	0.04	0.041	U	0.041									
Calcium	mg/Kg	29	B	2.2	18.6	B	2.3									
Chromium	mg/Kg	1.7	B	0.12	0.76	B	0.12									
Cobalt	mg/Kg	0.08	U	0.08	0.083	U	0.083									
Copper	mg/Kg	1.1	B	0.12	0.49	B	0.12									
Iron	mg/Kg	1290		1.7	127		1.8									
Lead	mg/Kg	6.5		0.14	3.2		0.14									
Magnesium	mg/Kg	23.3	B	1.2	7.4	B	1.2									
Manganese	mg/Kg	4.2		0.1	1.2	B	0.1									
Mercury	mg/Kg	0.04	U	0.04	0.052	U	0.052									
Nickel	mg/Kg	0.46	B	0.14	0.14	U	0.14									
Potassium	mg/Kg	16.2	B	4.8	6.4	B	5									
Selenium	mg/Kg	0.58	UJ	0.58	0.74	J	0.6									
Silver	mg/Kg	0.14	U	0.14	0.14	U	0.14									
Sodium	mg/Kg	114	B	30.3	126	B	31.4									
Thallium	mg/Kg	0.52	UJ	0.52	0.54	UJ	0.54									
Vanadium	mg/Kg	3.9	B	0.08	0.84	B	0.083									
Zinc	mg/Kg	1.6	B	0.14	0.2	B	0.14									
Cyanide	mg/Kg	0.078	U	0.078	0.077	U	0.077									

Table checked by: C. Macé Date: 3/01/2005

Table E-2 (e)
Summary of Validated Data
Conventional Parameters
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil		Sample Point SB01-06 Date Sampled: 9/18/2002 Lab ID: R2732-15 % Solids: 97.1			Sample Point SB01-66 Date Sampled: 9/18/2002 Lab ID: R2732-16 % Solids: 93			Sample Point SB02-06 Date Sampled: 9/18/2002 Lab ID: R2732-11 % Solids: 95.4			Sample Point SB02-66 Date Sampled: 9/18/2002 Lab ID: R2732-12 %Solids: 97.6			Sample Point SB03-06 Date Sampled: 9/19/2002 Lab ID: T2732-1 %Solids: 95.4		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
TOC	mg/Kg	896		2.5	1147		2.5	2028		2.5	424		2.5	1091		2.5

Matrix: Unsaturated Soil		Sample Point SB03-132 Date Sampled: 9/19/2002 Lab ID: T2732-2 % Solids: 95.4			Sample Point SB04-06 Date Sampled: 9/19/2002 Lab ID: T2732-3 % Solids: 94.9			Sample Point SB04-66 Date Sampled: 9/19/2002 Lab ID: T2732-4 % Solids: 95.6			Sample Point SB05-06 Date Sampled: 9/19/2002 Lab ID: T2732-5 %Solids: 93.8			Sample Point SB05-66 Date Sampled: 9/19/2002 Lab ID: T2732-6 %Solids: 97.8		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
TOC	mg/Kg	2555		2.5	672		2.5	1277		2.5	2254		2.5	198		2.5

Matrix: Unsaturated Soil		Sample Point SB06-06 Date Sampled: 9/19/2002 Lab ID: R2732-19 % Solids: 95.7			Sample Point SB06-66 Date Sampled: 9/19/2002 Lab ID: R2732-20 % Solids: 96.9			Sample Point SB07-06 Date Sampled: 9/19/2002 Lab ID: T2732-7 % Solids: 87.3			Sample Point DSB07-06 Date Sampled: 9/19/2002 Lab ID: T2732-9 %Solids: 88.1			Sample Point SB07-66 Date Sampled: 9/19/2002 Lab ID: T2732-8 %Solids: 96.7		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
TOC	mg/Kg	2670		2.5	774		2.5	8469		2.5	8292		2.5	942		2.5

Matrix: Unsaturated Soil		Sample Point SB08-06 Date Sampled: 9/19/2002 Lab ID: T2732-10 % Solids: 95			Sample Point SB08-66 Date Sampled: 9/19/2002 Lab ID: T2732-11 % Solids: 95.2			Sample Point SB09-06 Date Sampled: 9/20/2002 Lab ID: W2732-6 % Solids: 89.7			Sample Point SB09-66 Date Sampled: 9/20/2002 Lab ID: W2732-7 %Solids: 96.3			Sample Point SB10-06 Date Sampled: 9/20/2002 Lab ID: W2732-4 %Solids: 84.8		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
TOC	mg/Kg	6192		2.5	1068		2.5	4128		2.5	220		2.5	2236		2.5

Table E-2 (e)
Summary of Validated Data
Conventional Parameters
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil		Sample Point SB10-66 Date Sampled: 9/20/2002 Lab ID: W2732-5 % Solids: 98			Sample Point SB11-06 Date Sampled: 9/25/2002 Lab ID: Y2732-3 % Solids: 94.8			Sample Point SB11-66 Date Sampled: 9/25/2002 Lab ID: Y2732-4 % Solids: 97.9			Sample Point SB12-06 Date Sampled: 9/24/2002 Lab ID: W2732-8 %Solids: 95.8			Sample Point SB13-06 Date Sampled: 9/20/2002 Lab ID: W2732-2 %Solids: 93.3		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
TOC	mg/Kg	199		2.5	9783		2.5	644		2.5	929		2.5	2204		2.5

Matrix: Unsaturated Soil		Sample Point SB13-102 Date Sampled: 9/20/2002 Lab ID: W2732-3 % Solids: 96.4			Sample Point SB14-06 Date Sampled: 9/25/2002 Lab ID: Y2732-5 % Solids: 95.5			Sample Point SB14-66 Date Sampled: 9/25/2002 Lab ID: Y2732-6 % Solids: 97.7			Sample Point SB15-06 Date Sampled: 9/20/2002 Lab ID: T2732-20 %Solids: 94.8			Sample Point SB15-66 Date Sampled: 9/20/2002 Lab ID: W2732-1 %Solids: 97.3		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
TOC	mg/Kg	785		2.5	5411		2.5	607		2.5	1973		2.5	232		2.5

Matrix: Unsaturated Soil		Sample Point SB16-06 Date Sampled: 9/18/2002 Lab ID: R2732-13 % Solids: 91.6			Sample Point SB16-66 Date Sampled: 9/18/2002 Lab ID: R2732-14 % Solids: 95.8			Sample Point SB17-06 Date Sampled: 9/18/2002 Lab ID: R2732-4 % Solids: 94.7			Sample Point SB17-66 Date Sampled: 9/18/2002 Lab ID: R2732-5 %Solids: 96.3			Sample Point SB18-06 Date Sampled: 9/25/2002 Lab ID: Y2732-7 %Solids: 96.7		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
TOC	mg/Kg	5664		2.5	2397		2.5	4332		2.5	837		2.5	2141		2.5

Matrix: Unsaturated Soil		Sample Point SB18-66 Date Sampled: 9/25/2002 Lab ID: Y2732-8 % Solids: 96.7			Sample Point SB19-06 Date Sampled: 9/18/2002 Lab ID: R2732-9 % Solids: 94.8			Sample Point SB19-66 Date Sampled: 9/18/2002 Lab ID: R2732-10 % Solids: 96.8			Sample Point SB20-06 Date Sampled: 9/25/2002 Lab ID: Y2732-9 %Solids: 96.4			Sample Point SB20-66 Date Sampled: 9/25/2002 Lab ID: Y2732-10 %Solids: 97.4		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
TOC	mg/Kg	793		2.5	7242		2.5	357		2.5	3207		2.5	488		2.5

Table E-2 (e)
Summary of Validated Data
Conventional Parameters
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil		Sample Point SB21-06 Date Sampled: 9/25/2002 Lab ID: Y2732-11 % Solids: 96.2			Sample Point SB21-66 Date Sampled: 9/25/2002 Lab ID: Y2732-12 % Solids: 98.5			Sample Point SB22-06 Date Sampled: 9/20/2002 Lab ID: T2732-18 % Solids: 93.2			Sample Point SB22-66 Date Sampled: 9/20/2002 Lab ID: T2732-19 %Solids: 96.7			Sample Point SB23-06 Date Sampled: 9/18/2002 Lab ID: R2732-2 %Solids: 85.8		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
TOC	mg/Kg	5744		2.5	899		2.5	3356		2.5	1029		2.5	6836		2.5

Matrix: Unsaturated Soil		Sample Point SB23-66 Date Sampled: 9/18/2002 Lab ID: R2732-3 % Solids: 97.5			Sample Point SB24-06 Date Sampled: 9/25/2002 Lab ID: Y2732-13 % Solids: 95.9			Sample Point SB24-66 Date Sampled: 9/25/2002 Lab ID: Y2732-14 % Solids: 98.6			Sample Point SB25-06 Date Sampled: 9/19/2002 Lab ID: R2732-17 %Solids: 92.3			Sample Point SB25-186 Date Sampled: 9/19/2002 Lab ID: R2732-18 %Solids: 93.3		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
TOC	mg/Kg	280		2.5	5124		2.5	242		2.5	3325		2.5	632		2.5

Matrix: Unsaturated Soil		Sample Point SB26-06 Date Sampled: 9/18/2002 Lab ID: R2732-8 % Solids: 92.2			Sample Point SB26-66 Date Sampled: 9/18/2002 Lab ID: R2732-1 % Solids: 95.2			Sample Point SB27-06 Date Sampled: 9/20/2002 Lab ID: T2732-14 % Solids: 95.5			Sample Point SB27-66 Date Sampled: 9/20/2002 Lab ID: T2732-15 %Solids: 98.1			Sample Point SB28-06 Date Sampled: 9/20/2002 Lab ID: T2732-16 %Solids: 97.1		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
TOC	mg/Kg	3443		2.5	504		2.5	6391		2.5	496		2.5	4427		2.5

Matrix: Unsaturated Soil		Sample Point SB28-150 Date Sampled: 9/20/2002 Lab ID: T2732-17 % Solids: 93			Sample Point SB29-06 Date Sampled: 9/19/2002 Lab ID: T2732-12 % Solids: 95.7			Sample Point SB29-222 Date Sampled: 9/19/2002 Lab ID: T2732-13 % Solids: 95.3			Sample Point SB30-06 Date Sampled: 9/25/2002 Lab ID: Y2732-15 %Solids: 95.6			Sample Point SB30-66 Date Sampled: 9/25/2002 Lab ID: Y2732-16 %Solids: 96.2		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
TOC	mg/Kg	217		2.5	4568		2.5	1148		2.5	811		2.5	289		2.5

