U.S. Environmental Protection Agency

Anniston PCB Site Operable Unit 3
Baseline Risk Assessment
Anniston, Alabama

Contract No. 68-S7-03-04
Task Order No. 0023

January 2008

Revised Final
Human Health Baseline Risk Assessment Report

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January 14, 2008

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Project: Contract No. : 68-57-03-04
Task Order No. : 0023

Subject: Revised Final Report - Anniston OU 3 Human Health Risk Assessment

Dear Ms. Scully:

CDM FEDERAL PROGRAMS CORPORATION (CDM) is pleased to submit 10 copies of the above referenced document, along with 10 CDs containing the report in a PDF format. Comments received on December 13, 2007 on the November 2007 Final Human Health Baseline Risk Assessment have been resolved and addressed as discussed in follow-up conference calls with EPA and PRP representatives.

CDM is pleased to assist EPA with this assignment, and we look forward to providing further technical assistance on this project. If you have any questions concerning the attached, please call me at (404) 720-1324.

Sincerely yours,

CDM Federal Programs Corporation

Tony Isolda
Project Manager

Attachment

cc: Rob Stern, EPA Project Officer (letter only)
Gary Clemons, CDM (letter only)
Jim LaVelle, CDM (1 copy)
Project File (Atlanta) (1 copy)

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HUMAN HEALTH
BASELINE RISK ASSESSMENT REPORT

FOR
ANNISTON PCB SITE OPERABLE UNIT 3
ANNISTON, ALABAMA

January 2008

TASK ORDER NO. 0023

Prepared for:
U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA, GEORGIA

Prepared by:
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FOR
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ANNISTON, ALABAMA

January 2008

TASK ORDER NO. 0023

Prepared for:
U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 4

Prepared By: James M. LaVelle, Ph.D PA Date: 1/14/08
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Acronyms and Abbreviations

ADD	average daily dose
ADEM	Alabama Department of Environmental Management
amsl	above mean sea level
bgs	below ground surface
CDM	CDM Federal Programs Corporation
cm^2	square centimeters
COPC	chemical of potential concern
CS	confirmatory sampling
CSF	cancer slope factor
CSM	conceptual site model
CTE	central tendency exposure
ELCR	excess lifetime cancer risk
EPA	U.S. Environmental Protection Agency
EPC	exposure point concentration
FS	Feasibility Study
gpm	gallons per minute
HEAST	Health Effects Assessment Summary Tables
HHRA	human health risk assessment
HI	hazard index
HQ	hazard quotient
IRIS	Integrated Risk Information System
KM	Kaplan-Meier
L	liter
L/hour	liters per hour
LADD	lifetime average daily dose
m^3	cubic meters
mg/L	milligrams per liter
mg/m^3	milligrams per cubic meter
MLE	maximum likelihood estimation
m/s	meter per second
MS	matrix spike
MSD	matrix spike duplicate
mg/kg	milligram per kilogram
NCEA	National Center for Environmental Assessment
ND	non-detect
ng/m^3	nanograms per cubic meter
NIOSH	National Institute of Occupational Safety and Health
NOAEL	no-observed-adverse-effect-level
OLBSI	Old Limestone Bed Surface Impoundment
O&M	operations and maintenance
OSHA	Occupational Health and Safety Agency

OSWER	Office of Solid Waste and Emergency Response
OU	operable unit
PAH	polycyclic aromatic hydrocarbon
PAR	Pathway Analysis Report
PCB	polychlorinated biphenyl
PEF	particulate emission factor
PNCB	para-nitrochlorobenzene
PNP	4-nitrophenol
PPRTVs	EPA's Provisional Peer Reviewed Toxicity Values
PQL	practical quantitation limit
PRG	Preliminary Remediation Goal
PRP	potentially responsible party
PUF	polyurethane foam
QA	quality assurance
QC	quality control
RAGS	Risk Assessment Guidance for Superfund
RCRA	Resource Conservation and Recovery Act
RfC	reference concentration
RfD	reference dose
RFI	RCRA Facility Investigation
RI	remedial investigation
RL	reporting limit
RME	reasonable maximum exposure
ROS	regression on order statistics
STSC	Superfund Health Risk Technical Support Center
SVOC	semi-volatile organics
TAL	Target Analyte List
TCL	Target Compound List
TEF	toxic equivalency factor
TEQ	toxic equivalents
UCL	upper confidence limit
UPLs	upper prediction limits
VOC	volatile organic compounds
WHO	World Health Organization
WMA	waste management area
XAD	Hydrophobic Polyaromatic resin

Executive Summary

CDM was tasked by the U.S. Environmental Protection Agency (EPA) through Task Order No. 023 to perform a baseline human health risk assessment for the Anniston Polychlorinated Biphenyl (PCB) Site (herein after referred to as "the Site". As used in this report, the Site refers to the area where hazardous substances including PCBs associated with releases or discharges as a result of the operations, including waste disposal, of the Anniston Plant by Solutia Inc. (Solutia), Monsanto Chemical Company (Monsanto) and their predecessors have come to be located.

To best manage the cleanup and study of PCBs in the Anniston area, site management activities were initially divided among four operable units (OUs): OU-1, Anniston residential properties; OU-2, Anniston non-residential properties: OU-3, the former Monsanto PCB plant and landfills; and OU-4, the length of Choccolocco Creek and its floodplain from the confluence with Snow Creek including the backwater area and upstream on Snow Creek to Highway 78 to Lake Logan Martin. However, it was later determined that OU-1 and OU-2 could be combined into a single OU based on their geographic similarity and land use. This document concerns OU-3, the former Monsanto PCB plant and landfills. The term of OU-3 in this report refers to Solutia Inc.'s Anniston Plant Site, the closed South Landfill and the closed West End Landfill.

This Human Health Risk Assessment (HHRA) was developed to characterize the exposure setting and receptor characteristics for OU-3 and estimate ranges of risks to people exposed at OU-3. Screening-level risk estimates are also included for some exposure pathways for residents living near the Anniston Plant.

Overview of the Human Health Risk Assessment

The approach to developing the HHRA for OU-3 followed EPA guidelines for conducting an HHRA, with modifications made to accommodate conditions at OU-3. In planning for the HHRA, CDM reviewed available information obtained from the Resource Conservation and Recovery Act (RCRA) facility Investigation and Confirmatory Sampling (RFI/CS) Report (Solutia 2002), the Supplemental RFI (Golder 2003), and the Preliminary Site Characterization Summary (PSCS) Report (Solutia 2005). These data were collected as part of the PSCS and provide the basis for estimating potential exposure concentrations for chemicals of potential concern (COPCs) at and near OU-3.

Based on data collected during the RFI/CS, RI/Feasibility Study (FS), and post-closure groundwater monitoring, the HHRA identifies COPCs associated with historical releases at OU-3, evaluates potential exposure pathways by which people may contact COPCs, identifies appropriate toxicity criteria for use in quantifying potential risks, and characterizes potential cancer risks and non-cancer hazards associated with possible current and future exposure to COPCs. Uncertainties in the risk assessment process are discussed to provide an appropriate perspective for interpreting and using the results of the quantitative analysis.

Areas of Potential Concern

Areas of potential concern identified in the HHRA include the Facility Area portion of OU-3, the South Landfill, the West End Landfill, areas downgradient where COPCs in groundwater may have migrated in the shallow residuum, and adjacent properties. These areas are of concern because people could be exposed in each of these areas, either currently or in the future. A brief description of each area of potential concern follows.

Facility Area— The Facility Area encompasses buildings and paved parking lots, as well as grass, gravel and concrete covered areas. Many potential areas of concern have been covered with pavement, gravel or concrete, and grassed areas have previously been remediated.

South Landfill— The South Landfill is currently enclosed with fencing, limiting access, and capped with vegetation, precluding exposure to landfill contents. However, if the fence and/or cap is not maintained or should be disturbed in the future, exposures could occur.

West End Landfill— The West End Landfill is currently enclosed with fencing, limiting access, and capped, precluding exposure to landfill contents. However, if the fencing and/or RCRA compliant cap is not maintained or should be disturbed in the future, exposures could occur.

Downgradient Groundwater—Contaminants from source areas at OU-3 have migrated to the shallow residuum. These contaminants may have migrated downgradient of OU-3.

Adjacent Properties—Contaminants from source areas at OU-3 may migrate to adjacent properties via ambient air.

Potentially Exposed Populations

Information obtained from the Solutia Inc., and Pharmacia Corporation's *Preliminary Site Characterization Summary Report on Operable* Unit 3 (Solutia 2005) indicates OU-3 is largely occupied by buildings, parking lots, other areas some of which are actively used for industrial purposes, and impervious surfaces, making potential for contact with soil relatively low under current conditions.

The Preliminary Site Characterization Summary Report on Operable Unit 3 (Solutia 2005) also indicates area residents obtain water from the local water utility. The water utility obtains its water from Coldwater Spring which is located approximately five miles southwest (up gradient) of the manufacturing plant.

Based on the information above, in the HHRA, contaminants in surface soil, subsurface soil, ambient air and/or groundwater at OU-3 were quantitatively

evaluated for potential health threats to the following receptors:

Current and future land use:

(1) O&M workers (South Landfill, West End Landfill)
(2) Trespasser (South Landfill, West End Landfill)
(3) Construction workers (Facility Area)

Current land use:

(1) Operations area workers (Facility Area)
(2) O&M workers (Facility Area)
(3) Trespasser (Facility Area)
(4) Off-site residents (ambient air)

Future land use:

(1) Operations area workers (Facility Area)
(2) O&M workers (Facility Area)
(3) Trespasser (Facility Area)
(4) Operations area workers (groundwater)
(5) O&M workers (groundwater)
(6) Off-site residents (groundwater)

Exposure Pathways

Based on possible sources, receptors, and exposure pathways considering both current and potential future land use, the following exposure pathways were considered to be complete and are evaluated as part of the assessment of exposure to contaminants at OU-3. Some complete exposure pathways may not represent significant sources of human exposure. Pathways considered complete are presented below.

Current/Future Land Use

- O&M Worker (Adult)

  Surface soil (South Landfill, West End Landfill)
  - incidental ingestion
  - dermal contact

  Ambient air (South Landfill, West End Landfill)
  - inhalation of volatile chemicals

- Trespasser (Adolescent [7-16 years old])

  Surface soil (South Landfill, West End Landfill)
  - incidental ingestion
  - dermal contact

  Ambient air (South Landfill, West End Landfill)
  - inhalation of volatile chemicals

- Construction Worker (Adult)

  Surface and subsurface soil (Facility Area)
  - incidental ingestion
  - dermal contact

  Ambient air (Facility Area)
  - inhalation of volatile chemicals

Current Land Use

- Operations Area Worker (Adult)

  Surface soil (Facility Area)
  - incidental ingestion
  - dermal contact

  Ambient air (Facility Area)
  - inhalation of volatile chemicals

- O&M Worker (Adult)

  Surface soil (Facility Area)
  - incidental ingestion
  - dermal contact

  Ambient air (Facility Area)
  - inhalation of volatile chemicals

- Trespasser (Adolescent [7-16 years old])

  Surface soil (Facility Area)
  - incidental ingestion
  - dermal contact

  Ambient air (Facility Area)
  - inhalation of volatile chemicals

- Off-site Resident (Lifetime Resident and Young Child [0-6 years old])

  Ambient air
  - inhalation of volatile chemicals

Future Land Use

- Operations Area Worker (Adult)

  Surface soil (Facility Area)
  - incidental ingestion
  - dermal contact

Ambient air (Facility Area)
- inhalation of volatile chemicals

Groundwater (OU-3 private well)
- ingestion

- O&M Worker (Adult)

  Surface soil (Facility Area)
  - incidental ingestion
  - dermal contact

  Ambient air (Facility Area)
  - inhalation of volatile chemicals

  Groundwater (OU-3 private well)
  - ingestion

- Trespasser (Adolescent [7-16 years old])

  Surface soil (Facility Area)
  - incidental ingestion
  - dermal contact

  Ambient air (Facility Area)
  - inhalation of volatile chemicals

- Off-site Resident [Lifetime Resident and Young Child (0-6 years old)]

  Groundwater (OU-3 private well)
  - ingestion
  - dermal contact during showering and bathing
  - inhalation of volatile chemicals during showering and bathing

  Ambient air
  - inhalation of volatile chemicals

Exposure Assumptions

Exposure assumptions are used along with estimates for EPCs to estimate daily exposure to COPCs. Exposure assumptions were primarily taken from EPA documents (EPA 1989, 1991, 1992, 1997a, 2002a, 2004a) and from discussions with the EPA Region 4 risk assessor. EPA's standard default assumptions (EPA 1991) were used, where available. Otherwise professional judgment or values from the most recent guidance available were implemented unless EPA Region 4 has a known preference for a specific value. Reasonable maximum exposure (RME) and central tendency exposure (CTE) parameters were implemented, as well as site-specific exposure parameters for:

- exposed skin surface area;
- dermal absorption factor;
- soil adherence factor;
- intestinal absorption factor;
- soil ingestion rate; and
- exposure frequency.

Site-specific exposure parameters were obtained from the Solutia RFI/CS report (Solutia 2002). The basis and justification for these RCRA values are provided in the 2002 Solutia document.

Toxicity Assessment

Toxicity criteria used in this risk assessment were obtained from a variety of sources according to a hierarchy established in the Office of Solid Waste and Emergency Response (OSWER) Directive 9285.7-53 (EPA 2003). The toxicity value hierarchy is as follows:

- **Tier 1**—EPA's Integrated Risk Information System (IRIS).

- **Tier 2**—EPA's Provisional Peer Reviewed Toxicity Values (PPRTVs): The Office of Research and Development/National Center for Environmental Assessment (NCEA)/Superfund Health Risk Technical Support Center (STSC) develops PPRTVs on a chemical-specific basis when requested by EPA's Superfund program.

- **Tier 3**—Other Toxicity Values: Tier 3 includes additional EPA and non-EPA sources of toxicity information. Priority should be given to those sources of information that are the most current, the basis for which is transparent and publicly available, and which have been peer-reviewed.

Health criteria for chemicals exhibiting non-carcinogenic effects for use in risk assessment are generally EPA-derived reference doses (RfDs) and reference concentrations (RfCs). The RfD or RfC is an estimate of average daily exposure to an individual (including sensitive individuals) that is likely to be without appreciable risk of deleterious effects during a lifetime.

The carcinogenic potential of a chemical is expressed as a cancer slope factor (CSF) [in units of (mg/kg body weight-day)-1], which estimates the risk of cancer per unit dose. When a slope factor is multiplied by an estimate of lifetime average daily dose (ADD) of a potential carcinogen (in mg/kg body weight-day), the result is an estimate of the lifetime excess cancer risk associated with exposure at that dose.

Summary of Site Risks

Estimates of possible exposure were combined with toxicity criteria to provide estimates of cancer risks and noncancer hazards for the various human populations described above. Generally, cancer risks and non-cancer hazards for current and future workers within the Facility Area exceed EPA's thresholds, often by orders of magnitude. This conclusion generally holds for risk and hazard estimates developed

from default EPA exposure assumptions, and from site-specific assumptions used previously at the site. Even when site-specific information was used, risks and hazards remain elevated in the Facility Area for current/future construction workers; current trespassers; and future O&M workers and trespassers.

These estimates suggest that cancer risks for the site may be above the acceptable range as defined by EPA, due mainly to PCBs in soil and groundwater. These risks are associated with existing contamination in the Facility Area and are dependent on receptor behavior. For example, office workers at the site may receive little exposure and estimates of risk and hazards may be greatly overestimated for this population. On the other hand, risks may be more appropriately applied to workers that have opportunity for frequent contact with soil. Workers involved in outdoor maintenance, clean-up, sampling, and monitoring might fall into this category.

In contrast, risks and hazards are estimated to be at or below EPA thresholds for workers that frequent the South and West End Landfills currently and in the future, indicating that health threats for these exposure areas are minimal. Note, however, that the risk assessment did not evaluate a scenario where current landfill containment was compromised. The assessment assumes that landfill covers would remain intact as part of site remediation and closure activities.

Risks to future receptors exposed to groundwater exceeded acceptable cancer risk and non-cancer health hazard threshold, again by orders of magnitude, suggesting the potential for significant exposure if shallow groundwater were to be used for drinking. These risks and hazards would be realized only if wells are installed in the residuum at locations where they would draw water from the most contaminated part of existing plumes. Given the availability of municipal water supplies, installation of drinking water wells in such locations seems unlikely. However, risks are sufficiently high to suggest some consideration be given to ensuring the pathway remains incomplete indefinitely.

Cancer risks associated with exposure of off-site residents to PCB vapors in ambient air are low and may indicate that no unacceptable health threats currently exist. The highest risks for residents, which assume a worst case ambient air concentration of PCBs (2 in one million) is only slightly higher than the bottom of the EPA's risk range. Adjustment of air concentrations based on wind speed and direction would very likely lower estimated ambient air concentrations to the point where estimated risks would fall within the range considered negligible.

Finally, risks and hazards associated with trespassers in the landfill areas are low and suggest negligible risk and hazard. Current and future use of these areas by occasional visitors does not appear to be associated with significant health threats from exposure to PCBs and other site-related chemicals. However, risks and hazards associated with trespassers in the Facility Area are at the high end of or exceed acceptable cancer risk and the non-cancer health hazard threshold, suggesting significant exposure could occur if trespassing became common. Facility security appears to be sufficient to deter most or all trespassing currently.