Table E-2 (e)
Summary of Validated Data
Conventional Parameters
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil		Sample Point SB31-06 Date Sampled: 9/25/2002 Lab ID: Y2732-17 % Solids: 92.5			Sample Point SB31-198 Date Sampled: 9/25/2002 Lab ID: Y2732-18 % Solids: 96.2			Sample Point DSB31-198 Date Sampled: 9/25/2002 Lab ID: Y2732-19 % Solids: 95.1			Sample Point SB32-06 Date Sampled: 9/25/2002 Lab ID: Y2732-20 %Solids: 95.1			Sample Point SB32-66 Date Sampled: 9/25/2002 Lab ID: Z2732-1 %Solids: 96		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
TOC	mg/Kg	3509		2.5	624		2.5	1123		2.5	1134		2.5	788		2.5

Matrix: Unsaturated Soil		Sample Point SB33-06 Date Sampled: 9/18/2002 Lab ID: R2732-6 % Solids: 94.8			Sample Point SB33-66 Date Sampled: 9/18/2002 Lab ID: R2732-7 % Solids: 97.1			Sample Point SB34-06 Date Sampled: 9/24/2002 Lab ID: W2732-9 % Solids: 95.1			Sample Point SB34-66 Date Sampled: 9/24/2002 Lab ID: W2732-10 %Solids: 95.4			Sample Point SB35-06 Date Sampled: 9/24/2002 Lab ID: W2732-11 %Solids: 94.4		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
TOC	mg/Kg	7978		2.5	274		2.5	2284		2.5	244		2.5	5843		2.5

Matrix: Unsaturated Soil		Sample Point SB35-66 Date Sampled: 9/24/2002 Lab ID: W2732-12 % Solids: 95.1			Sample Point SB36-06 Date Sampled: 9/24/2002 Lab ID: W2732-13 % Solids: 93.7			Sample Point SB36-66 Date Sampled: 9/24/2002 Lab ID: W2732-14 % Solids: 96			Sample Point SB37-06 Date Sampled: 9/24/2002 Lab ID: W2732-15 %Solids: 93.2			Sample Point SB37-66 Date Sampled: 9/24/2002 Lab ID: W2732-16 %Solids: 97.3		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
TOC	mg/Kg	1894		2.5	3591		2.5	778		2.5	3082		2.5	437		2.5

Matrix: Unsaturated Soil		Sample Point SB38-06 Date Sampled: 9/24/2002 Lab ID: W2732-17 % Solids: 96.3			Sample Point SB38-66 Date Sampled: 9/24/2002 Lab ID: W2732-18 % Solids: 94.7			Sample Point SB39-06 Date Sampled: 9/24/2002 Lab ID: W2732-19 % Solids: 94.5			Sample Point SB39-66 Date Sampled: 9/24/2002 Lab ID: W2732-20 %Solids: 94.7			Sample Point SB40-06 Date Sampled: 9/24/2002 Lab ID: Y2732-1 %Solids: 95		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
TOC	mg/Kg	1030		2.5	2417		2.5	2944		2.5	676		2.5	1653		2.5

Table E-2 (e)
Summary of Validated Data
Conventional Parameters
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Unsaturated Soil		Sample Point SB40-66 Date Sampled: 9/24/2002 Lab ID: Y2732-2 % Solids: 97.3			Sample Point SS01-06 Date Sampled: 9/26/2002 Lab ID: Z2732-2 % Solids: 95.5			Sample Point SS02-06 Date Sampled: 9/26/2002 Lab ID: Z2732-3 % Solids: 93.4			Sample Point SS03-06 Date Sampled: 9/26/2002 Lab ID: Z2732-4 %Solids: 94			Sample Point SS04-06 Date Sampled: 9/26/2002 Lab ID: Z2732-5 %Solids: 96.9		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
TOC	mg/Kg	526		2.5	8597		2.5	11610		2.5	6812		2.5	3152		2.5

Matrix: Unsaturated Soil		Sample Point DSS04-06 Date Sampled: 9/26/2002 Lab ID: Z2732-6 % Solids: 97.3			Sample Point SS05-06 Date Sampled: 9/26/2002 Lab ID: Z2732-7 % Solids: 96			Sample Point SS06-06 Date Sampled: 9/26/2002 Lab ID: Z2732-8 % Solids: 94.3			Sample Point DSS06-06 Date Sampled: 9/26/2002 Lab ID: Z2732-9 %Solids: 94.5			Sample Point SS07-06 Date Sampled: 9/26/2002 Lab ID: Z2732-10 %Solids: 96.5		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
TOC	mg/Kg	3849		2.5	9948		2.5	5793		2.5	4735		2.5	8259		2.5

Matrix: Unsaturated Soil		Sample Point SS08-06 Date Sampled: 9/26/2002 Lab ID: Z2732-12 % Solids: 96.4			Sample Point SS09-06 Date Sampled: 9/26/2002 Lab ID: Z2732-13 % Solids: 96.8			Sample Point Date Sampled: Lab ID: % Solids:			Sample Point Date Sampled: Lab ID: %Solids:			Sample Point Date Sampled: Lab ID: %Solids:		
Parameter	Units	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
TOC	mg/Kg	6461		2.5	8698		2.5									

Table E-3 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Surface Water

Parameter	Units	Sample Point SW01 Date Sampled: 9/22/2003 Lab ID: 84301 % Solids: NA			Sample Point SW02 Date Sampled: 9/22/2003 Lab ID: 84302 % Solids: NA			Sample Point SW03 Date Sampled: 9/22/2003 Lab ID: 84303 % Solids: NA			Sample Point DSW03 Date Sampled: 9/22/2003 Lab ID: 84304 %Solids: NA			Sample Point SW04 Date Sampled: 9/23/2003 Lab ID: 84307 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/L	10	UJ	0.45	10	UJ	0.45	10	UJ	0.45	10	UJ	0.45	10	U	0.45
Chloromethane	µg/L	10	UJ	0.28	10	UJ	0.28	10	UJ	0.28	10	UJ	0.28	10	U	0.28
Vinyl Chloride	µg/L	10	UJ	0.35	10	UJ	0.35	10	UJ	0.35	10	UJ	0.35	10	U	0.35
Bromomethane	µg/L	10	UJ	0.45	10	UJ	0.45	10	UJ	0.45	10	UJ	0.45	10	U	0.45
Chloroethane	µg/L	10	UJ	0.54	10	UJ	0.54	10	UJ	0.54	10	UJ	0.54	10	U	0.54
Trichlorofluoromethane	µg/L	10	UJ	0.49	10	UJ	0.49	10	UJ	0.49	10	UJ	0.49	10	U	0.49
1,1-Dichloroethene	µg/L	10	UJ	0.3	10	UJ	0.3	10	UJ	0.3	10	UJ	0.3	10	U	0.3
1,1,2-Trichloro-1,2,2-Trifluo	µg/L	10	UJ	0.4	10	UJ	0.4	10	UJ	0.4	10	UJ	0.4	10	U	0.4
Acetone	µg/L	10	UJ	1.6	10	UJ	1.6	10	UJ	1.6	10	UJ	1.6	10	U	1.6
Carbon Disulfide	µg/L	10	UJ	0.33	10	UJ	0.33	10	UJ	0.33	10	UJ	0.33	10	U	0.33
Methyl acetate	µg/L	10	UJ	0.38	10	UJ	0.38	10	UJ	0.38	10	UJ	0.38	10	U	0.38
Methylene chloride	µg/L	10	UJ	0.31	10	UJ	0.31	10	UJ	0.31	10	UJ	0.31	10	U	0.31
trans-1,2-Dichloroethene	µg/L	10	UJ	0.24	10	UJ	0.24	10	UJ	0.24	10	UJ	0.24	10	U	0.24
tert-Butyl methyl ether	µg/L	10	UJ	0.3	10	UJ	0.3	10	UJ	0.3	10	UJ	0.3	10	U	0.3
1,1-Dichloroethane	µg/L	10	UJ	0.33	10	UJ	0.33	10	UJ	0.33	10	UJ	0.33	10	U	0.33
cis-1,2-Dichloroethene	µg/L	10	UJ	0.29	10	UJ	0.29	10	UJ	0.29	10	UJ	0.29	10	U	0.29
2-Butanone	µg/L	10	UJ	0.66	10	UJ	0.66	10	UJ	0.66	10	UJ	0.66	10	U	0.66
Chloroform	µg/L	10	UJ	0.32	10	UJ	0.32	10	UJ	0.32	10	UJ	0.32	10	U	0.32
1,1,1-Trichloroethane	µg/L	10	UJ	0.27	10	UJ	0.27	10	UJ	0.27	10	UJ	0.27	10	U	0.27
Cyclohexane	µg/L	10	UJ	0.22	10	UJ	0.22	10	UJ	0.22	10	UJ	0.22	10	U	0.22
Carbon tetrachloride	µg/L	10	UJ	0.32	10	UJ	0.32	10	UJ	0.32	10	UJ	0.32	10	U	0.32
Benzene	µg/L	10	UJ	0.28	10	UJ	0.28	10	UJ	0.28	10	UJ	0.28	10	U	0.28
1,2-Dichloroethane	µg/L	10	UJ	0.26	10	UJ	0.26	10	UJ	0.26	10	UJ	0.26	10	U	0.26
Trichloroethene	µg/L	10	UJ	0.28	10	UJ	0.28	10	UJ	0.28	10	UJ	0.28	10	U	0.28
Methylcyclohexane	µg/L	10	UJ	0.21	10	UJ	0.21	10	UJ	0.21	10	UJ	0.21	10	U	0.21
1,2-Dichloropropane	µg/L	10	UJ	0.33	10	UJ	0.33	10	UJ	0.33	10	UJ	0.33	10	U	0.33
Bromodichloromethane	µg/L	10	UJ	0.35	10	UJ	0.35	10	UJ	0.35	10	UJ	0.35	10	U	0.35
cis-1,3-Dichloropropene	µg/L	10	UJ	0.37	10	UJ	0.37	10	UJ	0.37	10	UJ	0.37	10	U	0.37