Section 1
Introduction

CDM was tasked by the U.S. Environmental Protection Agency (EPA) through Task Order No. 023 to perform a baseline human health risk assessment for the Anniston Polychlorinated Biphenyl (PCB) Site (herein after referred to as "the Site"). As used in this report, the Site refers to the area where hazardous substances including PCBs associated with releases or discharges as a result of the operations, including waste disposal, of the Anniston Plant by Solutia Inc. (Solutia), Monsanto Chemical Company (Monsanto) and their predecessors have come to be located. The term of operable unit 3 (OU-3) in this report refers to Solutia Inc.'s Anniston Plant Site, the closed South Landfill and the closed West End Landfill. This Human Health Risk Assessment (HHRA) was developed to characterize the exposure setting and receptor characteristics for OU-3 and estimate ranges of risks to people exposed at OU-3. Screening-level risk estimates are also included for some exposure pathways for residents living near the Anniston Plant.

This HHRA has been developed from data collected during the Resource Conservation and Recovery Act (RCRA) Facility Investigation and Confirmatory Sampling (RFI/CS), the Remedial Investigation and Feasibility Study (RI/FS), and post-closure groundwater monitoring. These data are used to characterize potential for exposure to site-related chemicals.

Note that while state agencies or the federal Occupational Safety and Health Administration (OSHA) are typically responsible for risks to workers at a site, these organizations are primarily concerned with air exposures. OSHA does not have a validated method for assessing risk resulting from oral or dermal exposure to PCBs. Thus, the HHRA is a useful tool to estimate risk based on soil as the primary medium of exposure and provides an adjunct method of assessing total risk.

1.1 Overview of the Human Health Risk Assessment

The approach to developing the HHRA for OU-3 followed EPA guidelines for conducting an HHRA, with modifications made to accommodate conditions at OU-3. In planning for the HHRA, CDM reviewed available information obtained from the RFI/CS (Solutia 2002), the Supplemental RFI (Golder 2003), and the Preliminary Site Characterization Summary (PSCS) Report (Solutia 2005). These data were collected as part of the PSCS and provide the basis for estimating potential exposure concentrations for chemicals of potential concern (COPCs) at and near OU-3.

Based on data collected during the RFI/CS, RI/FS, and post-closure groundwater monitoring, the HHRA identifies COPCs associated with historical releases at OU-3, evaluates potential exposure pathways by which people may contact COPCs, identifies appropriate toxicity criteria for use in quantifying potential risks, and characterizes potential cancer risks and non-cancer hazards associated with possible current and future exposure to COPCs. Uncertainties in the risk assessment process

are discussed to provide an appropriate perspective for interpreting and using the results of the quantitative analysis.

The HHRA is developed in accordance with EPA guidance set forth in the following documents:

- Risk Assessment Guidance for Superfund: Human Health Evaluation Manual, Part A (EPA 1989).
- Risk Assessment Guidance for Superfund: Human Health Evaluation Manual, Part D (EPA 2001).
- Risk Assessment Guidance for Superfund: Human Health Evaluation Manual, Part E, Supplemental Guidance for Dermal Risk Assessment. Final (EPA 2004a).
- Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites (EPA 2002a).
- ProUCL Version 4.0 Users Guide (EPA 2007a).
- Exposure Factors Handbook, Volumes I, II, and III (EPA 1997a, with 1999 revisions).
- Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors (EPA 1991).
- Integrated Risk Information System (IRIS) (on-line database of toxicity information) (EPA 2007b).
- Human Health Toxicity Values in Superfund Risk Assessments (EPA 2003).
- Health Effects Assessment Summary Tables FY-1997 Annual (HEAST) (EPA 1997b).
- National Center for Environmental Assessment (NCEA) (EPA agency, additional toxicity information not found in IRIS or HEAST and updates for the HEAST values).

Exposure pathways and receptors, exposure variables, toxicity values, and risks are presented in tabular form in accordance with the standard tables of *Risk Assessment Guidance for Superfund (RAGS) Part D* (EPA 2001).

1.2 HHRA Contents

This HHRA is composed of eight sections:

Section 1 – Introduction

Section 2 - Site Background and Setting - briefly describes the site background

Section 3 - Hazard Identification - describes soil, fugitive dust, groundwater and ambient air datasets

Section 4 - Exposure Assessment - identifies receptors and potential exposure pathways, including exposure variables and means of calculating the exposure point concentrations (EPCs) from site data

Section 5 - Toxicity Assessment – discusses the relevant toxicity information for the identified COPCs

Section 6 - Risk Characterization - identifies the total estimated cancer risks and non-cancer health hazards for each of the receptors and discusses the uncertainties associated with the risk estimates

Section 7 - Summary and Conclusions- provides a brief overview of the methodologies and results of the risk assessment

Section 8 - References - contains the report references

The following appendices are also included in the report:

- Attachment A provides lists of the samples included in the risk assessment and figures showing the locations of those samples.
- Attachment B includes the results of the risk calculations using reasonable maximum exposure (RME) assumptions.
- Attachment C presents statistics (output from ProUCL Version 4.0 software) for COPC chemical data that were used in the development of exposure point concentrations (EPCs).
- Attachment D lists assumptions used in the Schaum et al. (1994) model to estimate indoor air concentrations of volatile organic compounds (VOCs) from groundwater while showering.
- Attachment E presents the results of the risk calculations using central tendency exposure (CTE) assumptions.
- Attachment F presents the results of the risk calculations using site-specific assumptions provided by the potentially responsible party (PRP).

Section 2
Site Background and Setting

2.1 Site Location and Description

The Site is located in Calhoun County in the north-central part of Alabama **(Figure 2-1).** The Site consists of the area where hazardous substances, including PCBs associated with releases or discharges as a result of the operations, including waste disposal, of the Anniston plant by Solutia, Inc. (Solutia), Monsanto Company, and their predecessors have come to be located. A RI is currently being conducted to evaluate the nature and extent of contamination in the Anniston area from the former Monsanto Company's PCB manufacturing plant and Solutia's current manufacturing plant. Today the former PCB plant property is owned by Solutia. Solutia currently produces polyphenyl compounds and blends and packages phosphate-ester based, non-flammable hydraulic fluids at the Anniston plant.

To better manage the cleanup and study of PCBs in the Anniston area, site management activities were initially divided among four OUs: OU-1, Anniston residential properties; OU-2, Anniston non-residential properties: OU-3, the former Monsanto PCB plant and landfills; and OU-4, the length of Choccolocco Creek and its floodplain from the confluence with Snow Creek including the backwater area and upstream on Snow Creek to Highway 78 to Lake Logan Martin. However, it was later determined that OU-1 and OU-2 could be combined into a single OU based on their geographic similarity and land use. This document concerns OU-3, the former Monsanto PCB plant and landfills.

The Site has been evaluated extensively since 1980. Environmental work has included a combination of investigative and remedial efforts conducted pursuant to a variety of environmental permits. The environmental response efforts under the RCRA included the general areas of the Solutia manufacturing plant, which were termed the "on-site" area; and areas downstream of the Solutia manufacturing plant, termed the "off-site" area. The on-site area is geographically similar to the OU-3 area, which includes the manufacturing plant and the South and West End landfills. The borders of OU-3 depicted in **Figure 2-2**, are the railway to the north, the South Landfill to the south, Clydesdale Avenue to the east, and First Avenue to the west. Contaminated groundwater that originates from sources at the manufacturing plant and has migrated beyond the physical boundaries of OU-3 described above are also included in the characterization of OU-3.

2.2 Site History

A thorough discussion of the manufacturing history at this site was included in the RCRA RFI/CS Work Plan for the Anniston, Alabama, Facility (Golder 1997). As reported therein, manufacturing operations began in 1917 with the production of ferro-manganese, ferro-silicon, ferro-phosphorous compounds, and, later, phosphoric acid by the Southern Manganese Corporation. In 1927, the production of organic chemicals began with the introduction of biphenyl, which remains a major product today. In 1930, Southern Manganese Corporation became Swann Chemical Company

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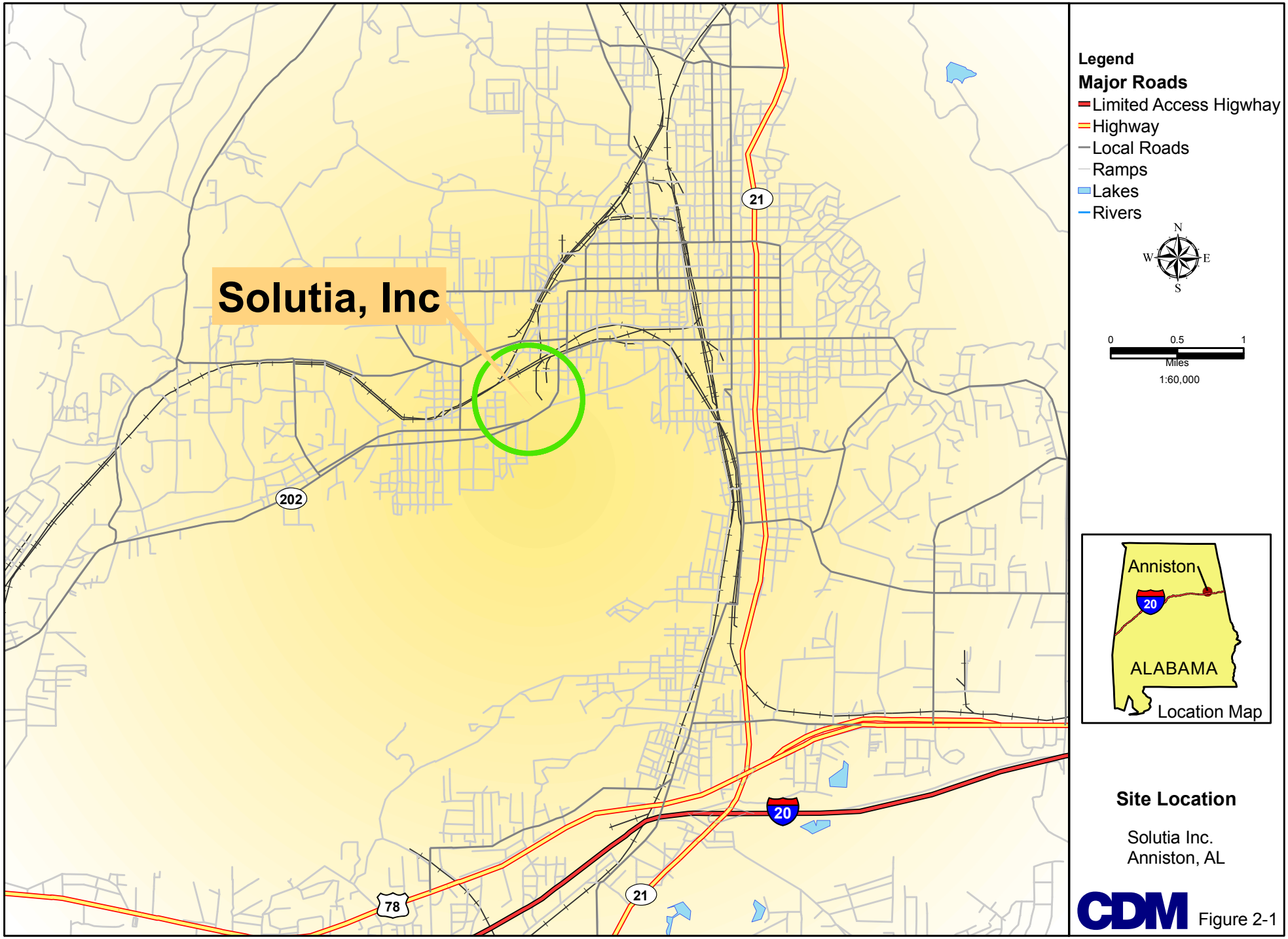

Site Location

Solutia Inc.
Anniston, AL

CDM

Figure 2-1

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Legend

OU-3

RR Track

N

W E

S

0 125 250 500

Feet

1:6,046

Site Map

Solutia Inc.
Anniston, AL

CDM Figure 2-2

(Swann); in May 1935, Monsanto purchased Swann. Monsanto created Solutia, the present owner, as a spin-off in 1997. A variety of organic and inorganic chemicals, including PCBs, parathion, phosphorus pentasulfide, and 4-nitrophenol (PNP), have been produced during the plant's operational history. Production of PNP was discontinued in 2004. The plant currently manufactures polyphenyl compounds (utilized in a variety of heat transfer fluid, plasticizer, and lubricant applications) and blends and packages phosphate-ester based, non-flammable hydraulic fluids primarily used in the aviation industry. These compounds have been produced for many years using the same raw materials and intermediates, even though there have been several expansions and process modifications.

A summary description of the various manufacturing and associated support processes is provided below.

- Phosphate ester-based Hydraulic Fluids (2006 to present) – Phosphate esters (e.g., tributyl phosphate) are blended to produce non-flammable hydraulic fluids.
- Polyphenyl Production (1927 to present)—Polyphenyls are manufactured from benzene and cumene (isopropyl benzene) in a continuous pyrolysis unit. The crude product is separated into various polyphenyl products including Santotar®.
- 4-Nitrophenol Production (1965 to 2004)—4-Nitrophenol was manufactured by the hydrolysis of para-nitrochlorobenzene (PNCB). PNCB and sodium hydroxide are reacted and acidified with sulfuric acid before the product is filtered and dried.
- Therminol® Production (1983 to Present)—Therminol® is produced from polyethylbenzene. Distillation residues (Therminol® ends) are managed in a totally enclosed treatment facility. The ends are blended with Santotar® and burned as a non-hazardous back-up fuel in the plant's boiler.
- Parathion and Methyl Parathion Production (1957 to 1986)—Parathion (or Niran®) and methyl parathion were produced on a seasonal basis. These materials were produced by reacting ethanol or methanol with phosphorus pentasulfide to form "thio acid." The thio acid was stripped, chlorinated and then distilled to produce an intermediate. The intermediate was either sold or reacted with acetone, 4-nitrophenol, and soda ash to produce crude parathion. Wet acetone from the operation was recovered in a solvent recovery system. The residue from the distillation of the chlorinated thio acid was recycled to a crystallizer. The filtrate was returned to the parathion process, and sulfur waste was returned to the production process or landfilled.
- Phosphorus Pentasulfide Production (1967 to 1988)—Phosphorus pentasulfide was produced by reacting elemental sulfur and phosphorus. The resulting phosphorus pentasulfide was drummed for sale or used in the parathion process.
- PCB Production (late 1929 to 1971)—PCBs were produced by reacting chlorine and biphenyl. Chlorine was produced between 1952 and 1969 solely for this purpose.

2.3 Site Historical Waste Disposal Practices

Multiple areas of OU-3 were used as disposal areas for process wastes.

West End Landfill

The West End Landfill is located along the western boundary of the Facility and operated as a single cell from approximately 1930 to approximately 1960, receiving production wastes and general trash from the facility. A multi-media cap was constructed over the landfill, and the area surrounding the landfill was covered with soil.

South Landfill and WMA-I

The South Landfill consisted of 10 individual cells from 1960 to 1988. Production wastes, demolition materials and trash from the Facility were disposed of in this landfill. This landfill was closed in 1989 with compacted soil and a vegetative layer. Also located within the South Landfill was one of two hazardous waste management areas (WMAs). WMA-I consisted of two cells, cells 4E and 5E, which were closed with a RCRA compliant cap in 1989. The remaining cells in the South Landfill were covered with compacted soil and a vegetative layer.

In 1997 and 1998, additional interim remedial measures were constructed on the western cells of the South Landfill and included cap and surface water management system upgrades.

OLBSI and WMA-II

The Old Limestone Bed Surface Impoundment (OLBSI) received acidic wastewater from the parathion intermediates operation from approximately 1960 to 1977. WMA-II consisted of a limestone bed, storage area and sump, and was used to partially neutralize acidic wastewaters generated by the parathion intermediates operation prior to biological treatment in the Facility's wastewater treatment plant from 1977 to 1988.

Phosphoric Acid Basins

The North and South Phosphoric Acid Basins were located along the eastern border of the Facility. Both basins were unlined impoundments with limestone beds where acidic wastewaters from the former parathion, PCB and phosphoric production areas were neutralized.

Former Phosphate "Landfill"

This area was not actually used as a landfill, but as a staging area and a basin for treatment of acidic wastewater. The area also coincides with the location of a neutralization basin, which operated as a part of the parathion production process.

This basin received acidic wastewater from the scrubber system of the Sulfur Incinerator which was used to burn residues from intermediates of the parathion production process. The effluent from the neutralization basin was discharged through the plant sewer system to the Phosphoric Acid Basins. The area is currently covered by gravel.

Substantial remediation has been performed at OU-3 during the recent operating history of the plant. Some of these activities are important for risk assessment associated with existing site conditions, including:

Former Parathion Production Area -- soils in the immediate vicinity of the former plant buildings were excavated to a maximum depth of 20 feet below ground surface (bgs);

Former Phosphorus Production Area -- after decommissioning, areas not already covered by concrete were covered with gravel;

Phosphoric Acid Basins -- the South Basin was excavated to a depth of approximately 10 to 12 feet bgs, and the North Basin, was excavated to a depth of 0-3 feet bgs.

Additionally, the property on which the manufacturing plant is located (including the landfills) is encumbered by a legal deed restriction. The deed restriction ensures that there will be no future residential development or any on-site use of groundwater for industrial, potable, or irrigation purposes.