Table E-3 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Surface Water

Parameter	Units	Sample Point SW01 Date Sampled: 9/22/2003 Lab ID: 84301 % Solids: NA			Sample Point SW02 Date Sampled: 9/22/2003 Lab ID: 84302 % Solids: NA			Sample Point SW03 Date Sampled: 9/22/2003 Lab ID: 84303 % Solids: NA			Sample Point DSW03 Date Sampled: 9/22/2003 Lab ID: 84304 %Solids: NA			Sample Point SW04 Date Sampled: 9/23/2003 Lab ID: 84307 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
4-Methyl-2-pentanone	µg/L	10	UJ	1	10	UJ	1	10	UJ	1	10	UJ	1	10	UJ	1
Toluene	µg/L	10	UJ	0.34	10	UJ	0.34	10	UJ	0.34	10	UJ	0.34	10	U	0.34
trans-1,3-Dichloropropene	µg/L	10	UJ	0.37	10	UJ	0.37	10	UJ	0.37	10	UJ	0.37	10	U	0.37
1,1,2-Trichloroethane	µg/L	10	UJ	0.28	10	UJ	0.28	10	UJ	0.28	10	UJ	0.28	10	U	0.28
Tetrachloroethene	µg/L	10	UJ	0.35	10	UJ	0.35	10	UJ	0.35	10	UJ	0.35	10	U	0.35
2-Hexanone	µg/L	10	UJ	1.1	10	UJ	1.1	10	UJ	1.1	10	UJ	1.1	10	UJ	1.1
Dibromochloromethane	µg/L	10	UJ	0.33	10	UJ	0.33	10	UJ	0.33	10	UJ	0.33	10	U	0.33
1,2-Dibromoethane	µg/L	10	UJ	0.29	10	UJ	0.29	10	UJ	0.29	10	UJ	0.29	10	U	0.29
Chlorobenzene	µg/L	10	UJ	0.34	10	UJ	0.34	10	UJ	0.34	10	UJ	0.34	10	U	0.34
Ethylbenzene	µg/L	10	UJ	0.32	10	UJ	0.32	10	UJ	0.32	10	UJ	0.32	10	U	0.32
Xylenes (total)	µg/L	10	UJ	0.01	10	UJ	0.01	10	UJ	0.01	10	UJ	0.01	10	U	0.01
Styrene	µg/L	10	UJ	0.41	10	UJ	0.41	10	UJ	0.41	10	UJ	0.41	10	U	0.41
Bromoform	µg/L	10	UJ	0.51	10	UJ	0.51	10	UJ	0.51	10	UJ	0.51	10	U	0.51
Isopropylbenzene	µg/L	10	UJ	0.38	10	UJ	0.38	10	UJ	0.38	10	UJ	0.38	10	U	0.38
1,1,2,2-Tetrachloroethane	µg/L	10	UJ	0.42	10	UJ	0.42	10	UJ	0.42	10	UJ	0.42	10	U	0.42
1,3-Dichlorobenzene	µg/L	10	UJ	0.62	10	UJ	0.62	10	UJ	0.62	10	UJ	0.62	10	U	0.62
1,4-Dichlorobenzene	µg/L	10	UJ	0.52	10	UJ	0.52	10	UJ	0.52	10	UJ	0.52	10	U	0.52
1,2-Dichlorobenzene	µg/L	10	UJ	0.61	10	UJ	0.61	10	UJ	0.61	10	UJ	0.61	10	U	0.61
1,2-Dibromo-3-chloropropa	µg/L	10	UJ	1.1	10	UJ	1.1	10	UJ	1.1	10	UJ	1.1	10	U	1.1
1,2,4-Trichlorobenzene	µg/L	10	UJ	0.72	10	UJ	0.72	10	UJ	0.72	10	UJ	0.72	10	U	0.72

Table checked by: D. Dugan Date: 1/8/04

Table E-3 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Surface Water

Parameter	Units	Sample Point SW01 Date Sampled: 9/22/2003 Lab ID: 84301 % Solids: NA			Sample Point SW02 Date Sampled: 9/22/2003 Lab ID: 84302 % Solids: NA			Sample Point SW03 Date Sampled: 9/22/2003 Lab ID: 84303 % Solids: NA			Sample Point DSW03 Date Sampled: 9/22/2003 Lab ID: 84304 %Solids: NA			Sample Point SW04 Date Sampled: 9/23/2003 Lab ID: 84307 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Phenol	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
bis(2-Chloroethyl)ether	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
2-Chlorophenol	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
2-Methylphenol	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
2,2'-Oxybis(1-Chloropropan	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Acetophenone	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
4-Methylphenol	µg/L	5	J	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
N-Nitroso-di-n-propylamine	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Hexachloroethane	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Nitrobenzene	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Isophorone	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
2-Nitrophenol	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
2,4-Dimethylphenol	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
bis(2-Chloroethoxy)Methan	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
2,4-Dichlorophenol	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Naphthalene	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
4-Chloroaniline	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Hexachlorobutadiene	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
4-Chloro-3-Methylphenol	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
2-Methylnaphthalene	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Hexachlorocyclopentadiene	µg/L	10	UJ	8	10	UJ	8	10	UJ	8	11	UJ	8	10	U	7
Caprolactam	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
2,4,6-Trichlorophenol	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
2,4,5-Trichlorophenol	µg/L	25	UJ	5	25	UJ	5	25	UJ	5	26	UJ	5	25	U	5
1,1'-Biphenyl	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
2-Chloronaphthalene	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
2-Nitroaniline	µg/L	25	UJ	5	25	UJ	5	25	UJ	5	26	UJ	5	25	U	5

Table E-3 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Surface Water

Parameter	Units	Sample Point SW01 Date Sampled: 9/22/2003 Lab ID: 84301 % Solids: NA			Sample Point SW02 Date Sampled: 9/22/2003 Lab ID: 84302 % Solids: NA			Sample Point SW03 Date Sampled: 9/22/2003 Lab ID: 84303 % Solids: NA			Sample Point DSW03 Date Sampled: 9/22/2003 Lab ID: 84304 %Solids: NA			Sample Point SW04 Date Sampled: 9/23/2003 Lab ID: 84307 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dimethyl Phthalate	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
2,6-Dinitrotoluene	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Acenaphthylene	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
3-Nitroaniline	µg/L	25	UJ	5	25	UJ	5	25	UJ	5	26	UJ	5	25	U	5
Acenaphthene	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
2,4-Dinitrophenol	µg/L	25	UJ	15	25	UJ	15	25	UJ	15	26	UJ	16	25	UJ	14
4-Nitrophenol	µg/L	25	UJ	5	25	UJ	5	25	UJ	5	26	UJ	5	25	U	5
Dibenzofuran	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
2,4-Dinitrotoluene	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Diethylphthalate	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Fluorene	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
4-Chlorophenyl-phenylether	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
4-Nitroaniline	µg/L	25	UJ	5	25	UJ	5	25	UJ	5	26	UJ	5	25	UJ	5
4,6-Dinitro-2-methylphenol	µg/L	25	UJ	9	25	UJ	10	25	UJ	10	26	UJ	10	25	U	9
N-Nitrosodiphenylamine	µg/L	10	UJ	5	10	UJ	5	10	UJ	5	11	UJ	5	10	U	5
4-Bromophenyl-phenylether	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Hexachlorobenzene	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Atrazine	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Pentachlorophenol	µg/L	25	UJ	2	25	UJ	2	25	UJ	2	26	UJ	2	25	U	2
Phenanthrene	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Anthracene	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Carbazole	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Di-n-butylphthalate	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Fluoranthene	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Pyrene	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Butylbenzylphthalate	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
3,3'-Dichlorobenzidine	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	UJ	2
Benzo(a)Anthracene	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2

Table E-3 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Surface Water

Parameter	Units	Sample Point SW01 Date Sampled: 9/22/2003 Lab ID: 84301 % Solids: NA			Sample Point SW02 Date Sampled: 9/22/2003 Lab ID: 84302 % Solids: NA			Sample Point SW03 Date Sampled: 9/22/2003 Lab ID: 84303 % Solids: NA			Sample Point DSW03 Date Sampled: 9/22/2003 Lab ID: 84304 %Solids: NA			Sample Point SW04 Date Sampled: 9/23/2003 Lab ID: 84307 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Chrysene	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
bis(2-Ethylhexyl)Phthalate	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Di-n-Octyl Phthalate	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Benzo(b)Fluoranthene	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Benzo(k)Fluoranthene	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Benzo(a)Pyrene	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Indeno(1,2,3-cd)Pyrene	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Dibenz(a,h)Anthracene	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2
Benzo(g,h,i)Perylene	µg/L	10	UJ	2	10	UJ	2	10	UJ	2	11	UJ	2	10	U	2

Table checked by: D. Dugan Date: 1/8/04

Table E-3 (c)
Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Surface Water

Parameter	Units	Sample Point SW01 Date Sampled: 9/22/2003 Lab ID: 84301 % Solids: NA			Sample Point SW02 Date Sampled: 9/22/2003 Lab ID: 84302 % Solids: NA			Sample Point SW03 Date Sampled: 9/22/2003 Lab ID: 84303 % Solids: NA			Sample Point DSW03 Date Sampled: 9/22/2003 Lab ID: 84304 %Solids: NA			Sample Point SW04 Date Sampled: 9/23/2003 Lab ID: 84307 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/L	0.056	UJ	0.013	0.056	UJ	0.013	0.056	UJ	0.013	0.056	UJ	0.013	0.05	U	0.011
beta-BHC	µg/L	0.056	UJ	0.013	0.056	UJ	0.013	0.056	UJ	0.013	0.056	UJ	0.013	0.05	U	0.011
delta-BHC	µg/L	0.056	UJ	0.017	0.056	UJ	0.017	0.056	UJ	0.017	0.056	UJ	0.017	0.05	U	0.015
gamma-BHC (Lindane)	µg/L	0.056	UJ	0.056	0.056	UJ	0.056	0.056	UJ	0.056	0.056	UJ	0.056	0.05	U	0.05
Heptachlor	µg/L	0.056	UJ	0.015	0.056	UJ	0.015	0.056	UJ	0.015	0.056	UJ	0.015	0.05	U	0.013
Aldrin	µg/L	0.056	UJ	0.012	0.056	UJ	0.012	0.056	UJ	0.012	0.056	UJ	0.012	0.05	U	0.01
Heptachlor epoxide	µg/L	0.056	UJ	0.013	0.056	UJ	0.013	0.056	UJ	0.013	0.056	UJ	0.013	0.05	U	0.012
Endosulfan I	µg/L	0.056	UJ	0.013	0.056	UJ	0.013	0.056	UJ	0.013	0.056	UJ	0.013	0.05	U	0.012
Dieldrin	µg/L	0.11	UJ	0.019	0.11	UJ	0.019	0.11	UJ	0.019	0.11	UJ	0.019	0.1	U	0.017
4,4'-DDE	µg/L	0.11	UJ	0.05	0.11	UJ	0.05	0.11	UJ	0.05	0.11	UJ	0.05	0.1	U	0.044
Endrin	µg/L	0.11	UJ	0.028	0.11	UJ	0.028	0.11	UJ	0.028	0.11	UJ	0.028	0.1	U	0.025
Endosulfan II	µg/L	0.11	UJ	0.014	0.11	UJ	0.014	0.11	UJ	0.014	0.11	UJ	0.014	0.1	U	0.013
4,4'-DDD	µg/L	0.11	UJ	0.057	0.11	UJ	0.057	0.11	UJ	0.057	0.11	UJ	0.057	0.1	U	0.05
Endosulfan sulfate	µg/L	0.11	UJ	0.044	0.11	UJ	0.044	0.11	UJ	0.044	0.11	UJ	0.044	0.1	U	0.038
4,4'-DDT	µg/L	0.11	UJ	0.03	0.11	UJ	0.03	0.11	UJ	0.03	0.11	UJ	0.03	0.1	U	0.027
Methoxychlor	µg/L	0.56	UJ	0.11	0.56	UJ	0.11	0.56	UJ	0.11	0.56	UJ	0.11	0.5	U	0.097
Endrin ketone	µg/L	0.11	UJ	0.04	0.11	UJ	0.04	0.11	UJ	0.04	0.11	UJ	0.04	0.1	U	0.036
Endrin aldehyde	µg/L	0.11	UJ	0.056	0.11	UJ	0.056	0.11	UJ	0.056	0.11	UJ	0.056	0.1	U	0.049
alpha-Chlordane	µg/L	0.056	UJ	0.019	0.056	UJ	0.019	0.056	UJ	0.019	0.056	UJ	0.019	0.05	U	0.016
gamma-Chlordane	µg/L	0.056	UJ	0.016	0.056	UJ	0.016	0.056	UJ	0.016	0.056	UJ	0.016	0.05	U	0.014
Toxaphene	µg/L	5.6	UJ	1.4	5.6	UJ	1.4	5.6	UJ	1.4	5.6	UJ	1.4	5	U	1.2
Aroclor-1016	µg/L	1.1	UJ	0.48	1.1	UJ	0.48	1.1	UJ	0.48	1.1	UJ	0.48	1	U	0.42
Aroclor-1221	µg/L	2.2	UJ	0.58	2.2	UJ	0.58	2.2	UJ	0.58	2.2	UJ	0.58	2	U	0.51
Aroclor-1232	µg/L	1.1	UJ	0.61	1.1	UJ	0.61	1.1	UJ	0.61	1.1	UJ	0.61	1	U	0.53
Aroclor-1242	µg/L	1.1	UJ	0.28	1.1	UJ	0.28	1.1	UJ	0.28	1.1	UJ	0.28	1	U	0.24
Aroclor-1248	µg/L	1.1	UJ	0.45	1.1	UJ	0.45	1.1	UJ	0.45	1.1	UJ	0.45	1	U	0.4
Aroclor-1254	µg/L	1.1	UJ	0.12	1.1	UJ	0.12	1.1	UJ	0.12	1.1	UJ	0.12	1	U	0.11
Aroclor-1260	µg/L	1.1	UJ	0.32	1.1	UJ	0.32	1.1	UJ	0.32	1.1	UJ	0.32	1	U	0.28

Table checked by: D. Dugan Date: 1/8/04

Table E-3 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Surface Water

Parameter	Units	Sample Point SW01 Date Sampled: 9/22/2003 Lab ID: 84301 % Solids: NA			Sample Point SW02 Date Sampled: 9/22/2003 Lab ID: 84302 % Solids: NA			Sample Point SW03 Date Sampled: 9/22/2003 Lab ID: 84303 % Solids: NA			Sample Point DSW03 Date Sampled: 9/22/2003 Lab ID: 84304 %Solids: NA			Sample Point SW04 Date Sampled: 9/23/2003 Lab ID: 84307 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	µg/L	2300		69.6	1920		69.6	1740		69.6	1800		69.6	1840		69.6
Antimony	µg/L	1.9	U	1.9	1.9	U	1.9	1.9	U	1.9	1.9	U	1.9	1.9	U	1.9
Arsenic	µg/L	2.9	B	2.1	11		2.1	2.1	U	2.1	3	B	2.1	3.8	B	2.1
Barium	µg/L	89.9	B	0.3	96.5	B	0.3	99.9	B	0.3	105	B	0.3	53.4	B	0.3
Beryllium	µg/L	0.3	B	0.2	0.2	U	0.2	0.33	B	0.2	0.25	B	0.2	0.2	U	0.2
Cadmium	µg/L	0.3	U	0.3	0.3	U	0.3	0.3	U	0.3	0.3	U	0.3	0.3	U	0.3
Calcium	µg/L	4290	B	18.3	5950		18.3	3270	B	18.3	3300	B	18.3	4370	B	18.3
Chromium	µg/L	2.8	B	1	3.8	B	1	2.5	B	1	2.2	B	1	3.8	B	1
Cobalt	µg/L	2.1	B	0.8	3.2	B	0.8	2.7	B	0.8	2.8	B	0.8	0.98	B	0.8
Copper	µg/L	11.5	B	1.3	5.7	B	1.3	3.6	B	1.3	4.2	B	1.3	24.7	B	1.3
Iron	µg/L	11300		20.5	22500		20.5	10500		20.5	13700		20.5	13100		20.5
Lead	µg/L	17.9		1.1	10.6		1.1	10.3		1.1	11.2		1.1	22.8		1.1
Magnesium	µg/L	1510	B	12.4	1570	B	12.4	1480	B	12.4	1500	B	12.4	1180	B	12.4
Manganese	µg/L	47.3		0.4	77.6		0.4	45.2		0.4	45.6		0.4	24.9		0.4
Mercury	µg/L	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1	0.1	U	0.1
Nickel	µg/L	7.5	B	1	8	B	1	7.5	B	1	7.6	B	1	3.1	B	1
Potassium	µg/L	1520	B	56.1	1570	B	56.1	1290	B	56.1	1350	B	56.1	1520	B	56.1
Selenium	µg/L	2.8	B	2.5	2.5	U	2.5	2.9	B	2.5	2.5	U	2.5	3.2	B	2.5
Silver	µg/L	0.9	U	0.9	0.9	U	0.9	0.9	U	0.9	0.9	U	0.9	0.9	U	0.9
Sodium	µg/L	6680		276	2170	B	276	2270	B	276	2390	B	276	4030	B	276
Thallium	µg/L	3.7	U	3.7	3.7	U	3.7	3.7	U	3.7	3.7	U	3.7	3.7	U	3.7
Vanadium	µg/L	9.7	B	1	12.7	B	1	6	B	1	8.5	B	1	13.8	B	1
Zinc	µg/L	71.4	R	1.1	125	R	1.1	45.3	R	1.1	233	R	1.1	38.7	R	1.1
Cyanide	µg/L	2	B	0.6	2.1	B	0.6	1.1	B	0.6	1.8	B	0.6	1.5	B	0.6

Table checked by: D. Dugan Date: 1/8/04

Table E-3 (e)
Summary of Validated Data
Conventional Parameters
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Surface Water

Parameter	Units	Sample Point SW01 Date Sampled: 9/22/2003 Lab ID: 84301 % Solids: NA			Sample Point SW02 Date Sampled: 9/22/2003 Lab ID: 84302 % Solids: NA			Sample Point SW03 Date Sampled: 9/22/2003 Lab ID: 84303 % Solids: NA			Sample Point DSW03 Date Sampled: 9/22/2003 Lab ID: 84304 %Solids: NA			Sample Point SW04 Date Sampled: 9/23/2003 Lab ID: 84307 %Solids: NA		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Hardness	mg/L	16		5	13		5	13		5	16.8		5	20.1		5
Total Suspended Solids	mg/L	69		1	21		1	12		1	9		1	21.5		1

Table checked by: D. Dugan Date: 1/8/04

Table E-4 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Sediment

Parameter	Units	Sample Point SD01-06 Date Sampled: 11/4/2002 Lab ID: B2732-1 % Solids: 48.6			Sample Point FSD01-06 Date Sampled: 11/4/2002 Lab ID: B2732-2 % Solids: 45.3			Sample Point SD01-24 Date Sampled: 11/4/2002 Lab ID: B2732-3 % Solids: 90.8			Sample Point SD02-06 Date Sampled: 11/4/2002 Lab ID: B2732-4 %Solids: 85.2			Sample Point SD02-24 Date Sampled: 11/4/2002 Lab ID: B2732-5 %Solids: 84.3		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
Chloromethane	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	UJ	0.93	17	UJ	1.4	12	UJ	0.99
Vinyl Chloride	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
Bromomethane	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
Chloroethane	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
Trichlorofluoromethane	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
1,1-Dichloroethene	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
1,1,2-Trichloro-1,2,2-Trifluo	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
Acetone	µg/Kg	230	UJ	2.5	280	UJ	2.8	10	U	0.93	37	U	1.4	18	U	0.99
Carbon Disulfide	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
Methyl acetate	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
Methylene chloride	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
trans-1,2-Dichloroethene	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
tert-Butyl methyl ether	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
1,1-Dichloroethane	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
cis-1,2-Dichloroethene	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
2-Butanone	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
Chloroform	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
1,1,1-Trichloroethane	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
Cyclohexane	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
Carbon tetrachloride	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
Benzene	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
1,2-Dichloroethane	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
Trichloroethene	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
Methylcyclohexane	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
1,2-Dichloropropane	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
Bromodichloromethane	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
cis-1,3-Dichloropropene	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
4-Methyl-2-pentanone	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99

Table E-4 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Sediment

Parameter	Units	Sample Point SD01-06 Date Sampled: 11/4/2002 Lab ID: B2732-1 % Solids: 48.6			Sample Point FSD01-06 Date Sampled: 11/4/2002 Lab ID: B2732-2 % Solids: 45.3			Sample Point SD01-24 Date Sampled: 11/4/2002 Lab ID: B2732-3 % Solids: 90.8			Sample Point SD02-06 Date Sampled: 11/4/2002 Lab ID: B2732-4 %Solids: 85.2			Sample Point SD02-24 Date Sampled: 11/4/2002 Lab ID: B2732-5 %Solids: 84.3		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Toluene	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
trans-1,3-Dichloropropene	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
1,1,2-Trichloroethane	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
Tetrachloroethene	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
2-Hexanone	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
Dibromochloromethane	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
1,2-Dibromoethane	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
Chlorobenzene	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
Ethylbenzene	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
Xylenes (total)	µg/Kg	54	UJ	0.01	59	UJ	0.01	10	U	0.01	17	U	0.01	12	U	0.01
Styrene	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
Bromoform	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
Isopropylbenzene	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
1,1,2,2-Tetrachloroethane	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
1,3-Dichlorobenzene	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
1,4-Dichlorobenzene	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
1,2-Dichlorobenzene	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
1,2-Dibromo-3-chloropropa	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	U	0.93	17	U	1.4	12	U	0.99
1,2,4-Trichlorobenzene	µg/Kg	54	UJ	2.5	59	UJ	2.8	10	UJ	0.93	17	UJ	1.4	12	UJ	0.99