2.4 Land Use

2.4.1 Site Topography and Land Use

The following descriptions were obtained from the Solutia Inc., and Pharmacia Corporation's *Preliminary Site Characterization Summary Report on Operable Unit 3* (Solutia 2005).

Approximately 90 percent of Calhoun County, including the Facility, lies within the Valley and Ridge physiographic province. The geology of this area is characterized by fold and thrust faulting, with the dominant structural features being the numerous thrust faults. The Facility is located in the Weisner Ridges subsection of the Valley and Ridge province, which consists of maturely dissected, faulted and folded quartzite mountains of high relief with intervening carbonate valleys.

Topography in the area is characterized by flat to gently rolling, northeastward trending valleys that are paralleled by ridges and mountains. The highest point at the Facility, at approximately 940 feet above mean sea level (amsl), is near the southern property line. The ground surface declines rapidly across the South Landfill (moving south to north) and then slopes gently to the north across the rest of the Facility.

The manufacturing plant itself is largely occupied by buildings, parking lots, other areas actively used for industrial purposes, and impervious surfaces. Impervious surfaces (buildings, roads, parking lots, and concrete or asphalt surfaces) make up approximately 12% of the total area of OU-3. Other types of engineered covers, such as gravel or engineered landfill covers, occupy much of the remaining area (55% of the total area). Only 33% of the OU-3 area can be considered to have no existing soil cover. Some of these portions of the property have not been used previously for chemical manufacturing.

The property on which the manufacturing plant is located (including the landfills) is encumbered by a legal deed restriction. The deed restriction ensures that there will be no future residential development or any use of on-site groundwater for industrial, potable, or irrigation purposes.

2.4.2 Hydrology and Groundwater Use

Information pertaining to hydrology and groundwater was taken from the *Preliminary Site Characterization Summary Report on Operable Unit 3* (Solutia 2005).

2.4.2.1 Regional Hydrogeology

The stratigraphic and structural relationships of the rocks throughout most of Calhoun County are typical of the Valley and Ridge physiographic province of the southern Appalachian Highlands. Rocks that range in age from Cambrian to Pennsylvanian have been sharply folded into northeast trending anticlines and synclines that are complicated by thrust faults. The thrust faults are the dominant structural features of the Valley and Ridge province and cause the repetition of the geologic units on the surface. Secondary stresses caused numerous high-angle faults of more limited extent.

This faulting, folding, and crushing of rock units has caused the sometimes chaotic surficial distribution of formations in the County, including portions underlying the Facility. Nine consolidated units ("bedrock" units, including the Shady Dolomite) and the overlying residuum are considered significant water-bearing units in Calhoun County. Although vertical conductivity in these units varies, there is no readily identifiable regional confining layer or layers to isolate the units into separate systems. Groundwater occurs in a variety of hydrogeologic environments. The majority of the water-bearing units in the area are carbonate rocks. Typically, these carbonate units yield only enough water for individual domestic use. Regional groundwater flow is controlled by topography and the transmissivity of the units and geologic structure of the underlying formations. The Shady Dolomite Formation is present along the lower slopes of Coldwater Mountain in the vicinity of the Facility. This formation is approximately 500 feet thick and consists of bluish-gray or pale-yellowish gray, thick-bedded, dolomite with chert. The Shady Dolomite is considered a good aquifer in Calhoun County, and wells developed in this aquifer supply enough water for municipal or industrial uses.

Lesser quantities of groundwater are obtained from sandstone, shale, mudstone, and quartzite units present in the County. These groundwater sources can be sufficient for domestic uses; however, it is difficult to obtain sufficient amounts of groundwater from these sources for municipal or industrial uses. The groundwater yield from these rocks is controlled by fracture orientation, grain size, grain distribution, and secondary permeability.

Minor amounts of groundwater are obtained from the metamorphic rocks in the extreme eastern and southeastern parts of the County. These minor systems are associated with the Piedmont province and usually supply only enough water for light domestic use.

Approximately 150 springs have been identified and located in the County during studies of the area. The discharge of these springs is variable, ranging from less than 1 gallon per minute (gpm) to over 17,000 gpm. Many of these springs are found along the trace of thrust faults and produce enough water for domestic uses and, in some instances, for municipal supply. It is estimated that 80 percent of these springs are used for domestic, farm, stock, municipal, industrial, or recreational water supplies.

One major spring in the Anniston area is Coldwater Spring. Coldwater Spring is located approximately five miles southwest (upgradient) of the Facility. The spring is the primary water source for the cities of Anniston, Fort McClellan, Anniston Ordnance Depot, and other municipalities and communities within Calhoun County. Although the hydrogeology of the spring is not well understood, it is believed that the spring discharges from the brecciated zones of the Jacksonville Fault (Warman and Causey, 1962; Scott, *et al*., 1987). The Jacksonville Fault surface trace lays approximately 1/4-mile north of the northern boundary of OU-3. The fault is projected to have dipped below the Facility; however, evidence of the fault was not encountered in the deepest Facility boring at over 950 feet bgs. Groundwater at the Facility predominantly flows laterally, although a downward gradient exists. The fault, and hence the spring, are consequently protected by the predominant lateral flow and by over 950 feet of soil and rock (approximately 100 feet of low permeability residuum followed by the Shady Dolomite Formation).

2.4.2.2 OU-3 Hydrogeology

As reported in the RFI/CS Report (Solutia 2002), investigations conducted at the Facility have determined that the near-surface site geology consists of two water-bearing zones; the residuum and the Shady Dolomite. The residuum consists of low permeability silts and clays that are the products of weathering. Locally, the residuum extends to a depth of over 100 feet and acts as a semi-confining unit to the underlying Shady Dolomite. Water levels in the residuum reflect recent and seasonal variations in precipitation. The quality of groundwater in the residuum is variable and reflects surface and near-surface conditions.

Groundwater within the residuum generally occurs under unconfined (water table) conditions. Typically, the water table surface is a reflection of the ground surface and shallow groundwater flow follows topography. The predominant lateral groundwater flow direction within the residuum is to the north. This flow direction is a result of a relatively steep gradient that exists across the northern face of Coldwater Mountain, trending into a much flatter gradient across the production area of the Facility.

There is a distinct northeast component of flow in the shallow residuum in the northeast portion of the Facility. However, there is a northwest component of flow in the deep residuum. This general northwest component of flow is also present in the shallow residuum along the northern plant boundary in the vicinity of the OLBSI Corrective Action System.

The shallow groundwater is influenced by anthropogenic features such as backfilled excavations, caps, etc., which produce variable hydraulic conductivities and groundwater recharge rates. Also, three groundwater extraction systems (the South Landfill Corrective Action System, the Plant Corrective Action System, and the OLBSI Corrective Action System) influence the groundwater flow patterns in localized areas of the Facility.

The deep residuum is characterized by the same silty clay materials as the shallow residuum. However, there are localized areas within the deep residuum consisting of dense clay with little or no secondary permeability, particularly in the northern portion of the Facility. Locally, these areas could act as groundwater flow barriers.

2.4.2.3 Groundwater Use

Within one mile of the Site, eleven wells were identified on four commercial properties. Ten of these wells were determined to be monitoring/observation wells, and one, located at The Union Foundry property, was identified as being used for process water. The Union Foundry is well outside any areas of groundwater impact associated with OU-3. No potable water wells have been identified in the area.

Section 3
Hazard Identification

This section was developed to identify potential areas of concern; summarize available soil, groundwater and air data for use in the characterization; select COPCs; and discuss the calculation of EPCs.

3.1 Areas of Potential Concern

Areas of potential concern include the Facility Area portion of OU-3, the South Landfill, the West End Landfill, areas downgradient where COPCs in groundwater may have migrated in the shallow residuum, and adjacent properties. These areas are of concern because people could be exposed in each of these areas, either currently or in the future. A brief description of each area of potential concern follows.

Facility Area—The Facility Area encompasses buildings and paved parking lots, as well as grass, gravel and concrete covered areas. Many potential areas of concern have been covered with pavement, gravel or concrete, and grassed areas have previously been remediated.

South Landfill— The South Landfill is currently enclosed with fencing, limiting access, and capped with vegetation, precluding exposure to landfill contents. However, if the fence and/or cap is not maintained or should be disturbed in the future, exposures could occur.

West End Landfill— The West End Landfill is currently enclosed with fencing, limiting access, and capped, precluding exposure to landfill contents. However, if the fencing and/or RCRA compliant cap is not maintained or should be disturbed in the future, exposures could occur.

Downgradient Groundwater—Contaminants from source areas at OU-3 have migrated to the shallow residuum. These contaminants may have migrated downgradient of OU-3.

Adjacent Properties—Contaminants from source areas at OU-3 may migrate to adjacent properties via ambient air.

3.2 Data Summary

OU-3 investigations included collection and analysis of samples from surface soil, subsurface soil, groundwater and air. Details of the investigations and sample analyses are summarized below. Appendix A provides tables summarizing the samples collected from each medium and the date of collection, as well as figures showing the sample locations. Soil sampling locations are shown on Figure A-1; groundwater sampling locations are shown on Figure A-2; and air sampling locations are shown on Figure A-3.

As much as possible, this risk assessment attempts to account for any cleanup activities that have been completed since data collection. The focus of the risk assessment is on evaluation of current and potential future site conditions.

3.2.1 Surface Soil

Surface soil samples from 47 locations were collected during the RFI, the supplemental RFI, and the PSCS. Surface soil samples were collected from varying depth intervals. For purposes of this characterization, all samples with a sampling depth beginning within six inches of ground surface were included in the surface soil data set. Of the 54 samples collected from 47 sample locations, all but one sample (collected from location SWMU-42) were analyzed for PCBs. The sample collected from location SWMU-42 was analyzed only for furans. In addition to PCBs, samples collected from SSR-01, SSR-02 and SSR-18 were analyzed for the COPC list extant at the time of the investigation (arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, manganese, mercury, nickel, vanadium, methyl parathion, parathion, tetraethyldithiopyrophosphate, 1,2-dichlorobenzene, 1,4-dichlorobenzene, 2,4,5-trichlorophenol, 2,4,6-trichlorophenol, 2,4-dichlorophenol, 4-nitrophenol, o,o,o-triethylphosphorothioate, phenol, pentachlorophenol, 1,1,2,2-tetrachloroethane, chlorobenzene, isopropylbenzene, and methlyene chloride). Samples collected from locations SSRI-04-06, SSRI-07-06 and SSRI-11-06 were analyzed for furans; dioxins; PCB congeners; organophosphorous pesticides; chlorinated pesticides; Target Analyte List (TAL) metals and cyanide; and Target Compound List (TCL) VOCs, semi-volatile organics (SVOCs) and pesticides, in addition to PCBs. Seven duplicate samples were collected from surface soil locations SSR-18, SSRI-04, SSRI-07, SSRI-11, SSRI-15,, SWMU-42 and SWMU-12-24A.

The list of the surface soil samples used in the risk assessment is provided in Table A-1. Surface soil data are divided into two data sets to address current and future land uses. As shown in Table A-1, at the South Landfill and West End Landfill, datasets used for this HHRA are the same for both current and future land-use scenarios. However, at the facility area, the datasets for current and future land-use scenarios are different. The dataset for the current land-use scenario does not include sample SSR-18, as the location is currently under a concrete cap, precluding exposure. The dataset for the future land-use scenario includes all soil samples, assuming the concrete cap might not be maintained or could be removed in the future. Sampling locations are shown on Figure A-1.

3.2.2 Subsurface Soil

An additional 34 subsurface soil samples were collected during the RFI/CS, and the RI/FS. Subsurface soil samples were collected from varying depth intervals. Any sample with a starting depth equal to or greater than six inches bgs was considered subsurface soil. Two samples were eliminated from this characterization because they were located in an area of the northern phosphoric acid basin (SSR-03) and the former parathion production area (SSR-16) that were subsequently excavated. One sample (SSR-10), collected below 12 feet bgs, is not evaluated in this assessment because the

construction worker scenario in the assessment assumed the excavation depth would not extend below 12 feet bgs. Of the remaining 31 samples, all were sampled for PCBs. Fifteen of the subsurface soil samples were additionally analyzed for the COPC list extant at the time of the investigation (arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, manganese, mercury, nickel, vanadium, methyl parathion, parathion, tetraethyldithiopyrophosphate, 1,2-dichlorobenzene, 1,4-dichlorobenzene, 2,4,5-trichlorophenol, 2,4,6-trichlorophenol, 2,4-dichlorophenol, 4-nitrophenol, o,o,o-triethylphosphorothioate, phenol, pentachlorophenol, 1,1,2,2-tetrachloroethane, chlorobenzene, isopropylbenzene, and methylene chloride). Three duplicate samples were collected from subsurface soil location SSR-15, SSRI-06 and SSRI-12.

Surface soil and subsurface soil datasets are combined into one current/future dataset for evaluating risks to construction workers who may come into contact with soil both at the surface and subsurface regardless of the presence of a concrete cap. If construction work were to take place either currently or in the future, the cap would be removed, exposing the construction worker to all soil. The list of the surface and subsurface soil samples used in the risk assessment is provided in Table A-2, and sampling locations are shown on Figure A-1.

Surface soil and subsurface soil datasets are combined and collectively referred to as "subsurface soil" for the remainder of the document for construction workers who may come into contact with soil both at the surface and at depth.

3.2.3 Groundwater

The groundwater data set consists of analytical results from samples from 38 monitoring wells. All samples were analyzed for PCBs. Additional analyses were performed on a subset of these wells. Results from the last two years of monitoring from each well were used to select COPCs. However, in keeping with Region 4 policy, only those wells within the portions of plumes with the highest chemical concentrations, defined as MW-07, MW-09A, MW-14, MW-15, MW-16, MW-20A, MW-21A, and T-4, were used to assess risk (CDM 2006). Therefore, not all groundwater COPCs are represented in the risk calculations.

Monitoring well MW-16 is installed in the deep residuum, while the remaining seven are installed in the shallow residuum. All of these wells were, however, grouped for purposes of evaluating potential risks and hazards. This approach assumes that a well installed in the future could be screened across both units. The list of the groundwater samples used in the risk assessment is provided in Table A-3, however, only the most contaminated well from the plume area was assessed for risk to future receptors. Well locations are shown in Figure A-2.

3.2.4 Air

As reported in the *Preliminary Site Characterization Summary Report on Operable Unit 3* (Solutia 2005), field data and laboratory analytical data were collected. Field data included information necessary for the calculation of sampler air volumes, which are

then used to calculate ambient concentrations from the analytical results supplied by the laboratory. For each sample, ambient PCB concentrations were calculated for each sample by dividing chemical weight by sample volume, yielding an estimate of mass per unit volume in ambient air (nanograms per cubic meter [ng/m^3]). Calculations were made for each PCB congener class (mono through deca), and total PCBs were reported on a per sample basis by summing the values given for each of the ten congener classes. A value of zero was used to calculate total PCBs for the congener classes reported as non-detected. Meteorological monitoring data were collected at the same time as air samples.

Ambient air PCB results included in the risk characterization from the *Preliminary Site Characterization Summary Report on Operable Unit 3* (Solutia 2005) are summarized in Table A-4, and seven of the eight sampling locations are shown on Figure A-3. Sampling location 8-Far West is not shown on the figure, but is located off-site, approximately 550 meters west of sampling location 3-West.

Volatilization of PCBs and suspension of PCB containing particles may contribute to total PCBs in ambient air. To differentiate between vapor and particulate phases, 16 samples were collected at the Near East sample location and subjected to separate analysis of the filter and polyurethane foam/hydrophobic polyaromatic resin (PUF/XAD) media. PCBs were not detected on the filter (particulate) in any of the samples taken during different months and temperature ranges. PCBs found were measured in the PUF/XAD (vapor phase) media. The detection limit for PCBs in particulate matter (0.7 ng/m^3) is sufficiently low that, if any PCBs were present in particulate matter, they would be of little consequence for human health risk. These observations indicate PCBs in ambient air are almost exclusively in the vapor phase in the area surrounding the Solutia Facility. Potential exposure to PCBs in air-borne dust is not further addressed in this risk assessment.

As presented in the *Preliminary Site Characterization Summary Report on Operable Unit 3* (Solutia 2005), average ambient PCB concentration levels at the eight sites monitored varied from 2.3 to 27.1 ng/m^3, with a maximum total PCB concentration of 145.4 ng/m^3 measured at the Northwest sample location. Average and maximum PCB concentrations measured during the program, although an order of magnitude above ambient air Preliminary Remediation Goals (PRGs) of 3.4 ng/m^3, were well below the National Institute of Occupational Safety and Health (NIOSH) PCB standard of 1,000 ng/m^3 and OSHA PCB standard of 1,000,000 ng/m^3.

3.2.5 Quality Control

As presented in the quality assurance (QA) sections of the RFI/CS (Solutia 2002), supplemental RFI (Golder 2003), and PSCS reports (Solutia 2005) data was subjected to the data validation process. The validation process includes the evaluation of holding times, method blanks, surrogate spike recoveries, laboratory control samples, laboratory matrix spikes and laboratory duplicates. In addition to laboratory quality assurance/quality control (QA/QC), field duplicates, matrix spike/matrix spike

duplicates (MS/MSDs), and trip and rinsate blanks were utilized in the field programs to provide important information on analytical variability and error, the overall performance of the field sampling effort, and the uncertainty surrounding the analytical results

Overall, considering laboratory and field QA/QC, data employed in the risk characterization are considered of sufficient quality to support quantitative risk characterization. Rejected data are not used in any analysis; however qualified data are incorporated into the data analysis and the uncertainty around the use of this data is discussed in the risk assessment uncertainty section.

3.3 Selection of Chemicals of Potential Concern

Tables B-2.1 through B-2.4 in Attachment B summarize analytical data by medium and identifies COPCs for the risk assessment. The range of detected concentrations, detection frequency, and the range of detection limits presented in these tables were evaluated using complete datasets. These datasets started with all of the surface soil, subsurface soil, groundwater and air data described above in Section 3.2. Rejected data were eliminated for each dataset, and duplicate sample results were evaluated. For duplicate samples, the following criteria were used:

- If an analyte was detected in both the sample and the duplicate, the higher detected concentration was employed.
- If an analyte was detected in either the duplicate or the sample but was not detected in the other, the detected concentration was used.
- If an analyte was not detected in either the sample or the duplicate, the lower detection limit was identified, and one-half the detection limit was used.

No method is available to determine the most appropriate representative concentration from duplicate results. In this assessment, the higher of duplicate concentrations was used because, in several instances, duplicate differed by a large amount (up to a factor of 10). Use of the average of the duplicate results or using only the original result could result in an underestimate of actual chemical concentrations. Use of the higher value is therefore less likely to underestimate the actual concentration.

It is possible that use of the higher of duplicate values may overestimate actual concentrations in some samples. Where many duplicate samples are included in calculations, exposure point concentrations may be overestimated. Such overestimation is minimal when duplicate concentrations are similar. When large differences exist, overestimation could be noticeable in the calculations. However, because EPCs are upper confidence limits on means, single values typically do not make large differences in calculated values, except where data sets are small or the single values are extreme. In the current assessment, use of the larger of duplicate concentrations is expected to make relatively small differences in exposure point

concentrations. However, in one instance, at location SSRI-11, the difference between the sample and duplicate results for PCBs is notable for surface soil. The sample PCB result was 154 mg/kg and the duplicate 930 mg/kg. Implications for this wide disparity for this sampling location are further discussed in Section 6 under uncertainties.

Maximum detected concentrations of chemicals were compared, by medium, to risk-based screening levels to identify COPCs for each medium. Screening levels were taken from EPA Region 9 PRGs for residential soil and tap water (EPA 2004b), using a target cancer risk of 10^{-6} (one in one million) and a target hazard quotient of 0.1. Chemicals were considered COPCs if their maximum detected concentration exceeded their respective screening levels.

Risk-based screening levels were not available for the following chemicals: calcium, lead (for groundwater only), magnesium, potassium, sodium, 4-nitrophenol, o,o,o-triethylphosphorothioate and sulfotepp.

Calcium, magnesium, potassium, and sodium are essential metals and were not selected as COPCs. 4-Nitrophenol, o,o,o,-triethylphosphorothioate and sulfotepp were not selected as COPCs because no toxicity information is available for assessment. Lead was retained as a COPC.
COPCs are summarized in **Table 3-1**.

Local ambient levels (background) of inorganic constituents were not considered in the selection of COPCs. Ambient levels are evaluated in Section 6.2.1.2, Background Conditions.

3.4 Exposure Point Concentrations

An EPC is an estimate of the concentration of a COPC at points of exposure for different groups of receptors. This concentration term is calculated as the lower of the maximum detected concentration or the 95 percent upper confidence limit (UCL) of the arithmetic mean. This approach provides a conservative (protective) estimate of average COPC concentrations to account for uncertainties in the risk assessment dataset (EPA 1989). EPCs may be estimated by (1) using environmental data alone, or (2) using a combination of environmental data and environmental fate and transport models. In this assessment, EPCs for soil, groundwater, and air were estimated using environmental data only.

3.4.1 Calculation of Exposure Point Concentrations

EPCs represent concentrations of COPCs to which receptors may be exposed. EPCs serve as input into risk calculations and are derived for all COPCs for each area of concern. EPCs can be used, along with appropriate exposure assumptions, to reflect a range of potential exposures (average, reasonable upper range, worst case). Most often where data quantity allow, single EPCs are used to represent possible exposure concentrations. Typically, EPCs are estimated as the lower concentration of the maximum detected concentration or the upper one-sided 95% confidence limit of the

Table 3-1
Summary of Chemical of Potential Concern for Human Health Risk Assessment
Anniston PCB Site
Operable Unit 3

CAS No.	Chemical	Surface Soil	Surface/ Subsurface Soil	Groundwater	Ambient Air
	Volatile Organic Compounds				
120-82-1	1,2,4-Trichlorobenzene	--	--	YES	--
106-46-7	1,4-Dichlorobenzene	--	--	YES	--
108-90-7	Chlorobenzene	--	NO	YES	--
156-59-2	cis-1,2-Dichloroethene	--	--	YES	--
87-86-5	Pentachlorophenol	--	--	YES	--
79-01-6	Trichloroethylene	--	--	YES	--
	Semi-volatile Organic Compounds				
88-06-2	2,4,6-Trichlorophenol	--	--	YES	--
56-55-3	Benzo(a)anthracene	YES	YES	--	--
50-32-8	Benzo(a)pyrene	YES	YES	--	--
205-99-2	Benzo(b)fluoranthene	YES	YES	--	--
53-70-3	Dibenz(a,h)anthracene	YES	YES	--	--
193-39-5	Indeno(1,2,3-cd)pyrene	YES	YES	YES	--
	Pesticides/PCBs				
1336-36-3	PCBs, Total	YES	YES	YES	YES
58-89-9	gamma-BHC	--	--	YES	--
1024-57-3	Heptachlor epoxide	YES	YES	--	--
298-00-0	Methyl parathion	NO	NO	YES	--
56-38-2	Parathion	NO	NO	YES	--
	Dioxin				
NA	Dioxin TEQ	YES	YES	YES	--
	Inorganics				
7429-90-5	Aluminum	YES	YES	NO	--
7440-36-0	Antimony	YES	YES	YES	--
7440-38-2	Arsenic	YES	YES	YES	--
7440-39-3	Barium	NO	YES	NO	--
7440-43-9	Cadmium	YES	YES	--	--
7440-47-3	Chromium	YES	YES	--	--
7439-89-6	Iron	YES	YES	NO	--
7439-92-1	Lead	YES	YES	NO	--
7439-96-5	Manganese	YES	YES	YES	--
7439-97-6	Mercury	YES	YES	YES	--
7440-02-0	Nickel	NO	YES	--	--
7440-62-2	Vanadium	YES	YES	NO	--

Notes:

See Appendix B, Tables B-2.1 through 2.4 for a full list of detected chemicals and basis for selection as Chemical of Potential Concern (COPC).

YES = Chemical was detected in media and selected as a COPC.

NO = Chemical was detected in media but not selected as a COPC.

-- = Chemical was not detected in media.

arithmetic mean concentration (95% UCL) to help ensure that the actual average concentration is not underestimated. The choice of the arithmetic mean as an appropriate statistic for characterizing exposure at an exposure point is based on the assumption of random exposure within the exposure area (EPA 1989).

For each chemical with 10 or more samples, a 95%UCL on the arithmetic mean concentration was calculated and compared to the maximum detected concentration for that chemical. The lower value of the UCL and the maximum detected value was then selected as the EPC, as recommended by EPA (EPA 1992). For chemicals with less than 10 samples, the maximum detected concentration was used.

Different statistical methods can be used to estimate the 95% UCL of a data set, depending upon the data distribution. Therefore, two key steps are required to estimate the 95% UCL of a data set:

- Determine the distribution of the data (i.e., normal, lognormal, gamma or other).
- Compute the 95% UCL using the appropriate procedure for the data distribution.

In this assessment, both steps were performed with the ProUCL statistical software Version 4.0 developed for EPA (2007a). The ProUCL program contains rigorous parametric and nonparametric (including bootstrap methods) statistical methods (instead of simple *ad hoc* or substitution methods) that can be used on full data sets without nondetects (NDs) and on data sets with below reporting limit (RL) or ND observations.

ProUCL computes the 95%UCL using state-of-the-art parametric and nonparametric methods that can be used on full-uncensored data sets without NDs and also on data sets with below RL observations. ProUCL also provides goodness-of-fit tests for normal, lognormal, and gamma distributions where the ND values can be extrapolated (estimated) based upon normal regression on statistics (ROS), gamma ROS, and lognormal ROS (robust ROS) methods.

For highly censored datasets (i.e. if the percentage of NDs within a data set is greater than 80%) the maximum RL for ND data is compared to the maximum detected concentration. If the maximum RL for the NDs is greater or equal to the maximum concentration, then all NDs with RLs greater than the maximum concentration are excluded from the data set. Otherwise, the RL is used as the substitute for ND values. Using the data set generated from the ND evaluation, percentiles of the data set are determined, and the 95^{th} percentile is selected as the EPC.

Soil EPCs for both current and future land use scenarios were calculated for the Facility Area. EPCs for current land use were calculated using only those samples that are currently accessible (i.e. not under the concrete cap). EPCs for future land use were calculated using all soil samples, because if the concrete cap is not maintained, soil beneath it may become accessible. Since no construction was taking place at the

time this assessment was developed, construction workers are only evaluated for future exposures.
Only one set of soil EPCs for each the South Landfill and West End Landfill were calculated using available data from the soil caps. Separate EPCs for future land use were not calculated, because any exposure to soils beneath the cap is assumed to be unacceptable due to hazardous substances placed in the landfill.

EPCs for air were calculated using all data from each of the air sampling stations. Risks and hazards from inhalation exposure were then estimated for three locations, station 2-South at the South Landfill, station 3 - West at the West End Landfill, and station 6 - Near East roughly in the middle of the operating facility. Potential risks associated with vapor inhalation for the remaining stations were then discussed using the calculated EPCs to estimate possible risks.

Tables B-3.1 through B-3.9 present EPCs for each COPC in each medium and identify the statistical procedure used to calculate UCLs. ProUCL Version 4.0 output tables are provided in Attachment C.

3.4.2 Calculation of Indoor Air Exposure Point Concentrations

3.4.2.1 Shower Volatilization

Modeling is required to estimate the indoor air concentrations of VOCs from groundwater while showering. In this scenario, receptors were assumed to inhale VOCs while showering and during time spent in the bathroom after showering. The dermal absorption of volatilized VOCs was assumed to be negligible due to low dermal permeabilities. A chapter entitled, "Estimating Dermal and Inhalation Exposure to Volatile Chemicals in Domestic Water" by J. Schaum *et al*. (1994), which appears as Chapter 13 in the book entitled *Water Contamination and Health: Integration of Exposure Assessment, Toxicology, and Risk Assessment*, was utilized to perform the shower modeling. This chapter presents methodology for estimating exposure to VOCs in domestic water supplies for the inhalation exposure route.

The methods treat the bathroom as one compartment and estimate an air concentration averaged over the time of the actual shower and the time spent in the bathroom after the shower. The model was derived by assuming that COPCs volatilize at a constant rate, instantly mix uniformly with bathroom air, and ventilation with clean air does not occur. These assumptions imply that chemical concentrations in the air increases linearly from zero to a maximum at the end of the shower, and then remain constant during the time an individual spends in the bathroom immediately after showering. Air concentrations are estimated as follows:

$$C_a = \frac{\left(\frac{C_{aMax}}{2}\right)t_1 + (C_{aMax})t_2}{t_1 + t_2}$$

where:

C_a	=	concentration of a chemical contaminant in air, milligrams per cubic meter (mg/m^3)
C_{aMax}	=	maximum concentration of a chemical contaminant in air (mg/m^3)
t_1	=	time of shower (hour)
t_2	=	time after shower (hour)

C_{aMax} is estimated as follows:

$$C_{aMax} = \frac{C_W \, f F_W t_1}{V_a}$$

where:

C_{aMax}	=	maximum concentration of a chemical contaminant in air (mg/m^3)
C_w	=	water concentration, milligrams per liter (mg/L)
f	=	fraction volatilized (unitless)
F_w	=	water flow rate, liters per hour (L/hour)
t_1	=	time of shower (hour)
V_a	=	bathroom volume, cubic meters (m^3)

Water concentration, C_w, is a site-specific value that refers to the concentration of a chemical in water as it enters the shower. The 95% UCL value or the maximum detected value was utilized as the water concentration (i.e., the EPC listed in Table B-3.6 in Appendix B).

Fraction volatilized, *f*, is a chemical-specific value that refers to the mass fraction of chemical in water that volatilizes over the course of the shower. Volatilization rates depend on properties such as Henry's Law constants and molecular weights. Chemical-specific fraction volatilized values were calculated from these chemical properties using the equation provided by Schaum *et al*. (1994) (see Tables D-1 and D-2 in Appendix D).

Water flow rate, F_w, refers to the rate at which water flows into the shower. A value of 1,000 L/hour was assumed in the model for the RME scenario and 500 L/hour for the CTE scenario (Schaum *et al*. 1994).

Bathroom volume, V_a, refers to the volume of the bathroom including the shower stall. A value of 6 m^3 was assumed in the model for the RME scenario and 16 m^3 for the CTE scenario (Schaum *et al*. 1994). Shower time, t_1, refers to the actual time of the shower. Values of 15 and 27 minutes for adults and young children, respectively, for the RME; and 6 and 8.4 minutes for adults and young children (0–6 years), respectively, for the CTE (EPA 2001c) were assumed in the model.

Time spent in the bathroom after showering, t_2, was assumed to be 20 and 33 minutes for adults and young children (0–6 years), respectively, for the RME; and 9 and 11.5 minutes for adults and young children, respectively, for the CTE (EPA 2001c).

Three important assumptions make the model conservative (protective), including:

- Volatilization rate is constant.
- Air in the bathroom is not exchanged during the shower and time afterwards.
- Mixing of air in the shower chamber and bathroom air is so rapid that the combined volume can be treated as a single chamber with a single concentration of volatilized chemical (i.e., same chemical concentration throughout shower and bathroom).

Exposure point air concentrations from the shower model are presented in Appendix D. Tables D-3 and D-4 estimate indoor air concentrations from the potable well data for adult and child (0-6 years), respectively.

Section 4
Exposure Assessment

This section evaluates the potential for human exposure to COPCs at OU-3. As discussed in Section 2, OU-3 is comprised of three distinct exposure areas: the Facility Area, the South Landfill and the West End Landfill. Because each area is unique to uses and land covers, each area was individually assessed for appropriate receptors and exposure pathways

The key aspect of this assessment is development of a conceptual site model (CSM) that illustrates how chemicals may move from historical release points to locations where human exposure may occur. Based on this exposure model, this section also discusses exposure factors for people who may contact contamination.

4.1 Identification of Exposure Pathways

As defined in the *Risk Assessment Guidance for Superfund Part A* (EPA 1989), an exposure pathway is composed of the following elements:

- A source and mechanism of chemical release to the environment.
- An environmental transport medium (e.g., groundwater) for the released chemical and/or mechanism of transfer of the chemical from one medium to another.
- A point of potential contact by humans with a contaminated medium.
- A route of exposure (i.e., ingestion, inhalation, or dermal contact).

In this risk assessment, pathways are identified to estimate risks and hazards to current and future receptors assuming that no additional site remediation occurs and that no additional restrictions to site access or use will be put in place in the future. Thus, the goal of the assessment is to estimate possible current and future risks and hazards based on existing site conditions.

Contamination at OU-3 is linked to releases associated with past manufacturing and waste disposal processes. Releases during operations and disposal occurred primarily to soil. However, contaminants in soil have apparently migrated through the vadose zone to affect area groundwater. Further, PCBs do volatilize from soils and are measured in air on and near the site. Potential exposure to COPCs in soil, groundwater and air are therefore considered possible for people using OU-3.

4.2 Characterization of Potentially Exposed Populations

Information obtained from the Solutia Inc., and Pharmacia Corporation's *Preliminary Site Characterization Summary Report on Operable Unit 3* (Solutia 2005) indicates OU-3 is largely occupied by buildings, parking lots, other areas some of which are actively used for industrial purposes, and impervious surfaces, making potential for contact with soil relatively low under current conditions.

The *Preliminary Site Characterization Summary Report on Operable Unit 3* (Solutia 2005) also indicates area residents obtain water from the local water utility. The water utility obtains its water from Coldwater Spring which is located approximately five miles southwest (up gradient) of the manufacturing plant.

The Alabama Department of Environmental Management (ADEM) completed a water supply well survey for the area as part of its preliminary assessment of an unrelated facility in the vicinity of the Solutia plant (ADEM 2000) and reported only one active water supply well within four miles of the site. The well is located on the Union Foundry property, approximately one mile from the plant. As part of the supplemental RFI, Solutia identified two wells within a one-mile radius from the plant; however, the wells were not in use and were not in good enough condition to be used. During the remedial investigation (RI) field investigation, 11 parcels occupied by commercial enterprises were found to have monitoring wells. No potable wells are known to exist in the area.

Based on the above information, potentially exposed populations previously presented in the Pathway Analysis Report (PAR) (CDM 2006) consisted of current/future operations area workers, operations and maintenance (O&M) workers, trespassers, and construction workers. Future on-site residents were also considered as potential future receptors. It was also assumed that exposure to contaminated soils and to PCBs in air as fugitive dust would be ongoing for these receptors. No complete pathway was identified for exposure to groundwater. However, these initial potentially exposed populations have been modified for this characterization following availability of additional information.

Receptors in this characterization include current/future operations area workers, O&M workers, trespassers, and construction workers. Future on-site residents were eliminated from the characterization based on an existing deed restriction preventing residential use. However, current/future off-site residents were included, as they may be exposed to site-related contamination that migrates off-site in groundwater or air. Inhalation of fugitive dust was eliminated as a pathway of concern for all receptors, because PCBs were not identified in fugitive dust. Instead, exposures to ambient air were included.