Table checked by: D. Dugan Date: 1/8/04

Table E-4 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Sediment

Parameter	Units	Sample Point SD03-06 Date Sampled: 9/22/2003 Lab ID: 84102 % Solids: 23.7			Sample Point SD03-24 Date Sampled: 9/22/2003 Lab ID: 84101 % Solids: 53.8			Sample Point SD04-06 Date Sampled: 9/23/2003 Lab ID: 84103 % Solids: 20.3			Sample Point SD04-24 Date Sampled: 9/23/2003 Lab ID: 84104 %Solids: 17.6			Sample Point Date Sampled: Lab ID: %Solids:		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Dichlorodifluoromethane	µg/Kg	61	UJ	0.26	18	UJ	0.26	87	UJ	0.26	110	UJ	0.26			
Chloromethane	µg/Kg	61	UJ	0.32	18	UJ	0.32	87	UJ	0.32	110	UJ	0.32			
Vinyl Chloride	µg/Kg	61	UJ	0.38	18	UJ	0.38	87	UJ	0.38	110	UJ	0.38			
Bromomethane	µg/Kg	61	UJ	0.68	18	UJ	0.68	87	UJ	0.68	110	UJ	0.68			
Chloroethane	µg/Kg	61	UJ	0.33	18	UJ	0.33	87	UJ	0.33	110	UJ	0.33			
Trichlorofluoromethane	µg/Kg	61	UJ	0.3	18	UJ	0.3	87	UJ	0.3	110	UJ	0.3			
1,1-Dichloroethene	µg/Kg	61	UJ	0.37	18	UJ	0.37	87	UJ	0.37	110	UJ	0.37			
1,1,2-Trichloro-1,2,2-Trifluo	µg/Kg	61	UJ	0.45	18	UJ	0.45	87	UJ	0.45	110	UJ	0.45			
Acetone	µg/Kg	280	UJ	0.79	55	UJ	0.79	1200	UJ	0.79	850	UJ	0.79			
Carbon Disulfide	µg/Kg	61	UJ	0.34	18	UJ	0.34	87	UJ	0.34	110	UJ	0.34			
Methyl acetate	µg/Kg	25	J	0.92	5	J	0.92	1600	J	0.92	160	J	0.92			
Methylene chloride	µg/Kg	61	UJ	0.57	18	UJ	0.57	87	UJ	0.57	110	UJ	0.57			
trans-1,2-Dichloroethene	µg/Kg	61	UJ	0.44	18	UJ	0.44	87	UJ	0.44	110	UJ	0.44			
tert-Butyl methyl ether	µg/Kg	61	UJ	0.28	18	UJ	0.28	87	UJ	0.28	110	UJ	0.28			
1,1-Dichloroethane	µg/Kg	61	UJ	0.27	18	UJ	0.27	87	UJ	0.27	110	UJ	0.27			
cis-1,2-Dichloroethene	µg/Kg	61	UJ	0.29	18	UJ	0.29	87	UJ	0.29	110	UJ	0.29			
2-Butanone	µg/Kg	61	UJ	1	18	UJ	1	130	UJ	1	110	UJ	1			
Chloroform	µg/Kg	61	UJ	0.27	18	UJ	0.27	87	UJ	0.27	110	UJ	0.27			
1,1,1-Trichloroethane	µg/Kg	61	UJ	0.29	18	UJ	0.29	87	UJ	0.29	110	UJ	0.29			
Cyclohexane	µg/Kg	61	UJ	0.31	18	UJ	0.31	87	UJ	0.31	110	UJ	0.31			
Carbon tetrachloride	µg/Kg	61	UJ	0.32	18	UJ	0.32	87	UJ	0.32	110	UJ	0.32			
Benzene	µg/Kg	61	UJ	0.37	18	UJ	0.37	87	UJ	0.37	110	UJ	0.37			
1,2-Dichloroethane	µg/Kg	61	UJ	0.29	18	UJ	0.29	87	UJ	0.29	110	UJ	0.29			
Trichloroethene	µg/Kg	61	UJ	0.41	18	UJ	0.41	87	UJ	0.41	110	UJ	0.41			
Methylcyclohexane	µg/Kg	61	UJ	0.36	18	UJ	0.36	87	UJ	0.36	110	UJ	0.36			
1,2-Dichloropropane	µg/Kg	61	UJ	0.36	18	UJ	0.36	87	UJ	0.36	110	UJ	0.36			
Bromodichloromethane	µg/Kg	61	UJ	0.24	18	UJ	0.24	87	UJ	0.24	110	UJ	0.24			
cis-1,3-Dichloropropene	µg/Kg	61	UJ	0.19	18	UJ	0.19	87	UJ	0.19	110	UJ	0.19			
4-Methyl-2-pentanone	µg/Kg	61	UJ	0.25	18	UJ	0.25	87	UJ	0.25	110	UJ	0.25			

Table E-4 (a)
Summary of Validated Data
Volatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Sediment

Parameter	Units	Sample Point SD03-06 Date Sampled: 9/22/2003 Lab ID: 84102 % Solids: 23.7			Sample Point SD03-24 Date Sampled: 9/22/2003 Lab ID: 84101 % Solids: 53.8			Sample Point SD04-06 Date Sampled: 9/23/2003 Lab ID: 84103 % Solids: 20.3			Sample Point SD04-24 Date Sampled: 9/23/2003 Lab ID: 84104 %Solids: 17.6			Sample Point Date Sampled: Lab ID: %Solids:		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Toluene	µg/Kg	61	UJ	0.32	18	UJ	0.32	87	UJ	0.32	110	UJ	0.32			
trans-1,3-Dichloropropene	µg/Kg	61	UJ	0.24	18	UJ	0.24	87	UJ	0.24	110	UJ	0.24			
1,1,2-Trichloroethane	µg/Kg	61	UJ	0.2	18	UJ	0.2	87	UJ	0.2	110	UJ	0.2			
Tetrachloroethene	µg/Kg	61	UJ	0.42	18	UJ	0.42	87	UJ	0.42	110	UJ	0.42			
2-Hexanone	µg/Kg	61	UJ	0.3	18	UJ	0.3	87	UJ	0.3	110	UJ	0.3			
Dibromochloromethane	µg/Kg	61	UJ	0.28	18	UJ	0.28	87	UJ	0.28	110	UJ	0.28			
1,2-Dibromoethane	µg/Kg	61	UJ	0.27	18	UJ	0.27	87	UJ	0.27	110	UJ	0.27			
Chlorobenzene	µg/Kg	61	UJ	0.39	18	UJ	0.39	87	UJ	0.39	110	UJ	0.39			
Ethylbenzene	µg/Kg	61	UJ	0.33	18	UJ	0.33	87	UJ	0.33	110	UJ	0.33			
Xylenes (total)	µg/Kg	61	UJ	0.01	3	J	0.01	87	UJ	0.01	110	UJ	0.01			
Styrene	µg/Kg	61	UJ	0.33	18	UJ	0.33	87	UJ	0.33	110	UJ	0.33			
Bromoform	µg/Kg	61	UJ	0.25	18	UJ	0.25	87	UJ	0.25	110	UJ	0.25			
Isopropylbenzene	µg/Kg	61	UJ	0.35	18	UJ	0.35	87	UJ	0.35	110	UJ	0.35			
1,1,2,2-Tetrachloroethane	µg/Kg	61	UJ	0.24	18	UJ	0.24	87	UJ	0.24	110	UJ	0.24			
1,3-Dichlorobenzene	µg/Kg	61	UJ	0.4	18	UJ	0.4	87	UJ	0.4	110	UJ	0.4			
1,4-Dichlorobenzene	µg/Kg	61	UJ	0.35	18	UJ	0.35	87	UJ	0.35	110	UJ	0.35			
1,2-Dichlorobenzene	µg/Kg	61	UJ	0.32	18	UJ	0.32	87	UJ	0.32	110	UJ	0.32			
1,2-Dibromo-3-chloropropa	µg/Kg	61	UJ	0.41	18	UJ	0.41	87	UJ	0.41	110	UJ	0.41			
1,2,4-Trichlorobenzene	µg/Kg	61	UJ	0.33	18	UJ	0.33	87	UJ	0.33	110	UJ	0.33			

Table checked by: D. Dugan Date: 1/8/04

Table E-4 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Sediment

Parameter	Units	Sample Point SD01-06 Date Sampled: 11/4/2002 Lab ID: B2732-1 % Solids: 48.6			Sample Point FSD01-06 Date Sampled: 11/4/2002 Lab ID: B2732-2 % Solids: 45.3			Sample Point SD01-24 Date Sampled: 11/4/2002 Lab ID: B2732-3 % Solids: 90.8			Sample Point SD02-06 Date Sampled: 11/4/2002 Lab ID: B2732-4 %Solids: 85.2			Sample Point SD02-24 Date Sampled: 11/4/2002 Lab ID: B2732-5 %Solids: 84.3		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/Kg	700	UJ	4	690	UJ	4	370	U	4	390	U	4	410	U	4
Phenol	µg/Kg	700	UJ	8	690	UJ	8	370	U	8	390	U	8	410	U	8
bis(2-Chloroethyl)ether	µg/Kg	700	UJ	8	690	UJ	8	370	U	8	390	U	8	410	U	8
2-Chlorophenol	µg/Kg	700	UJ	8	690	UJ	8	370	U	8	390	U	8	410	U	8
2-Methylphenol	µg/Kg	700	UJ	11	690	UJ	11	370	U	11	390	U	11	410	U	11
2,2'-Oxybis(1-Chloropropan	µg/Kg	700	UJ	9	690	UJ	9	370	U	9	390	U	9	410	U	9
Acetophenone	µg/Kg	700	UJ	10	690	UJ	10	370	U	10	390	U	10	410	U	10
4-Methylphenol	µg/Kg	700	UJ	12	690	UJ	12	370	U	12	390	U	12	410	U	12
N-Nitroso-di-n-propylamine	µg/Kg	700	UJ	10	690	UJ	10	370	U	10	390	UJ	10	410	U	10
Hexachloroethane	µg/Kg	700	UJ	8	690	UJ	8	370	U	8	390	U	8	410	U	8
Nitrobenzene	µg/Kg	700	UJ	12	690	UJ	12	370	UJ	12	390	U	12	410	UJ	12
Isophorone	µg/Kg	700	UJ	9	690	UJ	9	370	U	9	390	U	9	410	U	9
2-Nitrophenol	µg/Kg	700	UJ	10	690	UJ	10	370	U	10	390	U	10	410	U	10
2,4-Dimethylphenol	µg/Kg	700	UJ	9	690	UJ	9	370	U	9	390	U	9	410	U	9
bis(2-Chloroethoxy)Methan	µg/Kg	700	UJ	9	690	UJ	9	370	U	9	390	U	9	410	U	9
2,4-Dichlorophenol	µg/Kg	700	UJ	7	690	UJ	7	370	U	7	390	U	7	410	U	7
Naphthalene	µg/Kg	31	J	8	36	J	8	370	U	8	32	J	8	410	U	8
4-Chloroaniline	µg/Kg	700	UJ	2	690	UJ	2	370	U	2	390	U	2	410	U	2
Hexachlorobutadiene	µg/Kg	700	UJ	8	690	UJ	8	370	U	8	390	U	8	410	U	8
4-Chloro-3-Methylphenol	µg/Kg	700	UJ	12	690	UJ	12	370	U	12	390	U	12	410	U	12
2-Methylnaphthalene	µg/Kg	41	J	10	50	J	10	370	U	10	63	J	10	12	J	10
Hexachlorocyclopentadiene	µg/Kg	700	UJ	11	690	UJ	11	370	U	11	390	U	11	410	U	11
Caprolactam	µg/Kg	56	J	14	690	UJ	14	370	U	14	390	U	14	410	U	14
2,4,6-Trichlorophenol	µg/Kg	700	UJ	15	690	UJ	15	370	U	15	390	U	15	410	U	15
2,4,5-Trichlorophenol	µg/Kg	1800	UJ	13	1700	UJ	13	930	U	13	970	U	13	1000	U	13
1,1'-Biphenyl	µg/Kg	700	UJ	9	690	UJ	9	370	U	9	390	U	9	410	U	9
2-Chloronaphthalene	µg/Kg	700	UJ	9	690	UJ	9	370	U	9	390	U	9	410	U	9
2-Nitroaniline	µg/Kg	1800	UJ	7	1700	UJ	7	930	UJ	7	970	U	7	1000	UJ	7
Dimethyl Phthalate	µg/Kg	700	UJ	9	690	UJ	9	370	U	9	390	U	9	410	U	9