As stated earlier, the three areas of concern at the site have different uses and land covers, and each area was individually assessed for different receptors. For exposures to contaminants in soil, the Facility Area was assessed for all receptors including operations area workers, operations and maintenance (O&M) workers, trespassers, and construction workers. Only O&M workers and trespassers were assessed for the South and West End Landfills. For exposures to contaminants in groundwater operations area workers, O&M workers, and off-site residents were assumed to have access to groundwater for drinking water under a future land-use scenario.

Detailed discussion of each of these receptor groups is included below and summarized in **Table 4-1**.

4.2.1 Current/Future Receptors

Receptors identified for current/future scenarios include O&M workers and trespassers exposed to surface soil a the South Landfill and West End Landfill, and construction workers exposed to surface and subsurface soil in the Facility Area. For all receptors at the landfills and for construction work at the operating facility, current and future exposure conditions are assumed to be identical and these two time frames are evaluated concurrently in a "current/future" scenario.

Operations and Maintenance Workers

O&M workers may come into contact with contaminants in surface soil through incidental ingestion, dermal contact, and inhalation of vapors or particulates in ambient air during routine inspection of the South Landfill and West End Landfill. Semi-annual groundwater monitoring, occasional cap repair, periodic inspection and mowing could be typical activities. O&M workers are evaluated using site-specific and default parameters recommended by EPA as described in Section 4.4.2.

Trespassers

Trespassers who cross the fence into OU-3 may be exposed to contaminants in surface soil at the South Landfill and West End Landfill via incidental ingestion, dermal contact, and inhalation of vapors or particulates in ambient air. Trespassers are examined using site-specific and default parameters recommended by EPA Region 4 as described in Section 4.4.4.

Construction Workers

Construction workers could be exposed to subsurface soils at the Facility Area through incidental ingestion, dermal contact, and inhalation of vapors or particulates in ambient air. They are examined using site-specific and default parameters recommended by EPA as described in Section 4.4.3.

4.2.2 Current Receptors

Receptors identified for current scenarios include operations area workers, O&M workers and trespassers exposed to current surface soil at the Facility Area, and off-site residents exposed to ambient air.

Operations Area Workers

Operations area workers may come into contact with contaminants in current surface soil at the Facility Area through incidental ingestion, dermal contact, and inhalation of vapors or particulates in ambient air. Workers are evaluated using a combination of default and site-specific parameters recommended by EPA and used in a recent risk assessment for the facility (Solutia 2005). The reader is referred to the Solutia report for detailed explanation of these parameters as described in Section 4.4.1.

TABLE 4-1

Anniston PCB Site, Operable Unit 3

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 / Future	Surface Soil	Surface Soil	South Landfill	O&M Worker	Adult	Dermal	On-Site	Quant	Workers may have exposed skin surfaces come into contact with soil
						Incidental Ingestion	On-Site	Quant	Workers may incidentally ingest soil
				Trespassers	Adolescent (7-16 yrs)	Dermal	On-Site	Quant	Trespassers may have exposed skin surfaces come into contact with soil
						Incidental Ingestion	On-Site	Quant	Trespassers may incidentally ingest soil
			West End Landfill	O&M Worker	Adult	Dermal	On-Site	Quant	Workers may have exposed skin surfaces come into contact with soil
						Incidental Ingestion	On-Site	Quant	Workers may incidentally ingest soil
				Trespassers	Adolescent (7-16 yrs)	Dermal	On-Site	Quant	Trespassers may have exposed skin surfaces come into contact with soil
						Incidental Ingestion	On-Site	Quant	Trespassers may incidentally ingest soil
	Surface/ Subsurface Soil	Surface/ Subsurface Soil	Facility Area	Construction Worker	Adult	Dermal	On-Site	Quant	Workers may have exposed skin surfaces come into contact with soil
						Incidental Ingestion	On-Site	Quant	Workers may incidentally ingest soil
	Air	Ambient Air	South Landfill	O&M Worker	Adult	Inhalation	On-Site	Quant	Workers may inhale ambient air
				Trespassers	Adolescent (7-16 yrs)	Inhalation	On-Site	Quant	Trespassers may inhale ambient air
			West End Landfill	O&M Worker	Adult	Inhalation	On-Site	Quant	Workers may inhale ambient air
				Trespassers	Adolescent (7-16 yrs)	Inhalation	On-Site	Quant	Trespassers may inhale ambient air
			Facility Area	Construction Worker	Adult	Inhalation	On-Site	Quant	Workers may inhale ambient air
Current	Surface Soil	Surface Soil	Facility Area	Operations Area Worker	Adult	Dermal	On-Site	Quant	Workers may have exposed skin surfaces come into contact with soil
						Incidental Ingestion	On-Site	Quant	Workers may incidentally ingest soil
				O&M Worker	Adult	Dermal	On-Site	Quant	Workers may have exposed skin surfaces come into contact with soil
						Incidental Ingestion	On-Site	Quant	Workers may incidentally ingest soil
				Trespassers	Adolescent (7-16 yrs)	Dermal	On-Site	Quant	Trespassers may have exposed skin surfaces come into contact with soil
						Incidental Ingestion	On-Site	Quant	Trespassers may incidentally ingest soil

TABLE 4-1

Anniston PCB Site, Operable Unit 3

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	Air	Ambient Air	Facility Area	Operations Area Worker	Adult	Inhalation	On-Site	Quant	Workers may inhale ambient air
				O&M Worker	Adult	Inhalation	On-Site	Quant	Workers may inhale ambient air
				Trespassers	Adolescent (7-16 yrs)	Inhalation	On-Site	Quant	Trespassers may inhale ambient air
			Ambient Air[1]	Off-site Resident	Child to Adult	Inhalation	Off-Site	Quant	Residents may inhale ambient air
					Child (0-6 yrs)	Inhalation	Off-Site	Quant	Residents may inhale ambient air
Future	Surface Soil	Surface Soil	Facility Area	Operations Area Worker	Adult	Dermal	On-Site	Quant	Workers may have exposed skin surfaces come into contact with soil
						Incidental Ingestion	On-Site	Quant	Workers may incidentally ingest soil
				O&M Worker	Adult	Dermal	On-Site	Quant	Workers may have exposed skin surfaces come into contact with soil
						Incidental Ingestion	On-Site	Quant	Workers may incidentally ingest soil
				Trespassers	Adolescent (7-16 yrs)	Dermal	On-Site	Quant	Trespassers may have exposed skin surfaces come into contact with soil
						Incidental Ingestion	On-Site	Quant	Trespassers may incidentally ingest soil
	Groundwater	Groundwater	Tap	Off-site Resident	Child to Adult	Dermal	Off-Site	Quant	Groundwater is potable. It may be developed for drinking water use in the future.
						Ingestion	Off-Site	Quant	Groundwater is potable. It may be developed for drinking water use in the future.
					Child (0-6 yrs)	Dermal	Off-Site	Quant	Groundwater is potable. It may be developed for drinking water use in the future.
						Ingestion	Off-Site	Quant	Groundwater is potable. It may be developed for drinking water use in the future.
				Operations Area Worker	Adult	Ingestion	On-Site	Quant	Groundwater is potable. It may be developed for drinking water use in the future.
				O&M Worker	Adult	Ingestion	On-Site	Quant	Groundwater is potable. It may be developed for drinking water use in the future.
		Air	Vapors in Bath	Off-site Resident	Child to Adult	Inhalation	Off-Site	Quant	Groundwater is potable. It may be developed for drinking water use in the future.
					Child (0-6 yrs)	Inhalation	Off-Site	Quant	Groundwater is potable. It may be developed for drinking water use in the future.

TABLE 4-1

Anniston PCB Site, Operable Unit 3

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
Future	Air	Ambient Air	Ambient Air[1]	Off-site Resident	Child to Adult	Inhalation	Off-Site	Quant	Residents may inhale ambient air
					Child (0-6 yrs)	Inhalation	Off-Site	Quant	Residents may inhale ambient air
				Operations Area Worker	Adult	Inhalation	On-Site	Quant	Workers may inhale ambient air
				O&M Worker	Adult	Inhalation	On-Site	Quant	Workers may inhale ambient air
				Trespassers	Adolescent (7-16 yrs)	Inhalation	On-Site	Quant	Trespassers may inhale ambient air

Quant = Quantitative risk analysis performed.

[1]The highest of air exposure point at Facility Area, South Landfill, or West End Landfill.

Operations and Maintenance Workers
O&M workers may come into contact with contaminants in current surface soil at the Facility Area through incidental ingestion, dermal contact, and inhalation of vapors or particulates in ambient air while conducting unspecified duties in the Facility Area. O&M workers are evaluated using site-specific and default parameters recommended by EPA as described in Section 4.4.2.

Trespassers
Trespassers who cross the fence into OU-3 may be exposed to contaminants in current surface soil at the Facility Area via incidental ingestion, dermal contact, and inhalation of vapors or particulates in ambient air. Trespassers are examined using site-specific and default parameters recommended by EPA Region 4 as described in Section 4.4.4.

Off-site Residents
Off-site residents (lifetime residents and young children [0–6 years old]) may come into contact with contaminants via inhalation of contaminants released to and transported off-site in ambient air. Off-site residents are examined using default parameters recommended by EPA as described in Section 4.4.5.

4.2.3 Future Receptors

Receptors identified for future scenarios include operations area workers, O&M workers and trespassers exposed to future surface soil at the Facility Area; operations area workers and O&M workers exposed to site-wide groundwater; and off-site residents exposed to ambient air and site-wide groundwater.

Operations Area Workers
Operations area workers may come into contact with contaminants in future surface soil at the Facility Area through incidental ingestion, dermal contact, and inhalation of vapors or particulates in ambient air.

Future operations area workers were assessed using EPA default assumptions, since future site use is uncertain and current worker activities and locations may change. In addition, future workers are assessed for possible exposure to contaminated groundwater. In theory, a well could be placed on-site and workers could use water from this well for drinking and/or washing. Exposure parameters are discussed Section 4.4.1.

Operations and Maintenance Workers
O&M workers may come into contact with contaminants in future surface soil at the Facility Area via incidental ingestion, dermal contact, and inhalation of vapors or particulates in ambient air while conducting unspecified duties.

O&M workers are also evaluated for a scenario where wells are installed in the future that draw water from the contaminated part of the aquifer for potable use at OU-3. Therefore, future O&M workers are also assumed to ingest groundwater. O&M workers are evaluated using site-specific and default parameters recommended by EPA as described in Section 4.4.2.

Trespassers
Trespassers who cross the fence into OU-3 may be exposed to contaminants in future surface soil at the Facility Area via incidental ingestion, dermal contact, and inhalation of vapors or particulates in ambient air. Trespassers are examined using site-specific and default parameters recommended by EPA Region 4 as described in Section 4.4.4.

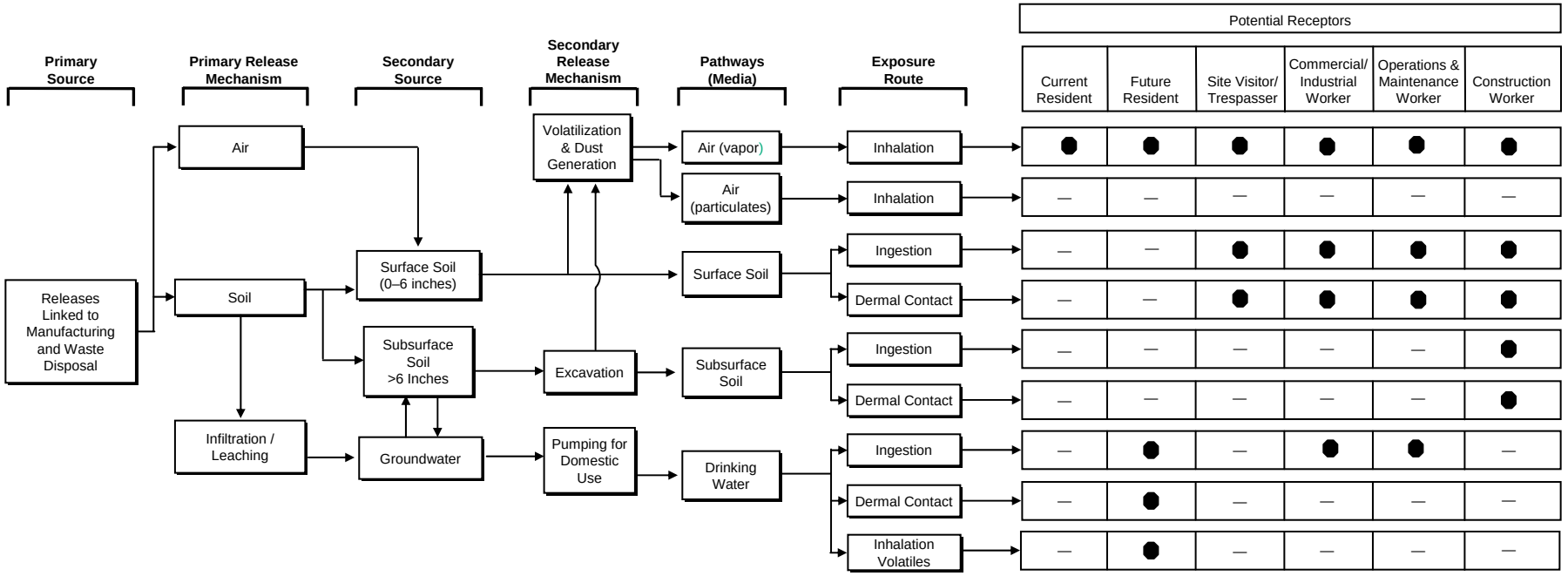
Off-site Residents
As discussed above, development of shallow groundwater resources at OU-3 is unlikely, and the deed for the OU-3 property restricts future residential development. However, in theory, a residential drinking water well could be installed near the property boundary that would draw water from the contaminated residuum beneath the site. The risk assessment evaluates such a scenario. Future off-site residents (lifetime residents and young children [0–6 years old]) are evaluated for ingestion, dermal contact, and inhalation of VOCs in groundwater during washing, bathing, showering, laundering, and cooking. Additionally, future off-site residents may inhale ambient air containing PCB vapors originating on-site. Future residents are examined using default parameters recommended by EPA also as described in Section 4.4.5.

4.3 Summary of Exposure Pathways

Based on possible sources, receptors, and exposure pathways considering both current and potential future land use, the following exposure pathways were considered to be complete and are evaluated as part of the assessment of exposure to contaminants at OU-3. Some complete exposure pathways may not represent significant sources of human exposure. Results of this analysis of possible exposure pathways are combined into a Conceptual Site Model (**Figure 4-1**). Pathways considered complete are presented below.

Current/Future Land Use

- O&M Worker (Adult)
  - Surface soil (South Landfill, West End Landfill)
    - incidental ingestion
    - dermal contact
  - Ambient air (South Landfill, West End Landfill)
    - inhalation of volatile chemicals



LEGEND

→ = Pathways, current, historical and future

● = Pathways for quantitative evaluation

— = Incomplete or insignificant pathways

CDM

Anniston CSM
11/20/2007

Figure 4-1
Site Conceptual Exposure Model
Anniston PCB Site, Operable Unit 3
Anniston, Alabama

- Trespasser (Adolescent [7-16 years old])
  Surface soil (South Landfill, West End Landfill)
    - incidental ingestion
    - dermal contact

  Ambient air (South Landfill, West End Landfill)
    - inhalation of volatile chemicals

- Construction Worker (Adult)
  Surface and subsurface soil (Facility Area)
    - incidental ingestion
    - dermal contact

  Ambient air (Facility Area)
    - inhalation of volatile chemicals

Current Land Use

- Operations Area Worker (Adult)
  Surface soil (Facility Area)
    - incidental ingestion
    - dermal contact

  Ambient air (Facility Area)
    - inhalation of volatile chemicals

- O&M Worker (Adult)
  Surface soil (Facility Area)
    - incidental ingestion
    - dermal contact

  Ambient air (Facility Area)
    - inhalation of volatile chemicals

- Trespasser (Adolescent [7-16 years old])
  Surface soil (Facility Area)
    - incidental ingestion
    - dermal contact

  Ambient air (Facility Area)
    - inhalation of volatile chemicals

- Off-site Resident (Lifetime Resident and Young Child [0 - 6 years old])
  Ambient air
    - inhalation of volatile chemicals

Future Land Use

- Operations Area Worker (Adult)
  - Surface soil (Facility Area)
    - incidental ingestion
    - dermal contact
  - Ambient air (Facility Area)
    - inhalation of volatile chemicals
  - Groundwater (OU-3 private well)
    - ingestion
- O&M Worker (Adult)
  - Surface soil (Facility Area)
    - incidental ingestion
    - dermal contact
  - Ambient air (Facility Area)
    - inhalation of volatile chemicals
  - Groundwater (OU-3 private well)
    - ingestion
- Trespasser (Adolescent [7-16 years old])
  - Surface soil (Facility Area)
    - incidental ingestion
    - dermal contact
  - Ambient air (Facility Area)
    - inhalation of volatile chemicals
- Off-site Resident [Lifetime Resident and Young Child (0–6 years old)]
  - Groundwater (OU-3 private well)
    - ingestion
    - dermal contact during showering and bathing
    - inhalation of volatile chemicals during showering and bathing
  - Ambient air
    - inhalation of volatile chemicals

4.4 Exposure Assumptions

Exposure assumptions are values for such parameters as the amount of air inhaled each day (20 m^3 for an adult, 10 m^3 for a child), the amount of water consumed per day (1 liter for the operations area worker, O&M worker and child resident; and 2

liters for an adult resident), and body weight (70 kg for an adult and 15 kg for a child). These values are subject to uncertainty and will vary to some degree within the exposed population. They are, however, considered representative for exposure calculations.