Table E-4 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Sediment

Parameter	Units	Sample Point SD01-06 Date Sampled: 11/4/2002 Lab ID: B2732-1 % Solids: 48.6			Sample Point FSD01-06 Date Sampled: 11/4/2002 Lab ID: B2732-2 % Solids: 45.3			Sample Point SD01-24 Date Sampled: 11/4/2002 Lab ID: B2732-3 % Solids: 90.8			Sample Point SD02-06 Date Sampled: 11/4/2002 Lab ID: B2732-4 %Solids: 85.2			Sample Point SD02-24 Date Sampled: 11/4/2002 Lab ID: B2732-5 %Solids: 84.3		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
2,6-Dinitrotoluene	µg/Kg	700	UJ	10	690	UJ	10	370	U	10	390	U	10	410	U	10
Acenaphthylene	µg/Kg	32	J	8	41	J	8	370	U	8	27	J	8	410	U	8
3-Nitroaniline	µg/Kg	1800	UJ	9	1700	UJ	9	930	U	9	970	U	9	1000	U	9
Acenaphthene	µg/Kg	700	UJ	9	690	UJ	9	370	U	9	390	U	9	410	U	9
2,4-Dinitrophenol	µg/Kg	1800	UJ	150	1700	UJ	150	930	U	150	970	U	150	1000	U	150
4-Nitrophenol	µg/Kg	1800	UJ	55	1700	UJ	55	930	UJ	55	970	U	55	1000	UJ	55
Dibenzofuran	µg/Kg	16	J	7	20	J	7	370	U	7	21	J	7	410	U	7
2,4-Dinitrotoluene	µg/Kg	700	UJ	7	690	UJ	7	370	U	7	390	U	7	410	U	7
Diethylphthalate	µg/Kg	700	UJ	9	690	UJ	9	370	U	9	390	U	9	410	U	9
Fluorene	µg/Kg	700	UJ	8	690	UJ	8	370	U	8	390	U	8	410	U	8
4-Chlorophenyl-phenylether	µg/Kg	700	UJ	7	690	UJ	7	370	U	7	390	U	7	410	U	7
4-Nitroaniline	µg/Kg	1800	UJ	17	1700	UJ	17	930	U	17	970	U	17	1000	U	17
4,6-Dinitro-2-methylphenol	µg/Kg	1800	UJ	14	1700	UJ	14	930	U	14	970	U	14	1000	U	14
N-Nitrosodiphenylamine	µg/Kg	700	UJ	10	690	UJ	10	370	U	10	390	U	10	410	U	10
4-Bromophenyl-phenylether	µg/Kg	700	UJ	10	690	UJ	10	370	U	10	390	U	10	410	U	10
Hexachlorobenzene	µg/Kg	700	UJ	11	690	UJ	11	370	U	11	390	U	11	410	U	11
Atrazine	µg/Kg	700	UJ	6	690	UJ	6	370	U	6	390	U	6	410	U	6
Pentachlorophenol	µg/Kg	1800	UJ	33	1700	UJ	33	930	UJ	33	970	U	33	1000	UJ	33
Phenanthrene	µg/Kg	140	J	10	180	J	10	370	U	10	120	J	10	16	J	10
Anthracene	µg/Kg	64	J	8	75	J	8	370	U	8	39	J	8	410	U	8
Carbazole	µg/Kg	26	J	9	32	J	9	370	U	9	23	J	9	410	U	9
Di-n-butylphthalate	µg/Kg	700	UJ	11	690	UJ	11	370	U	11	390	U	11	410	U	11
Fluoranthene	µg/Kg	320	J	7	390	J	7	9	J	7	240	J	7	23	J	7
Pyrene	µg/Kg	300	J	13	360	J	13	370	U	13	210	J	13	22	J	13
Butylbenzylphthalate	µg/Kg	700	UJ	9	690	UJ	9	370	U	9	390	U	9	410	U	9
3,3'-Dichlorobenzidine	µg/Kg	700	UJ	20	690	UJ	20	370	U	20	390	U	20	410	U	20
Benzo(a)Anthracene	µg/Kg	100	J	9	120	J	9	370	U	9	97	J	9	410	U	9
Chrysene	µg/Kg	220	J	8	260	J	8	370	U	8	130	J	8	18	J	8
bis(2-Ethylhexyl)Phthalate	µg/Kg	700	UJ	10	690	UJ	10	370	U	10	390	U	10	410	U	10

Table E-4 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Sediment

Parameter	Units	Sample Point SD01-06 Date Sampled: 11/4/2002 Lab ID: B2732-1 % Solids: 48.6			Sample Point FSD01-06 Date Sampled: 11/4/2002 Lab ID: B2732-2 % Solids: 45.3			Sample Point SD01-24 Date Sampled: 11/4/2002 Lab ID: B2732-3 % Solids: 90.8			Sample Point SD02-06 Date Sampled: 11/4/2002 Lab ID: B2732-4 %Solids: 85.2			Sample Point SD02-24 Date Sampled: 11/4/2002 Lab ID: B2732-5 %Solids: 84.3		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Di-n-Octyl Phthalate	µg/Kg	1200	J	9	690	UJ	9	370	U	9	390	U	9	410	U	9
Benzo(b)Fluoranthene	µg/Kg	270	J	13	280	J	13	370	U	13	200	J	13	21	J	13
Benzo(k)Fluoranthene	µg/Kg	200	J	14	280	J	14	370	U	14	110	J	14	410	U	14
Benzo(a)Pyrene	µg/Kg	140	J	8	170	J	8	370	U	8	78	J	8	10	J	8
Indeno(1,2,3-cd)Pyrene	µg/Kg	700	UJ	8	690	UJ	8	370	U	8	56	J	8	410	U	8
Dibenz(a,h)Anthracene	µg/Kg	700	UJ	11	690	UJ	11	370	U	11	24	J	11	410	U	11
Benzo(g,h,i)Perylene	µg/Kg	700	UJ	40	120	J	40	370	U	40	390	U	40	410	U	40

Table checked by: D. Dugan Date: 1/8/04

Table E-4 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Sediment

Parameter	Units	Sample Point SD03-06 Date Sampled: 9/22/2003 Lab ID: 84102 % Solids: 23.7			Sample Point SD03-24 Date Sampled: 9/22/2003 Lab ID: 84101 % Solids: 53.8			Sample Point SD04-06 Date Sampled: 9/23/2003 Lab ID: 84103 % Solids: 20.3			Sample Point SD04-24 Date Sampled: 9/23/2003 Lab ID: 84104 %Solids: 17.6			Sample Point Date Sampled: Lab ID: %Solids:		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Benzaldehyde	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Phenol	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
bis(2-Chloroethyl)ether	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
2-Chlorophenol	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
2-Methylphenol	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
2,2'-Oxybis(1-Chloropropan	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Acetophenone	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
4-Methylphenol	µg/Kg	390	J	70	610	UJ	70	1700	UJ	70	1800	UJ	70			
N-Nitroso-di-n-propylamine	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Hexachloroethane	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Nitrobenzene	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Isophorone	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
2-Nitrophenol	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
2,4-Dimethylphenol	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
bis(2-Chloroethoxy)Methan	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
2,4-Dichlorophenol	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Naphthalene	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
4-Chloroaniline	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Hexachlorobutadiene	µg/Kg	1400	UJ	81	610	UJ	81	1700	UJ	81	1800	UJ	81			
4-Chloro-3-Methylphenol	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
2-Methylnaphthalene	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Hexachlorocyclopentadiene	µg/Kg	1400	UJ	330	610	UJ	330	1700	UJ	330	1800	UJ	330			
Caprolactam	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
2,4,6-Trichlorophenol	µg/Kg	1400	UJ	110	610	UJ	110	1700	UJ	110	1800	UJ	110			
2,4,5-Trichlorophenol	µg/Kg	3500	UJ	170	1500	UJ	170	4200	UJ	170	4600	UJ	170			
1,1'-Biphenyl	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
2-Chloronaphthalene	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
2-Nitroaniline	µg/Kg	3500	UJ	170	1500	UJ	170	4200	UJ	170	4600	UJ	170			
Dimethyl Phthalate	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			