Exposure assumptions are used along with estimates for EPCs to estimate daily exposure to COPCs. Exposure assumptions were primarily taken from EPA documents (EPA 1989, 1991, 1992, 1997a, 2002a, 2004a) and from discussions with the EPA Region 4 risk assessor. EPA's standard default assumptions (EPA 1991) were used, where available. Otherwise professional judgment or values from the most recent guidance available were implemented unless EPA Region 4 has a known preference for a specific value. RME and CTE exposure parameters and equations that are used in the risk assessment are provided in RAGS Part D Tables B-4.1, B-4.2, and B-4.3 for soil, groundwater, and air, respectively.

The RFI/CS report (Solutia 2002) proposes site-specific exposure parameters for:

- exposed skin surface area
- dermal absorption factor
- soil adherence factor
- intestinal absorption factor
- soil ingestion rate
- exposure frequency

Site-specific exposure parameters are presented in Tables B-4.4 and B-4.5 and are employed in Section 6 of the risk characterization. The basis and justification for these RCRA values are provided in the 2002 Solutia document.

4.4.1 Operations Area Worker Exposure Assumptions

In the current and future land use RME scenarios, operations area workers are assumed to be exposed to current and future Facility Area surface soil while outdoors at work via incidental ingestion, dermal contact, and inhalation of ambient air. While future commercial/industrial use of OU-3 could include both indoor and outdoor workers, soil and ambient air exposures are conservatively estimated assuming the worker is a full time employee who spends most of the workday conducting maintenance activities outdoors. Activities for this receptor (e.g., moderate digging, landscaping) would involve on-site exposures to surface soil and air. Soil and air exposure factors are given in RAGS Part D Tables B-4.1 and B-4.3, respectively. The future land use scenario also includes the possibility of a private well being installed and used for potable purposes. Groundwater exposure factors are presented in RAGS Part D Table B-4.2.

Under the current RME and CTE scenarios, the soil incidental ingestion rate of site workers was assumed to be 50 mg/day, with an intestinal absorption factor of 0.3 for PCBs and arsenic (Solutia 2002). For dermal contact with soil, the exposed skin surface area for adult workers is 2,290 cm^2 (Solutia 2002). A dermal adherence factor of 0.2 mg/cm^2 was assumed for the RME scenario (Solutia 2002) and 0.02 mg/cm^2 for the CTE scenario (EPA 2004a). Chemical specific dermal absorption factors for COPCs are presented in **Table 4-2**.

Under future RME and CTE scenarios, the soil incidental ingestion rate of site workers was assumed to be 100 mg/day (EPA 2002a). For dermal contact with soil, an adult worker was assumed to wear a short-sleeved shirt, long pants, and shoes; therefore, the exposed skin surface is limited to the head, hands, and forearms. The exposed skin surface area for workers is 3,300 cm^2, the average of the 50th percentile for males and females older than 18 years of age (EPA 2004a). A dermal adherence factor of 0.2 mg/cm^2 was assumed for the RME scenario and 0.02 mg/cm^2 under the CTE scenario (EPA 2004a). Chemical specific dermal absorption factors for COPCs are presented in **Table 4-2**.

Inhalation of ambient air may also occur. An inhalation rate of 1.5 m^3/hour was assumed (EPA 1997a) for both RME and CTE scenarios. Exposure time for inhalation of ambient air is assumed to be 8 hours per day.

For ingestion of groundwater, an ingestion rate of 1 liter (L) of water per day was assumed. Workers are assumed to be exposed for 250 days per year for the RME scenario (EPA 2002a) and 219 days per year for the CTE scenario (EPA 2004a). Exposure duration for site workers is 25 years, based on the 95th percentile value for job tenure for men in the manufacturing sector (EPA 1991, 1997a, 2002a). A life expectancy of 70 years (EPA 2002a) was used as the averaging time for exposure to carcinogenic contaminants. Averaging time for non-carcinogenic effects is equal to the exposure duration, or 25 years for site workers under the RME scenario and nine years under the CTE scenario. A body weight of 70 kg was used (EPA 2002a).

4.4.2 Operation and Maintenance Worker Exposure Assumptions

In the current/future land use RME scenarios, O&M workers are assumed to be exposed to current/future soil at the South and West End Landfills, and current and future Facility Area surface soil while outdoors at work via incidental ingestion, dermal contact, and inhalation of ambient air.

Under both RME and CTE scenarios, the soil incidental ingestion rate of site workers was assumed to be 100 mg/day (EPA 2002a). For dermal contact with soil, an adult

TABLE 4-2
PHYSICAL/CHEMICAL PROPERTIES FOR COPC
Anniston PCB Site, Operable Unit 3

Chemical of Potential Concern	Permeability Coefficient (1) (cm/hr) (water)	Dermal Absorption Fraction (1) (soil)	Henry's Law Constant (atm-m3/mol-K)	Diffusion Coeff. in Air (cm2/s) (3)	Diffusion Coeff. in Water (cm2/s) (3)	Chemical-Specific Fraction Volatilized
VOCs						
1,2,4-Trichlorobenzene	6.6E-02	NA	1.4E-03	3.0E-02	8.2E-06	4.6E-01
1,4-Dichlorobenzene	4.2E-02	NA	2.4E-03	6.9E-02	7.9E-06	4.4E-01
Chlorobenzene	2.8E-02	NA	3.7E-03	7.3E-02	8.7E-06	4.7E-01
cis-1,2-Dichloroethene	NA	NA	4.1E-03	7.4E-02	1.1E-05	5.6E-01
Pentachlorophenol	3.9E-01	2.5E-01	2.4E-08	5.6E-02	6.1E-06	3.7E-01
Trichloroethylene	1.2E-02	NA	1.0E-02	7.9E-02	9.1E-06	4.9E-01
SVOCs						
2,4,6-Trichlorophenol	3.5E-02	1.0E-01	7.8E-06	3.2E-02	6.3E-06	3.8E-01
Benzo(a)anthracene	4.7E-01	1.3E-01	3.4E-06	5.1E-02	9.0E-06	4.8E-01
Benzo(a)pyrene	7.0E-01	1.3E-01	1.1E-06	4.3E-02	9.0E-06	4.8E-01
Benzo(b)fluoranthene	7.0E-01	1.3E-01	1.1E-04	2.3E-02	5.6E-06	3.5E-01
Dibenz(a,h)anthracene	1.5E+00	1.3E-01	1.5E-08	2.0E-02	5.2E-06	3.3E-01
Indeno(1,2,3-cd)pyrene	1.0E+00	1.3E-01	1.6E-06	1.9E-02	5.7E-06	3.6E-01
P/PCBs						
PCBs, Total (3)	7.5E-01	6.0E-02	NA	NA	NA	NA
gamma-BHC	1.1E-02	4.0E-02	1.4E-05	1.4E-02	7.3E-06	4.2E-01
Heptachlor epoxide	NA	NA	9.5E-06	1.3E-02	4.2E-06	2.9E-01
Methyl parathion	NA	NA	NA	NA	NA	NA
Parathion	1.3E-02	NA	NA	NA	NA	NA
Dioxin						
Dioxin TEQ	NA	3.0E-02	NA	NA	NA	NA
Inorganics						
Aluminum	1.0E-03	NA	NA	NA	NA	NA
Antimony	1.0E-03	NA	NA	NA	NA	NA
Arsenic	1.0E-03	3.0E-02	NA	NA	NA	NA
Barium	1.0E-03	NA	NA	NA	NA	NA
Cadmium (4)	1.0E-03	1.0E-03	NA	NA	NA	NA
Chromium (5)	2.0E-03	NA	NA	NA	NA	NA
Iron	1.0E-03	NA	NA	NA	NA	NA
Lead	1.0E-04	NA	NA	NA	NA	NA
Manganese	1.0E-03	NA	NA	NA	NA	NA
Mercury (6)	1.0E-03	NA	1.1E-02	3.1E-02	6.3E-06	3.8E-01
Nickel (7)	2.0E-04	NA	NA	NA	NA	NA
Vanadium	1.0E-03	NA	NA	NA	NA	NA

VOC: volatile organic compounds.

SVOC: semi-volatile organic compounds.

P/PCB: pesticides/polychlorinated biphenols.

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(2) Estimated for volatile chemicals using Eqn. 5 from Schaum et al (1994) (p. 308), with radon as the reference chemical (j).

(3) Source: Soil Screening Guidance, May 1996, EPA/540/R95/128.

(4) Permiability Coefficient for hexavalent chromium applied to total chromium.

$$f_i = f_j * \frac{(2.5/D_w^{0.67} + RT/ D_a^{0.67}H)_j}{(2.5/D_w^{0.67} + RT/ D_a^{0.67}H)_i}$$

Where:

fi = volatilization fraction for chemical i.

fj = volatilization fraction for chemical j = Radon.

Da = diffusion coefficient in air, m^2/s.

Dw = diffusion coefficient in water, m^2/s.

R = gas constant, atm-m3/mol-K = 8.21 x 10-5.

H = Henry's law constant, atm-m3/mol-K.

T = temperature, K = 293.

For radon:

fj = 0.65.

Da = 2.0 E-5 m2/s.

Dw = 1.4 e-9 m2/s.

H = 70 torr-m3/mol-K.

worker was assumed to wear a short-sleeved shirt, long pants, and shoes; therefore, the exposed skin surface is limited to the head, hands, and forearms. Exposed skin surface area for workers is 3,300 cm^2, the average of the 50th percentile for males and females greater than 18 years of age (EPA 2004a). A dermal adherence factor of 0.9 mg/cm^2 was assumed for the RME scenario and 0.2 mg/cm^2 for the CTE scenario (EPA 2004a). Chemical specific dermal absorption factors for COPCs are presented in Table 4-2.

Exposure frequency was assumed to be twice per month, or 24 days per year under the RME scenario. One half of that exposure frequency was assumed for the CTE scenario, or 12 days per year. A life expectancy of 70 years (EPA 2002a) was used as the averaging time for exposure to carcinogenic contaminants. Averaging time for non-carcinogenic effects is equal to the exposure duration, or 25 years for the RME scenario (EPA 2002a) and 9 years for the CTE scenario. A body weight of 70 kg was used for construction workers (EPA 2002a).

Inhalation of ambient air may also occur to an O&M worker. An inhalation rate of 1.5 m^3/hour was assumed (EPA 1997a) for both RME and CTE scenarios. Exposure time for inhalation of ambient air is assumed to be 8 hours per day.

4.4.3 Construction Worker Exposure Assumptions

In the current/future land use scenario, construction workers are assumed to be exposed to future Facility Area surface/subsurface soil over the duration of a single construction project (typically five months). If multiple non-concurrent construction projects are anticipated, it is assumed that different workers are employed for each project. Activities for this receptor typically involve substantial exposures to subsurface soils via incidental ingestion, dermal contact, and inhalation of ambient air. Soil and air exposure factors are presented in RAGS Part D Tables B-4.1 and B-4.3, respectively.

Soil incidental ingestion rate of construction workers was assumed to be 330 mg/day under both RME and CTE scenarios. This value is based on the 95th percentile value for adult soil intake rates (EPA 2002a). For dermal contact with soil, an adult construction worker was assumed to wear a short-sleeved shirt, long pants, and shoes; therefore, the exposed skin surface is limited to the head, hands, and forearms. Exposed skin surface area for workers is 3,300 cm^2, the average of the 50th percentile for males and females greater than 18 years of age (EPA 2004a). A dermal adherence factor of 0.3 mg/cm^2 was assumed under the RME scenario and 0.1 mg/cm^2 under the CTE scenario (EPA 2004a), corresponding to the 95th percentile value that has been measured for construction workers. Chemical specific dermal absorption factors for COPCs are presented in Table 4-2.

Inhalation of ambient air may also occur. An inhalation rate of 2.5 m^3/hr was assumed (EPA 1997a) for both RME and CTE scenarios. Exposure time for inhalation of ambient air is assumed to be eight hours per day.

Construction workers are assumed to be exposed for five months (100 workdays) per year under the RME scenario and exposure frequency for the CTE scenario is assumed to be 40 days per year. Exposure duration for construction workers is one year.

A life expectancy of 70 years (EPA 1989) was used for all receptor groups as the averaging time for exposure to carcinogenic contaminants. Averaging time for non-carcinogenic effects is equal to the exposure duration, or one year for construction workers (EPA 1989) for both RME and CTE scenarios. A body weight of 70 kg was used for construction workers (EPA 2002a).

4.4.4 Trespasser Exposure Assumptions

The trespasser is assumed to be an adolescent 7 to 16 years old (a 10 year exposure duration (EPA 2000)). While adults could also trespass at OU-3, adolescent trespassers are expected to have a greater intake of site contaminants because of their lower body weight and because they have more time available to visit OU-3 more frequently.

In the current/future land use scenarios, adolescent trespassers (ages 7 to 16 years old) are assumed to cross the fence and be exposed to current/future soil at the South and West End Landfills, and current and future Facility Area surface soil via ingestion, dermal contact, and inhalation of ambient air. Trespassers are assumed to be exposed for 1 day per week or about 50 days per year under the RME scenario and 10 days per year under the CTE scenario (EPA 2000).

Soil incidental ingestion rate of trespassers was assumed to be 100 mg/day (EPA 1991, 2001b) for both RME and CTE scenarios. For dermal contact with soil, the adolescent trespasser was assumed to wear a short-sleeved shirt, shorts, and shoes; therefore, the exposed skin surface is limited to the head, hands, forearms, and lower legs. For dermal contact with soil, exposed skin surface area for adolescent trespassers was assumed to be 2.800 cm^2 (EPA 2004a). A dermal adherence factor of 0.2 mg/cm^2 was assumed under the RME scenario and 0.04 mg/cm^2 under the CTE scenario (EPA 2004a). Chemical-specific dermal absorption fractions for COPCs are presented in Table 4-2.

Inhalation of ambient air may also occur to a trespasser. An inhalation rate of 1.07 m^3/hour was assumed (EPA 1997a) for both RME and CTE scenarios. Exposure time

for inhalation of ambient air is assumed to be four hours per day for the RME scenario and two hours per day for the CTE scenario.

A life expectancy of 70 years (EPA 1989) was used for all receptor groups as the averaging time for exposure to carcinogenic contaminants. Averaging time for non-carcinogenic effects is equal to the exposure duration, or 365 days for trespassers under both RME and CTE scenarios (EPA 1989). A body weight considered representative of the age range of 7-16 years old , 45 kg, was used for adolescent trespassers (EPA 2000).

4.4.5 Residential Exposure Assumptions

In the future land-use scenario, off-site residents are exposed to groundwater via ingestion, dermal contact, and inhalation during showering. In this future land-use scenario, the site groundwater is assumed to be the sole source of water supply for the exposed population.

Residents are assumed to be exposed for 350 days per year (EPA 2000a). The total RME exposure duration for residents is assumed to be 30 years (EPA 2000a): 24 years as an adult and 6 years as a young child. A life expectancy of 70 years (EPA 1989) was used for all receptor groups as the averaging time for exposure to carcinogenic contaminants. Averaging time for non-carcinogenic effects is equal to the exposure duration, or 6 years for children. A body weight of 70 kg was used for all adult residents and 15 kg for children (0 to 6 years) under both scenarios (EPA 2004a).

As a measure of conservatism and to avoid redundancy, an effort was made to identify the most sensitive receptor to calculate non-cancer hazards and excess cancer risk levels. In the case of non-carcinogens, a child resident is the most sensitive receptor, owing to his lower body mass relative to the amount of chemical intake. The 95th percentile of the drinking water intake rate for children ages 1–10 years is 1 L/day (EPA 2000a). Therefore, groundwater ingestion rate for child residents is assumed to be 1 L/day.

For carcinogens, a resident from child through adult (child/adult) is the most sensitive receptor because the excess cancer risk for the child (exposure duration of six years) is assumed to be additive to that of an adult (exposure duration of 24 years). For this reason, no calculations of excess cancer risk are included for child residents and no calculations of non-cancer hazards are included for child/adult residents. An intake factor that accounts for changing body mass and consumption over 30 years was used to assess risk for a lifetime resident. The method is described in EPA's *Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure*

Factors (EPA 1991). The resulting groundwater ingestion factor is 1.09 L-yr/kg-d based on the adult groundwater ingestion rate of 2 L/day.

Inhalation and dermal exposure of residents to groundwater may occur through showering and other household activities. Shower duration for adults is assumed to be 15 minutes, with an additional 20 minutes for drying off, brushing teeth, combing hair, etc., for a total of 0.58 hour (EPA 2001c). Children (0–6 years) are assumed to spend 27 minutes in the bath, with an additional 33 minutes spent in the bathroom afterwards, for a total of 1 hour (EPA 2001c). Showering inhalation rates for both adults and the child (0–6 years) are assumed to be 1 m^3/hour (EPA 1997a). Inhalation rates are based on the mean short-term rate for light activities (e.g., walking at 1.5–3 miles per hour). For surface area exposed, estimates of total body surface areas for adults and children, respectively, are: 18,000 cm^2 and 6,600 cm^2 (EPA 2004a); these values are based on the 50th percentiles for males and females. The chemical-specific dermal permeability coefficients for COPCs are presented in Table 4-2 (EPA 2004a).