Table E-4 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Sediment

Parameter	Units	Sample Point SD03-06 Date Sampled: 9/22/2003 Lab ID: 84102 % Solids: 23.7			Sample Point SD03-24 Date Sampled: 9/22/2003 Lab ID: 84101 % Solids: 53.8			Sample Point SD04-06 Date Sampled: 9/23/2003 Lab ID: 84103 % Solids: 20.3			Sample Point SD04-24 Date Sampled: 9/23/2003 Lab ID: 84104 %Solids: 17.6			Sample Point Date Sampled: Lab ID: %Solids:		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
2,6-Dinitrotoluene	µg/Kg	1400	UJ	76	610	UJ	76	1700	UJ	76	1800	UJ	76			
Acenaphthylene	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
3-Nitroaniline	µg/Kg	3500	UJ	170	1500	UJ	170	4200	UJ	170	4600	UJ	170			
Acenaphthene	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
2,4-Dinitrophenol	µg/Kg	3500	UJ	770	1500	UJ	770	4200	UJ	770	4600	UJ	770			
4-Nitrophenol	µg/Kg	3500	UJ	190	1500	UJ	190	4200	UJ	190	4600	UJ	190			
Dibenzofuran	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
2,4-Dinitrotoluene	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Diethylphthalate	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Fluorene	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
4-Chlorophenyl-phenylether	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
4-Nitroaniline	µg/Kg	3500	UJ	170	1500	UJ	170	4200	UJ	170	4600	UJ	170			
4,6-Dinitro-2-methylphenol	µg/Kg	3500	UJ	210	1500	UJ	210	4200	UJ	210	4600	UJ	210			
N-Nitrosodiphenylamine	µg/Kg	1400	UJ	270	610	UJ	270	1700	UJ	270	1800	UJ	270			
4-Bromophenyl-phenylether	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Hexachlorobenzene	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Atrazine	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Pentachlorophenol	µg/Kg	3500	UJ	67	1500	UJ	67	4200	UJ	67	4600	UJ	67			
Phenanthrene	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Anthracene	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Carbazole	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Di-n-butylphthalate	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Fluoranthene	µg/Kg	1400	UJ	67	610	UJ	67	400	J	67	1800	UJ	67			
Pyrene	µg/Kg	1400	UJ	67	610	UJ	67	360	J	67	1800	UJ	67			
Butylbenzylphthalate	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
3,3'-Dichlorobenzidine	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Benzo(a)Anthracene	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Chrysene	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
bis(2-Ethylhexyl)Phthalate	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			

Table E-4 (b)
Summary of Validated Data
Semivolatile Organics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Sediment

Parameter	Units	Sample Point SD03-06 Date Sampled: 9/22/2003 Lab ID: 84102 % Solids: 23.7			Sample Point SD03-24 Date Sampled: 9/22/2003 Lab ID: 84101 % Solids: 53.8			Sample Point SD04-06 Date Sampled: 9/23/2003 Lab ID: 84103 % Solids: 20.3			Sample Point SD04-24 Date Sampled: 9/23/2003 Lab ID: 84104 %Solids: 17.6			Sample Point Date Sampled: Lab ID: %Solids:		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Di-n-Octyl Phthalate	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Benzo(b)Fluoranthene	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Benzo(k)Fluoranthene	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Benzo(a)Pyrene	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Indeno(1,2,3-cd)Pyrene	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Dibenz(a,h)Anthracene	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			
Benzo(g,h,i)Perylene	µg/Kg	1400	UJ	67	610	UJ	67	1700	UJ	67	1800	UJ	67			

Table checked by: D. Dugan Date: 1/8/04

Table E-4 (c)
Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Sediment

Parameter	Units	Sample Point SD01-06 Date Sampled: 11/4/2002 Lab ID: B2732-1 % Solids: 48.6			Sample Point FSD01-06 Date Sampled: 11/4/2002 Lab ID: B2732-2 % Solids: 45.3			Sample Point SD01-24 Date Sampled: 11/4/2002 Lab ID: B2732-3 % Solids: 90.8			Sample Point SD02-06 Date Sampled: 11/4/2002 Lab ID: B2732-4 %Solids: 85.2			Sample Point SD02-24 Date Sampled: 11/4/2002 Lab ID: B2732-5 %Solids: 84.3		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/Kg	3.6	UJ	0.38	3.5	UJ	0.38	1.9	U	0.38	2	U	0.38	2.1	U	0.38
beta-BHC	µg/Kg	3.6	UJ	1	3.5	UJ	1	1.9	U	1	2.8	R	1	2.1	U	1
delta-BHC	µg/Kg	3.6	UJ	0.9	3.5	UJ	0.9	1.9	U	0.9	2	U	0.9	2.1	U	0.9
gamma-BHC (Lindane)	µg/Kg	3.6	UJ	0.37	3.5	UJ	0.37	1.9	U	0.37	2	U	0.37	2.1	U	0.37
Heptachlor	µg/Kg	3.6	UJ	0.68	3.5	UJ	0.68	1.9	U	0.68	2	U	0.68	2.1	U	0.68
Aldrin	µg/Kg	3.6	UJ	0.73	3.5	UJ	0.73	1.9	U	0.73	2	U	0.73	2.1	U	0.73
Heptachlor epoxide	µg/Kg	3.6	UJ	0.48	3.5	UJ	0.48	1.9	U	0.48	2	U	0.48	2.1	U	0.48
Endosulfan I	µg/Kg	3.6	UJ	0.3	3.5	UJ	0.3	1.9	U	0.3	2	U	0.3	2.1	U	0.3
Dieldrin	µg/Kg	7	UJ	1.3	6.9	UJ	1.3	3.7	U	1.3	3.9	U	1.3	4.1	U	1.3
4,4'-DDE	µg/Kg	10	J	0.9	10	J	0.9	3.7	U	0.9	16		0.9	4.1	U	0.9
Endrin	µg/Kg	7	UJ	1.8	6.9	UJ	1.8	3.7	U	1.8	3.9	U	1.8	4.1	U	1.8
Endosulfan II	µg/Kg	7	UJ	1.1	6.9	UJ	1.1	3.7	U	1.1	3.9	U	1.1	4.1	U	1.1
4,4'-DDD	µg/Kg	3	J	0.97	2.7	J	0.97	3.7	U	0.97	5.8		0.97	4.1	U	0.97
Endosulfan sulfate	µg/Kg	7	UJ	1	6.9	UJ	1	3.7	U	1	3.9	U	1	4.1	U	1
4,4'-DDT	µg/Kg	7	UJ	1.6	6.9	UJ	1.6	3.7	UJ	1.6	8.3	J	1.6	4.1	UJ	1.6
Methoxychlor	µg/Kg	36	UJ	13	35	UJ	13	19	UJ	13	20	UJ	13	21	UJ	13
Endrin ketone	µg/Kg	7	UJ	1.1	6.9	UJ	1.1	3.7	U	1.1	3.9	U	1.1	4.1	U	1.1
Endrin aldehyde	µg/Kg	7	UJ	0.87	6.9	UJ	0.87	3.7	U	0.87	3.9	U	0.87	4.1	U	0.87
alpha-Chlordane	µg/Kg	3.6	UJ	0.78	3.5	UJ	0.78	1.9	U	0.78	2	U	0.78	2.1	U	0.78
gamma-Chlordane	µg/Kg	3.6	UJ	0.72	3.5	UJ	0.72	1.9	U	0.72	2	U	0.72	2.1	U	0.72
Toxaphene	µg/Kg	360	UJ	58	350	UJ	58	190	U	58	200	U	58	210	U	58
Aroclor-1016	µg/Kg	70	UJ	16	69	UJ	16	37	U	16	39	U	16	41	U	16
Aroclor-1221	µg/Kg	140	UJ	22	140	UJ	22	75	U	22	79	U	22	83	U	22
Aroclor-1232	µg/Kg	70	UJ	17	69	UJ	17	37	U	17	39	U	17	41	U	17
Aroclor-1242	µg/Kg	70	UJ	23	69	UJ	23	37	U	23	39	U	23	41	U	23
Aroclor-1248	µg/Kg	70	UJ	6.7	69	UJ	6.7	37	U	6.7	39	U	6.7	41	U	6.7
Aroclor-1254	µg/Kg	70	UJ	3.7	69	UJ	3.7	37	U	3.7	39	U	3.7	41	U	3.7
Aroclor-1260	µg/Kg	70	UJ	5.8	69	UJ	5.8	37	U	5.8	39	U	5.8	41	U	5.8

Table checked by: D. Dugan Date: 1/8/04

Table E-4 (c)
Summary of Validated Data
Pesticides/PCBs
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Sediment

Parameter	Units	Sample Point SD03-06 Date Sampled: 9/22/2003 Lab ID: 84102 % Solids: 23.7			Sample Point SD03-24 Date Sampled: 9/22/2003 Lab ID: 84101 % Solids: 53.8			Sample Point SD04-06 Date Sampled: 9/23/2003 Lab ID: 84103 % Solids: 20.3			Sample Point SD04-24 Date Sampled: 9/23/2003 Lab ID: 84104 %Solids: 17.6			Sample Point Date Sampled: Lab ID: %Solids:		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
alpha-BHC	µg/Kg	7.1	UJ	0.32	3.1	UJ	0.32	8.5	UJ	0.32	9.4	UJ	0.32			
beta-BHC	µg/Kg	7.1	UJ	0.25	3.1	UJ	0.25	8.5	UJ	0.25	9.4	UJ	0.25			
delta-BHC	µg/Kg	7.1	UJ	0.43	3.1	UJ	0.43	8.5	UJ	0.43	9.4	UJ	0.43			
gamma-BHC (Lindane)	µg/Kg	7.1	UJ	0.21	3.1	UJ	0.21	8.5	UJ	0.21	9.4	UJ	0.21			
Heptachlor	µg/Kg	7.1	UJ	0.3	3.1	UJ	0.3	8.5	UJ	0.3	9.4	UJ	0.3			
Aldrin	µg/Kg	7.1	UJ	0.21	3.1	UJ	0.21	8.5	UJ	0.21	9.4	UJ	0.21			
Heptachlor epoxide	µg/Kg	7.1	UJ	0.28	3.1	UJ	0.28	8.5	UJ	0.28	9.4	UJ	0.28			
Endosulfan I	µg/Kg	7.1	UJ	0.11	3.1	UJ	0.11	8.5	UJ	0.11	9.4	UJ	0.11			
Dieldrin	µg/Kg	14	UJ	0.33	6.1	UJ	0.33	17	UJ	0.33	18	UJ	0.33			
4,4'-DDE	µg/Kg	2.7	J	0.24	6.1	UJ	0.24	17	UJ	0.24	18	UJ	0.24			
Endrin	µg/Kg	14	UJ	0.35	6.1	UJ	0.35	17	UJ	0.35	18	UJ	0.35			
Endosulfan II	µg/Kg	14	UJ	0.33	6.1	UJ	0.33	17	UJ	0.33	18	UJ	0.33			
4,4'-DDD	µg/Kg	14	UJ	0.34	6.1	UJ	0.34	17	UJ	0.34	5.4	J	0.34			
Endosulfan sulfate	µg/Kg	14	UJ	0.95	6.1	UJ	0.95	17	UJ	0.95	18	UJ	0.95			
4,4'-DDT	µg/Kg	14	UJ	0.34	6.1	UJ	0.34	4.5	J	0.34	4.4	J	0.34			
Methoxychlor	µg/Kg	71	UJ	3.5	31	UJ	3.5	85	UJ	3.5	94	UJ	3.5			
Endrin ketone	µg/Kg	14	UJ	0.85	6.1	UJ	0.85	17	UJ	0.85	18	UJ	0.85			
Endrin aldehyde	µg/Kg	14	UJ	0.83	6.1	UJ	0.83	8.4	J	0.83	18	UJ	0.83			
alpha-Chlordane	µg/Kg	7.1	UJ	0.11	3.1	UJ	0.11	5.4	J	0.11	9.4	UJ	0.11			
gamma-Chlordane	µg/Kg	7.1	UJ	0.22	3.1	UJ	0.22	8.5	UJ	0.22	9.4	UJ	0.22			
Toxaphene	µg/Kg	710	UJ	19	310	UJ	19	850	UJ	19	940	UJ	19			
Aroclor-1016	µg/Kg	140	UJ	5	61	UJ	5	170	UJ	5	180	UJ	5			
Aroclor-1221	µg/Kg	280	UJ	12	120	UJ	12	340	UJ	12	370	UJ	12			
Aroclor-1232	µg/Kg	140	UJ	17	61	UJ	17	170	UJ	17	180	UJ	17			
Aroclor-1242	µg/Kg	140	UJ	7.9	61	UJ	7.9	170	UJ	7.9	180	UJ	7.9			
Aroclor-1248	µg/Kg	140	UJ	4.2	61	UJ	4.2	170	UJ	4.2	180	UJ	4.2			
Aroclor-1254	µg/Kg	140	UJ	13	61	UJ	13	170	UJ	13	180	UJ	13			
Aroclor-1260	µg/Kg	140	UJ	4.5	61	UJ	4.5	170	UJ	4.5	180	UJ	4.5			