Inhalation of ambient air may also occur for the current off-site resident. An inhalation rate of 13 m^3/day was assumed for adult residents (EPA 1997a). An inhalation rate of 7.5 m^3/day was assumed for child residents (EPA 1997a).

Section 5
Toxicity Assessment

A toxicity assessment identifies chemical specific criteria that reflect the intrinsic toxicity of COPCs to humans. These criteria are used, along with estimates of exposure, to estimate potential cancer risks and non-cancer hazards for receptors identified in Section 4. Risk and hazard estimates are provided in Section 6.

Toxicity criteria used in this risk assessment were obtained from a variety of sources according to a hierarchy established in the Office of Solid Waste and Emergency Response (OSWER) Directive 9285.7-53 (EPA 2003). The toxicity value hierarchy is as follows:

- Tier 1—EPA's Integrated Risk Information System (IRIS).
- Tier 2—EPA's Provisional Peer Reviewed Toxicity Values (PPRTVs): The Office of Research and Development/NCEA/Superfund Health Risk Technical Support Center (STSC) develops PPRTVs on a chemical-specific basis when requested by EPA's Superfund program.
- Tier 3—Other Toxicity Values: Tier 3 includes additional EPA and non-EPA sources of toxicity information. Priority should be given to those sources of information that are the most current, the basis for which is transparent and publicly available, and which have been peer-reviewed.

5.1 Health Effects Criteria for Non-carcinogens

For chemicals that exhibit non-carcinogenic (e.g., systemic) effects, organisms have repair and detoxification capabilities that must be exceeded by some critical concentration (threshold) before the health effect is manifested. This threshold view holds that a range of exposures from just above zero to some finite value can be tolerated by the organism without an appreciable hazard of adverse effects.

Health criteria for chemicals exhibiting non-carcinogenic effects for use in risk assessment are generally EPA-derived reference doses (RfDs) and reference concentrations (RfCs). The RfD or RfC is an estimate of average daily exposure to an individual (including sensitive individuals) that is likely to be without appreciable risk of deleterious effects during a lifetime. The RfD is expressed in units of milligram (mg) chemical per kilogram (kg) body weight per day (mg/kg-day); while the RfC is expressed in units of mg chemical per cubic meter (m^3) of air (mg/m^3). RfDs and RfCs are usually derived either from human studies involving work-place exposures or from animal studies, and are adjusted using uncertainty factors to ensure that they are unlikely to underestimate the potential for adverse non-carcinogenic effects to occur. Uncertainty factors reflect scientific judgment regarding the various types of data used to estimate the RfD/RfC and generally consist of multiples of factors ranging from 1 to 10. For example, a factor of 10 may be introduced to account for possible differences in response between humans and animals in prolonged exposure studies.

Other factors may be used to account for variation in susceptibility among individuals in the human population, use of data from a study with less-than-lifetime exposure, and/or use of data from a study that did not identify a no-observed-adverse-effect level (NOAEL).

RfDs and RfCs provide benchmarks against which estimated doses (i.e., those projected from human exposures to various environmental conditions) are compared. Doses that are significantly higher than the RfD/RfC may indicate an increased potential of hazard from the exposure, while doses that are less than the RfD/RfC are not likely to be associated with adverse health effects. It should be noted that an exceedance of the RfD/RfC does not provide an estimate of the likelihood of adverse effects. It only reflects an increased potential hazard for non-cancer health effects.

5.2 Health Effects Criteria for Potential Carcinogens

For chemicals that exhibit carcinogenic effects, EPA recognizes that more than one molecular event must occur to transform a cell from its normal state into a cancerous one. However, EPA regulates carcinogens using a non-threshold concept that assumes that a single change to the genome of a cell can initiate the carcinogenesis process. This non-threshold theory of carcinogenesis therefore assumes that any level of exposure to a carcinogen is associated with some finite possibility of causing cancer. Generally, regulatory agencies assume that the non-threshold hypothesis for carcinogens holds regardless of information concerning mechanisms of carcinogenic action for the chemical.

The carcinogenic potential of a chemical is expressed as as cancer slope factor (CSF) [in units of $(mg/kg\ body\ weight\text{-}day)^{-1}$], which estimates the risk of cancer per unit dose. When a slope factor is multiplied by an estimate of lifetime average daily dose (ADD) of a potential carcinogen (in mg/kg body weight-day), the result is an estimate of the lifetime excess cancer risk associated with exposure at that dose. EPA develops CSFs in a conservative manner, and risk estimates using slope factors are considered to be upper bound estimates of those possible. Risks estimated using slope factors are considered unlikely to underestimate actual risks and may substantially overestimate risks for a given exposure.

Excess lifetime cancer risks (ELCRs) are generally expressed in scientific notation and are probabilities. An ELCR of 1×10^{-6} (one in one million), for example, represents the incremental probability that an individual will develop cancer as a result of exposure to a carcinogenic chemical over a 70-year lifetime under specified exposure conditions. In addition, CSFs are developed for a specific route of exposure, either oral or inhalation, and ELCRs are estimated separately for these two routes of exposure.

In practice, CSF estimates are derived from the results of human epidemiology studies or chronic animal bioassays. The animal studies are conducted for a range of doses, including a high dose, in order to detect possible adverse effects. Since humans are expected to be exposed at lower doses than those used in animal studies, the data are adjusted via mathematical models. The data from animal studies are typically fitted to the linearized multistage model to obtain a dose-response curve. EPA evaluates a range of possible models based on the available data before conducting the extrapolation. The most appropriate model to reflect the data is selected based on an analysis of the data set.

The 95% UCL slope of the dose-response curve, subject to various adjustments and an inter-species scaling factor, is applied to derive the health protective CSF estimate for humans. Dose-response data from human epidemiological studies are fitted to dose-time-response curves. These models provide rough, but reasonable, estimates of the upper limits on lifetime risk. CSF estimates based on human epidemiological data are also derived using health protective assumptions and, as such, they too are considered unlikely to underestimate risks. Therefore, while actual risks associated with exposures to potential carcinogens are unlikely to be higher than the risks calculated using a slope factor estimate, they could be considerably lower.

In addition, there are varying degrees of confidence in the weight of evidence for carcinogenicity of a given chemical. EPA (1989) has proposed a system for characterizing the overall weight of evidence based on the availability of animal, human, and other supportive data. The weight-of-evidence classification is an attempt to determine the likelihood that an agent is a human carcinogen and thus qualitatively affects the estimation of potential health risks.

Three major factors are considered in characterizing the overall weight of evidence for human carcinogenicity: (1) the availability and quality of evidence from human studies, (2) the availability and quality of evidence from animal studies, and (3) other supportive information which is assessed to determine whether the overall weight of evidence should be modified. Carcinogens have often been grouped into the following five categories based on strength of this evidence:

- Human Carcinogen: There is at least sufficient evidence from human epidemiological studies to support a causal association between an agent and cancer.

- Probable Human Carcinogen: There is at least limited evidence from epidemiological studies of carcinogenicity in humans (Group B1) or, in the

absence of adequate data in humans, there is sufficient evidence of carcinogenicity in animals (Group B2).

- Possible Human Carcinogen: There is inadequate evidence of carcinogenicity in humans.

- Not Classified: There is inadequate data or no existing data for the chemical.

- No Evidence of Carcinogenicity in Humans: There is no evidence for carcinogenicity in at least two adequate animal tests in different species or in both epidemiological and animal studies.

The EPA 2005 Cancer Guidelines update previous versions and suggest a slightly different approach to categorizing carcinogens. These guidelines emphasize the value of understanding the biological changes a 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*. 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 Cancer Guidelines recommend an agent's human carcinogenic potential be described in a *weight-of-evidence narrative* rather than the previously identified categories. 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 five standard hazard descriptors are still used in the newest guidelines:

- 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.

However, requirements for in-depth analysis of "mode-of-action data" and other modifying information preclude the use of these descriptors to place chemicals into categories as was done previously.

The 2005 Cancer Guidelines also include Supplemental Guidance on the evaluation of early lifetime exposures. For example, where data are available that indicate a chemical is mutagenic, the Supplemental Guidance recommends either developing age-specific slope factors or generic age dependent adjustment factors. Application of the supplemental guidance for this risk assessment is explained in text of the exposure assessment (Section 4), and, where appropriate, was used to adjust cancer risk estimates.

5.3 Toxicological Assessment

Tables 5-1 and **5-2** summarize the chronic RfDs and RfCs used to estimate non-carcinogenic effects for the COPCs, and **Tables 5-3** and **5-4** summarize the CSFs used to estimate cancer risks for the COPCs. These criteria are the most current data, obtained from the May 2007 on-line version of IRIS and current NCEA recommendations.

The use of surrogate toxicity values can be seen noted in Tables 5-1 through 5-4. Regarding dioxin-like PCB congeners, a qualitative assessment of excess risk is made as described in the streamlined risk evaluation in support of residential cleanup (EPA 2002c). Note the congener data is not included in the summary tables in Appendix B.

Chromium VI toxicity values have been applied to total chromium. Chromium VI is considered a carcinogen by the inhalation route, but not a carcinogen by the oral route. Toxicity values for mercuric chloride were applied to all forms of mercury.

The RfD for Aroclor-1254 was used as a surrogate for total PCBs. The upper bound CSF intended for Aroclors having high risk and persistence for total PCBs of [2 $(mg/kg\text{-}day)^{-1}$] was used for RME scenarios and the central estimate CSF [1 $(mg/kg\text{-}day)^{-1}$] was used for CTE scenarios. The oral CSFs for the carcinogenic polycyclic aromatic hydrocarbons (PAHs) are derived using the relative potency approach (EPA 1993, *Provisional Guidance for Quantitative Assessment of Polycyclic Aromatic Hydrocarbons*, EPA/600/R-93/089).

TABLE 5-1

NON-CANCER TOXICITY DATA -- ORAL/DERMAL

Anniston PCB Site, Operable Unit 3

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (1)	Absorbed RfD for Dermal (1)		Primary Target Organ(s)	Combined Uncertainty/Modifying Factor	RfD: Target Organ(s)	
		Value	Unit		Value	Unit			Source(s)	Date(s) (2) (MM/DD/YYYY)
VOCs										
1,2,4-Trichlorobenzene	Chronic	1.0E-02	mg/kg-day	–	1.0E-02	mg/kg-day	Adrenals	1,000	IRIS	05/11/2007
1,4-Dichlorobenzene	Chronic	3.0E-02	mg/kg-day	–	3.0E-02	mg/kg-day	NA	NA	NCEA	10/2004
Chlorobenzene	Chronic	2.0E-02	mg/kg-day	–	2.0E-02	mg/kg-day	Liver	1,000	IRIS	05/11/2007
cis-1,2-Dichloroethene	Chronic	1.0E-02	mg/kg-day	–	1.0E-02	mg/kg-day	Blood	3,000	PPRTV	01/17/2007
Pentachlorophenol	Chronic	3.0E-02	mg/kg-day	76%	3.0E-02	mg/kg-day	Liver/Kidney	100	IRIS	05/11/2007
Trichloroethylene	Chronic	3.0E-04	mg/kg-day	–	3.0E-04	mg/kg-day	Liver/Kidney/Fetus	3,000	NCEA	10/25/2004
SVOCs										
2,4,6-Trichlorophenol	Chronic	1.0E-04	mg/kg-day	–	1.0E-04	mg/kg-day	NA	NA	NCEA	10/2004
Benzo(a)anthracene	NA	NA	NA	–	NA	NA	NA	NA	IRIS	05/11/2007
Benzo(a)pyrene	NA	NA	NA	89%	NA	NA	NA	NA	IRIS	05/11/2007
Benzo(b)fluoranthene	NA	NA	NA	–	NA	NA	NA	NA	IRIS	05/11/2007
Dibenz(a,h)anthracene	NA	NA	NA	–	NA	NA	NA	NA	IRIS	05/11/2007
Indeno(1,2,3-cd)pyrene	NA	NA	NA	–	NA	NA	NA	NA	IRIS	05/11/2007
P/PCBs										
PCBs, Total (3)	Chronic	2.0E-05	mg/kg-day	–	2.0E-05	mg/kg-day	Eye/Skin/Nails/Immune System	300	IRIS	05/11/2007
gamma-BHC	Chronic	3.0E-04	mg/kg-day	–	3.0E-04	mg/kg-day	Liver/Kidney	1,000	IRIS	05/11/2007
Heptachlor epoxide	Chronic	1.3E-05	mg/kg-day	–	1.3E-05	mg/kg-day	Liver	1,000	IRIS	05/11/2007
Methyl parathion	Chronic	2.5E-04	mg/kg-day	–	2.5E-04	mg/kg-day	Blood	100	IRIS	05/11/2007
Parathion	Chronic	6.0E-03	mg/kg-day	–	6.0E-03	mg/kg-day	NA	NA	HEAST	07/01/1997
Dioxin										
Dioxin TEQ	NA	NA	NA	–	NA	NA	NA	NA	IRIS	05/11/2007
Inorganics										
Aluminum	Chronic	1.0E+00	mg/kg-day	–	1.0E+00	mg/kg-day	GI Tract/CNS	100	NCEA	11/10/2003
Antimony	Chronic	4.0E-04	mg/kg-day	15%	6.0E-05	mg/kg-day	Whole Body/Blood	1,000	IRIS	05/11/2007
Arsenic	Chronic	3.0E-04	mg/kg-day	–	3.0E-04	mg/kg-day	Skin	3	IRIS	05/11/2007
Barium	Chronic	2.0E-01	mg/kg-day	7%	1.4E-02	mg/kg-day	CNS	300	IRIS	05/11/2007
Cadmium (4)	Chronic	1.0E-03	mg/kg-day	3%	2.5E-05	mg/kg-day	Kidney	10	IRIS	05/11/2007
Chromium (5)	Chronic	3.0E-03	mg/kg-day	2.5%	7.5E-05	mg/kg-day	GI Tract	900	IRIS	05/11/2007
Iron	Chronic	7.0E-01	mg/kg-day	–	7.0E-01	mg/kg-day	GI Tract/Liver	NA	PPRTV	01/17/2007
Lead	NA	NA	NA	–	NA	NA	NA	NA	IRIS	05/11/2007
Manganese	Chronic	1.4E-01	mg/kg-day	4%	5.6E-03	mg/kg/day	CNS	1	IRIS	05/11/2007
Mercury (6)	Chronic	3.0E-04	mg/kg-day	95%	2.9E-04	mg/kg/day	Immune System	1,000	IRIS	05/11/2007
Nickel (7)	Chronic	2.0E-02	mg/kg-day	4%	8.0E-04	mg/kg-day	Body and Organ Weight	300	IRIS	05/11/2007
Vanadium	Chronic	1.0E-03	mg/kg-day	2.6%	2.6E-05	mg/kg/day	Metabolic	100	NCEA	12/14/2005

NCEA = National Center for Environmental Assessment.
IRIS = Integrated Risk Information System.
PPRTV = Provisional Peer Reviewed Toxicity Values.
HEAST = Health Effects Assessment Summary Tables. July 1997.
RfD = Reference dose.
VOC = Volatile organic compound.
SVOC = Semi-volatile organic compound.
P/PCB = Pesticide/polychlorinated biphenyl.
CNS = Central Nervous System.

(1) The dermal RfD was assumed to equal the oral RfD, unless an adjustment factor was found in Exhibit 4.1 of RAGS-E (EPA 2001b).
(2) IRIS values were confirmed against the EPA's online database, May 2007.
NCEA and PPRTV values were provided by EPA.
(3) The RfD for total PCBs based on Aroclor 1254.
(4) The RfD for cadmium (food) is 0.001 mg/kg-day and cadmium (water) is 0.0005 mg/kg-day.
(5) The RfD for hexavalent chromium has been applied to total chromium.
(6) The RfD for methyl mercury has been applied to mercury.
(7) The RfD for nickel (soluble salt) has been applied to nickel.