Table checked by: D. Dugan Date: 1/8/04

Table E-4 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Sediment

Parameter	Units	Sample Point SD01-06 Date Sampled: 11/4/2002 Lab ID: B2732-1 % Solids: 48.6			Sample Point FSD01-06 Date Sampled: 11/4/2002 Lab ID: B2732-2 % Solids: 45.3			Sample Point SD01-24 Date Sampled: 11/4/2002 Lab ID: B2732-3 % Solids: 90.8			Sample Point SD02-06 Date Sampled: 11/4/2002 Lab ID: B2732-4 %Solids: 85.2			Sample Point SD02-24 Date Sampled: 11/4/2002 Lab ID: B2732-5 %Solids: 84.3		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	mg/Kg	8710	J	23.3	10200	J	23.2	655	J	11.5	5190	J	13.3	1570	J	12.7
Antimony	mg/Kg	0.84	J	0.49	0.68	J	0.49	0.24	UJ	0.24	0.28	UJ	0.28	0.27	UJ	0.27
Arsenic	mg/Kg	10.8	J	1.2	9.4	J	1.2	0.61	U	0.61	3.3		0.7	1	B	0.67
Barium	mg/Kg	96.6	J	0.12	106	J	0.12	8.3	B	0.061	67.4		0.07	14.1	B	0.067
Beryllium	mg/Kg	0.8	J	0.082	0.93	J	0.082	0.084	B	0.04	0.34	B	0.047	0.28	B	0.045
Cadmium	mg/Kg	0.5	J	0.12	0.43	J	0.12	0.061	U	0.061	0.21	B	0.07	0.12	B	0.067
Calcium	mg/Kg	1160	J	6.2	997	J	6.1	107	B	3	492	B	3.5	133	B	3.4
Chromium	mg/Kg	12.7	J	0.33	15.1	J	0.33	1.4	J	0.16	7.7	J	0.19	2.5	J	0.18
Cobalt	mg/Kg	1.7	J	0.29	1.8	J	0.29	0.14	B	0.14	0.67	B	0.16	0.36	B	0.16
Copper	mg/Kg	29.8	J	0.62	32.7	J	0.61	1.4	J	0.3	26.9	J	0.35	4.3	J	0.34
Iron	mg/Kg	12100	J	5.1	9290	J	5.1	344	J	2.5	3160	J	2.9	616	J	2.8
Lead	mg/Kg	133	J	0.49	150	J	0.49	4.5	J	0.24	73.4	J	0.28	9.8	J	0.27
Magnesium	mg/Kg	371	J	5.1	406	J	5	27	B	2.5	263	B	2.9	43	B	2.8
Manganese	mg/Kg	26.4	J	0.082	19.9	J	0.082	3.8		0.04	11.2		0.047	2.8	B	0.045
Mercury	mg/Kg	0.35	J	0.1	0.36	J	0.1	0.13		0.039	0.093	B	0.059	0.041	U	0.041
Nickel	mg/Kg	9.2	J	0.41	9.9	J	0.41	0.8	B	0.2	3.7	B	0.23	1.7	B	0.22
Potassium	mg/Kg	194	J	16.5	213	J	16.4	19.3	B	8.1	105	B	9.4	30.3	B	9
Selenium	mg/Kg	2.8	J	1.2	3.4	J	1.2	0.61	UJ	0.61	0.94	J	0.7	0.67	UJ	0.67
Silver	mg/Kg	0.33	UJ	0.33	0.33	UJ	0.33	0.16	U	0.16	0.19	U	0.19	0.18	U	0.18
Sodium	mg/Kg	132	J	125	124	UJ	124	142	B	61.5	103	B	71.5	134	B	68.1
Thallium	mg/Kg	0.99	UJ	0.99	0.98	UJ	0.98	0.48	UJ	0.48	0.56	UJ	0.56	0.54	UJ	0.54
Vanadium	mg/Kg	33.3	J	0.29	31.8	J	0.29	1.4	B	0.14	15.2		0.16	3.6	B	0.16
Zinc	mg/Kg	46	J	0.45	46	J	0.45	3.1	B	0.22	21.4	J	0.26	8.4	J	0.25
Cyanide	mg/Kg	1.1	J	0.051	1	J	0.055	0.028	U	0.028	0.11	B	0.029	0.036	B	0.03

Table checked by: D. Dugan Date: 1/8/04

Table E-4 (d)
Summary of Validated Data
Inorganics
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Sediment

Parameter	Units	Sample Point SD03-06 Date Sampled: 9/22/2003 Lab ID: 84102 % Solids: 23.7			Sample Point SD03-24 Date Sampled: 9/22/2003 Lab ID: 84101 % Solids: 53.8			Sample Point SD04-06 Date Sampled: 9/23/2003 Lab ID: 84103 % Solids: 20.3			Sample Point SD04-24 Date Sampled: 9/23/2003 Lab ID: 84104 %Solids: 17.6			Sample Point Date Sampled: Lab ID: %Solids:		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
Aluminum	mg/Kg	7540	J	58.7	1840		24.9	5570	J	64.1	6580	J	75.3			
Antimony	mg/Kg	1.6	UJ	1.6	0.68	U	0.68	1.8	J	1.7	2.1	UJ	2.1			
Arsenic	mg/Kg	1.8	UJ	1.8	0.75	U	0.75	8.6	J	1.9	2.3	UJ	2.3			
Barium	mg/Kg	111	J	0.25	26.3	B	0.11	116	J	0.28	76.4	J	0.33			
Beryllium	mg/Kg	1.1	J	0.17	0.23	B	0.071	0.51	J	0.18	0.89	J	0.22			
Cadmium	mg/Kg	0.37	J	0.25	0.11	U	0.11	0.28	UJ	0.28	0.33	UJ	0.33			
Calcium	mg/Kg	1740	J	15.4	440	B	6.5	2780	J	16.9	3050	J	19.8			
Chromium	mg/Kg	8.3	J	0.84	2.1	B	0.36	12.4	J	0.92	13.3	J	1.1			
Cobalt	mg/Kg	2.1	J	0.68	0.29	U	0.29	0.98	J	0.74	1	J	0.87			
Copper	mg/Kg	10.4	J	1.1	3	B	0.47	150	J	1.2	31.4	J	1.4			
Iron	mg/Kg	2750	J	17.3	632		7.3	6860	J	18.9	6820	J	22.2			
Lead	mg/Kg	54.5	J	0.93	13.1		0.39	165	J	1	26.6	J	1.2			
Magnesium	mg/Kg	539	J	10.5	121	B	4.4	424	J	11.4	298	J	13.4			
Manganese	mg/Kg	22.8	J	0.34	4.8	B	0.14	17	J	0.37	16.1	J	0.43			
Mercury	mg/Kg	0.2	UJ	0.2	0.066	U	0.066	0.48	J	0.21	0.22	UJ	0.22			
Nickel	mg/Kg	9.5	J	0.84	2	B	0.36	5.8	J	0.92	6.5	J	1.1			
Potassium	mg/Kg	441	J	47.3	145	B	20.1	512	J	51.7	400	J	60.7			
Selenium	mg/Kg	2.1	UJ	2.1	0.89	U	0.89	3.2	J	2.3	5.9	J	2.7			
Silver	mg/Kg	0.76	UJ	0.76	0.32	U	0.32	0.83	UJ	0.83	0.97	UJ	0.97			
Sodium	mg/Kg	920	J	233	111	B	98.6	2270	J	254	2090	J	298			
Thallium	mg/Kg	3.1	UJ	3.1	1.3	U	1.3	3.4	UJ	3.4	4	UJ	4			
Vanadium	mg/Kg	16	J	0.84	3.6	B	0.36	36.7	J	0.92	23.9	J	1.1			
Zinc	mg/Kg	57.2	J	0.93	12.5		0.39	54.8	J	1	107	J	1.2			
Cyanide	mg/Kg	0.21	J	0.084	0.17	B	0.037	0.16	J	0.099	0.29	J	0.11			

Table checked by: D. Dugan Date: 1/8/04

Table E-4 (e)
Summary of Validated Data
Conventional Parameters
Remedial Investigation
Lightman Drum Company Site
Winslow Township, NJ

Matrix: Sediment

Parameter	Units	Sample Point SD03-06 Date Sampled: 9/22/2003 Lab ID: 84102 % Solids: 23.7			Sample Point SD03-24 Date Sampled: 9/22/2003 Lab ID: 84101 % Solids: 53.8			Sample Point SD04-06 Date Sampled: 9/23/2003 Lab ID: 84103 % Solids: 20.3			Sample Point SD04-24 Date Sampled: 9/23/2003 Lab ID: 84104 %Solids: 17.6			Sample Point Date Sampled: Lab ID: %Solids:		
		Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL	Result	Qual	MDL
TOC	mg/Kg	144000	J	2.5	11800		2.5	279000	J	2.5	283000	J	2.5			

Table checked by: D. Dugan Date: 1/8/04

Notes: RL = Method Detection Limit (MDL)