TABLE 5-2

NON-CANCER TOXICITY DATA -- INHALATION

Anniston PCB Site, Operable Unit 3

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD (1)		Primary Target Organ(s)	Combined Uncertainty/ Modifying Factors	RfC Target Organ(s)	
		Value	Unit	Value	Unit			Source(s)	Date(s) (2) (MM/DD/YYYY)
VOCs									
1,2,4-Trichlorobenzene	NA	NA	NA	1.0E-03	mg/kg-day	NA	NA	PPRTV	10/2004
1,4-Dichlorobenzene	Chronic	8.0E-01	mg/m^3	2.3E-01	mg/kg-day	Liver	100	IRIS	05/11/2007
Chlorobenzene	Chronic	NA	NA	1.7E-02	mg/kg-day	NA	NA	NCEA	10/2004
cis-1,2-Dichloroethene	Chronic	NA	NA	1.0E-02	mg/kg-day	NA	NA	PPRTV (3)	10/2004
Pentachlorophenol	Chronic	NA	NA	3.0E-02	mg/kg-day	NA	NA	IRIS (3)	10/2004
Trichloroethylene	Chronic	4.0E-02	mg/m^3	1.1E-02	mg/kg/day	CNS	1,000	NCEA	04/15/2003
SVOCs									
2,4,6-Trichlorophenol	Chronic	NA	NA	1.0E-04	mg/kg-day	NA	NA	NCEA (3)	10/2004
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	IRIS	05/11/2007
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	IRIS	05/11/2007
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	IRIS	05/11/2007
Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	IRIS	05/11/2007
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	IRIS	05/11/2007
P/PCBs									
PCBs, Total	NA	NA	NA	NA	NA	NA	NA	IRIS	05/11/2007
gamma-BHC	Chronic	NA	NA	3.0E-04	mg/kg-day	NA	NA	HEAST (3)	10/2004
Heptachlor epoxide	Chronic	NA	NA	1.3E-05	mg/kg-day	NA	NA	IRIS (3)	10/2004
Methyl parathion	Chronic	NA	NA	2.5E-04	mg/kg-day	NA	NA	IRIS (3)	10/2004
Parathion	Chronic	NA	NA	6.0E-03	mg/kg-day	NA	NA	HEAST (3)	10/2004
Dioxin									
Dioxin TEQ	NA	NA	NA	NA	NA	NA	NA	IRIS	05/11/2007
Inorganics									
Aluminum	Chronic	5.0E-03	mg/m^3	1.4E-03	mg/kg-day	CNS	300	NCEA	10/25/2004
Antimony	Chronic	4.0E-05	mg/m^3	1.1E-05	mg/kg-day	Lungs	1,000	NCEA	01/22/2003
Arsenic	NA	NA	NA	NA	NA	NA	NA	IRIS	05/11/2007
Barium	Chronic	4.9E-04	mg/m^3	1.4E-04	mg/kg-day	NA	NA	NCEA	01/17/2007
Cadmium	Chronic	2.0E-04	mg/m^3	5.7E-05	mg/kg-day	NA	NA	NCEA	03/10/2003
Chromium (4)	Chronic	8.0E-06	mg/m^3	2.3E-06	mg/kg-day	Nasal septum atrophy	90	IRIS	05/11/2007
Iron	NA	NA	NA	NA	NA	NA	NA	IRIS	05/11/2007
Lead	NA	NA	NA	NA	NA	NA	NA	IRIS	05/11/2007
Manganese	Chronic	5.0E-05	mg/m^3	1.4E-05	mg/kg-day	CNS	1,000	IRIS	05/11/2007
Mercury	Chronic	3.0E-04	mg/m^3	8.6E-05	mg/kg-day	CNS	30	IRIS	05/11/2007
Nickel	NA	NA	NA	NA	NA	NA	NA	IRIS	05/11/2007
Vanadium	NA	NA	NA	NA	NA	NA	NA	IRIS	05/11/2007

NCEA = National Center for Environmental Assessment.

IRIS = Integrated Risk Information System.

HEAST = Health Effects Assessment Summary Tables. July 1997.

RfC = Reference concentration.

RfD = Reference dose.

VOC = Volatile organic compound.

SVOC = Semi-volatile organic compound.

P/PCB = Pesticide/polychlorinated biphenyl.

(1) Inhalation RfDs were calculated from Inhalation RfCs assuming a 70 kg individual has an inhalation rate of 20 m^3/day.(USEPA Risk Assessment Guidance for Superfund, Part A; December 1989).

(2) IRIS values were confirmed against the EPA's online database, May 2007.

NCEA values were provided by EPA.

(3) Route-to-route extrapolation from EPA Region 9 PRG tables updated October 2004, http://www.epa.gov/region09/waste/sfund/prg/index.htm.

(4) The RfC information for hexavalent chromium has been applied to total chromium.

TABLE 5-3

CANCER TOXICITY DATA -- ORAL/DERMAL

Anniston PCB Site, Operable Unit 3

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal (1)		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Unit		Value	Unit		Source(s)	Date(s) (2)
VOCs								
1,2,4-Trichlorobenzene	NA	NA	–	NA	NA	D	IRIS	05/11/2007
1,4-Dichlorobenzene	2.4E-02	$(mg/kg\text{-}day)^{-1}$	–	2.4E-02	$(mg/kg\text{-}day)^{-1}$	NA	HEAST	07/01/1997
Chlorobenzene	NA	NA	–	NA	NA	D	IRIS	05/11/2007
cis-1,2-Dichloroethene	NA	NA	–	NA	NA	D	IRIS	05/11/2007
Pentachlorophenol	1.2E-01	$(mg/kg\text{-}day)^{-1}$	–	1.2E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
Trichloroethylene	4.0E-01	$(mg/kg\text{-}day)^{-1}$	–	4.0E-01	$(mg/kg\text{-}day)^{-1}$	B2-C	NCEA	01/22/2003
SVOCs								
2,4,6-Trichlorophenol	1.1E-02	$(mg/kg\text{-}day)^{-1}$	–	1.1E-02	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
Benzo(a)anthracene (3)	7.3E-01	$(mg/kg\text{-}day)^{-1}$	58% - 89%	7.3E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
Benzo(a)pyrene (3)	7.3E+00	$(mg/kg\text{-}day)^{-1}$	58% - 89%	7.3E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
Benzo(b)fluoranthene (3)	7.3E-01	$(mg/kg\text{-}day)^{-1}$	58% - 89%	7.3E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
Dibenz(a,h)anthracene (3)	7.3E+00	$(mg/kg\text{-}day)^{-1}$	58% - 89%	7.3E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
Indeno(1,2,3-cd)pyrene (3)	7.3E-01	$(mg/kg\text{-}day)^{-1}$	58% - 89%	7.3E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
P/PCBs								
PCBs, Total (4)	2.0E+00	$(mg/kg\text{-}day)^{-1}$	80% - 96%	2.0E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
gamma-BHC	1.3E+00	$(mg/kg\text{-}day)^{-1}$	–	1.3E+00	$(mg/kg\text{-}day)^{-1}$	NA	HEAST	07/01/1997
Heptachlor epoxide	9.1E+00	$(mg/kg\text{-}day)^{-1}$	–	9.1E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
Methyl parathion	NA	NA	–	NA	NA	NA	IRIS	05/11/2007
Parathion	NA	NA	–	NA	NA	C	IRIS	05/11/2007
Dioxin								
Dioxin TEQ	1.5E+05	$(mg/kg\text{-}day)^{-1}$	–	1.5E+05	$(mg/kg\text{-}day)^{-1}$	NA	HEAST	07/01/1997
Inorganics								
Aluminum	NA	NA	–	NA	NA	D	NCEA	01/22/2003
Antimony	NA	NA	–	NA	NA	D	NCEA	01/22/2003
Arsenic	1.5E+00	$(mg/kg\text{-}day)^{-1}$	95%	1.5E+00	$(mg/kg\text{-}day)^{-1}$	A	IRIS	05/11/2007
Barium	NA	NA	–	NA	NA	D	IRIS	05/11/2007
Cadmium	NA	NA	–	NA	NA	B1	IRIS	05/11/2007
Chromium (5)	NA	NA	–	NA	NA	D	IRIS	05/11/2007
Iron	NA	NA	–	NA	NA	NA	IRIS	05/11/2007
Lead	NA	NA	–	NA	NA	B2	IRIS	05/11/2007
Manganese	NA	NA	–	NA	NA	D	IRIS	05/11/2007
Mercury (6)	NA	NA	–	NA	NA	C	IRIS	05/11/2007
Nickel	NA	NA	–	NA	NA	NA	IRIS	05/11/2007
Vanadium	NA	NA	–	NA	NA	NA	IRIS	05/11/2007

NCEA = National Center for Environmental Assessment.

HEAST = Health Effects Assessment Summary Tables. July 1997.

CSF = Cancer slope factor.

(1) The dermal CSF was assumed to equal the oral CSF, unless an adjustment factor was found in Exhibit 4.1 of RAGS-E (EPA 2001b).

(2) IRIS values were confirmed against the EPA's online database, May 2007. NCEA values were provided by EPA.

(3) The Oral Cancer Slope Factors for PAHs derived using the relative potency approach (USEPA. 1993. Provisional Guidance for Quantitative Assessment of Polycyclic Aromatic Hydrocarbons; EPA/600/R-93/089).

(4) The upper bound CSF [2 $(mg/kg\text{-}day)^{-1}$] was used for Reasonable Maximum Exposure scenario and central estimate CSF [1 $(mg/kg\text{-}day)^{-1}$] was used for Central Tendency Exposure scenario.

(5) The oral CSF for hexavalent chromium has been applied to total chromium.

(6) The oral CSF for methyl mercury has been applied to mercury.

EPA Weight of Evidence (EPA 1986, EPA 1996):

A - Human Carcinogen.

B1 - Probable human carcinogen - indicates that limited human data are available

B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans.

C - Possible human carcinogen.

D - Not classifiable as human carcinogen.

E - Evidence of noncarcinogenicity.

VOC = Volatile organic compound.

SVOC = Semi-volatile organic compound.

P/PCB = Pesticide/polychlorinated biphenyl.

TABLE 5-4
CANCER TOXICITY DATA -- INHALATION
Anniston PCB Site, Operable Unit 3

Chemical of Potential Concern	Unit Risk		Inhalation Cancer Slope Factor (1)		Weight of Evidence/ Cancer Guideline Description	Unit Risk: Inhalation CSF	
	Value	Unit	Value	Unit		Source(s)	Date(s) (2)
VOCs							
1,2,4-Trichlorobenzene	NA	NA	NA	NA	D	IRIS	05/11/2007
1,4-Dichlorobenzene	NA	NA	2.2E-02	$(mg/kg\text{-}day)^{-1}$	NA	NCEA	10/2004
Chlorobenzene	NA	NA	NA	NA	D	IRIS	05/11/2007
cis-1,2-Dichloroethene	NA	NA	NA	NA	D	IRIS	05/11/2007
Pentachlorophenol	NA	NA	1.2E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
Trichloroethylene	NA	NA	4.0E-01	$(mg/kg\text{-}day)^{-1}$	B2-C	EPA	01/17/2007
SVOCs							
2,4,6-Trichlorophenol	3.1E-06	$(\mu g/m^3)^{-1}$	1.1E-02	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
Benzo(a)anthracene (3)	NA	NA	3.1E-01	$(mg/kg\text{-}day)^{-1}$	B2	NCEA	01/22/2003
Benzo(a)pyrene (3)	8.9E-04	$(\mu g/m^3)^{-1}$	3.1E+00	$(mg/kg\text{-}day)^{-1}$	B2	NCEA	01/22/2003
Benzo(b)fluoranthene (3)	NA	NA	3.1E-01	$(mg/kg\text{-}day)^{-1}$	B2	NCEA	01/22/2003
Dibenz(a,h)anthracene (3)	NA	NA	3.1E+00	$(mg/kg\text{-}day)^{-1}$	B2	NCEA	01/22/2003
Indeno(1,2,3-cd)pyrene (3)	NA	NA	3.1E-01	$(mg/kg\text{-}day)^{-1}$	B2	NCEA	01/22/2003
P/PCBs							
PCBs, Total	1.0E-04	$(\mu g/m^3)^{-1}$	3.5E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
gamma-BHC	NA	NA	1.3E+00	$(mg/kg\text{-}day)^{-1}$	NA	HEAST (4)	10/2004
Heptachlor epoxide	2.6E-03	$(\mu g/m^3)^{-1}$	9.1E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
Methyl parathion	NA	NA	NA	NA	NA	IRIS	05/11/2007
Parathion	NA	NA	NA	NA	C	IRIS	05/11/2007
Dioxin							
Dioxin TEQ	NA	NA	1.5E+05	$(mg/kg\text{-}day)^{-1}$	NA	HEAST	07/01/1997
Inorganics							
Aluminum	NA	NA	NA	NA	D	NCEA	01/22/2003
Antimony	NA	NA	NA	NA	B1	NCEA	01/22/2003
Arsenic	4.3E-03	$(\mu g/m^3)^{-1}$	1.5E+01	$(mg/kg\text{-}day)^{-1}$	A	IRIS	05/11/2007
Barium	NA	NA	NA	NA	D	IRIS	05/11/2007
Cadmium	1.8E-03	$(\mu g/m^3)^{-1}$	6.3E+00	$(mg/kg\text{-}day)^{-1}$	B1	IRIS	05/11/2007
Chromium (5)	1.2E-02	$(\mu g/m^3)^{-1}$	4.2E+01	$(mg/kg\text{-}day)^{-1}$	A	IRIS	05/11/2007
Iron	NA	NA	NA	NA	NA	IRIS	05/11/2007
Lead	NA	NA	NA	NA	B2	IRIS	05/11/2007
Manganese	NA	NA	NA	NA	D	IRIS	05/11/2007
Mercury (6)	NA	NA	NA	NA	C	IRIS	05/11/2007
Nickel	NA	NA	NA	NA	NA	IRIS	05/11/2007
Vanadium	NA	NA	NA	NA	NA	IRIS	05/11/2007

NCEA = National Center for Environmental Assessment.
IRIS = Integrated Risk Information System.
CSF = Cancer slope factor.
(1) Inhalation CSFs were calculated from unit risks assuming a 70 kg individual has an inhalation rate of 20 m^3/day.
(2) IRIS values were confirmed against the EPA's online database, May 2007.
NCEA values were provided by EPA.
(3) The Inhalation CSF for PAHs derived using the relative potency approach (USEPA 1993).
Provisional Guidance for Quantitative Assessment of Polycyclic Aromatic Hydrocarbons; EPA/600/R-93/089).
(4) Route-to-route extrapolation from EPA Region 9 PRG tables updated October 2004,
http://www.epa.gov/region09/waste/sfund/prg/index.htm.
(5) The unit risk for hexavalent chromium has been applied to total chromium.
(6) The inhalation CSF for methyl mercury has been applied to mercury.

EPA Weight of Evidence (EPA 1986, EPA 1996):
A - Human Carcinogen.
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans.
C - Possible human carcinogen.
D - Not classifiable as human carcinogen.
E - Evidence of noncarcinogenicity.

VOC = Volatile organic compound.
SVOC = Semi-volatile organic compound.
P/PCB = Pesticide/polychlorinated biphenyl.

Section 6
Risk Characterization

In this section of the risk assessment, human health risks potentially associated with complete human exposure pathways identified in Section 4 are characterized, integrating toxicity and exposure assessments into quantitative expressions of carcinogenic risk and non-cancer hazards. Potential risks due to exposures to soil, groundwater, and air from OU-3 via incidental ingestion, dermal contact, and inhalation were quantitatively evaluated. Cancer risk and non-cancer hazard calculations for all COPCs for RME scenarios are presented in RAGS Part D Tables B-7.1 through B-7.17 and then summarized in RAGS Part D Tables B-9.1 through B-9.17 and B-10.1 through B-10.17. Cancer risk and non-cancer hazard calculations for all COPCs for CTE scenarios are presented in RAGS Part D Tables E-7.1 through E-7.13 and then summarized in RAGS Part D Tables E-9.1 through E-9.13 and E-10.1 through E-10.13. Total cancer risk and non-cancer hazard for each area and receptor are summarized in **Tables 6-1** and **6-2** for the RME and CTE scenarios, respectively.

Potential for non-cancer health hazards was evaluated by comparing ADDs with reference doses applicable for chronic (long-term) and subchronic (shorter-term) exposure. This ratio of exposure to toxicity is referred to as a hazard quotient (HQ). A hazard index (HI) is the sum of HQs from individual chemicals. A RfD or RfC defines an ADD below which it is unlikely even for sensitive populations to experience adverse health effects. Thus, if an HI exceeds unity (1), the ADD is higher than a "safe" exposure level and some concern for potential non-cancer effects exists. An HI is not, however, an expression of probability of non-cancer effects occurring. Generally, the greater the HI above unity, the greater the level of concern. HQs are typically only added together to estimate HIs for chemicals that affect the same target organ(s) or tissue(s).

Cancer risks are estimated as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to a potential carcinogen. The upper-bound ELCR is estimated by multiplying the lifetime average daily dose (LADD) (Section 4) by an appropriate CSF (Section 5). ELCRs are generally expressed in scientific notation as incremental probabilities. An ELCR of 1×10^{-6} (1 in 1,000,000), for example, represents the incremental probability that an individual will develop cancer as a result of exposure to a carcinogenic chemical over a 70-year lifetime under specified exposure conditions. This increment is in addition to the risk of developing cancer from causes unrelated to the exposure. Typical cancer rates in the United States are in the range of 1 in 4 to 1 in 2.

Generally, EPA uses a target cancer risk range of 10^{-6} to 10^{-4} (1 in 1,000,000 to 1 in 10,000) to evaluate the need for remediation or mitigation at a site (EPA 1991b). Cancer risks below 1 in 1,000,000 are typically assumed to be *de minimis* and would require no remediation or mitigation. Risks within the risk range are often considered acceptable, but decisions on whether to remediate or mitigate risk that fall in this

TABLE 6-1
SUMMARY OF CARCINOGENIC RISKS AND NON-CARCINOGENIC HEALTH HAZARDS
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Area	Receptor	Cancer Risk	Cancer Risk Note	Noncancer Hazard Index (HI)	Noncancer HI Note
Current/Future Land Use					
South Landfill	O&M Worker	$3x10^{-6}$	Cancer risk is within the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	0.2	HI value is below 1.
	Trespasser - Adolescent (7-16 yrs)	$2x10^{-6}$	Cancer risk is within the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	0.3	HI value is below 1.
West End Landfill	O&M Worker	$1x10^{-8}$	Cancer risk is below the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	NA	There is no detected data for surface soil in this area.
	Trespasser - Adolescent (7-16 yrs)	$7x10^{-9}$	Cancer risk is below the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	NA	There is no detected data for surface soil in this area.
Facility Area	Construction Worker	$1x10^{-4}$	Cancer risk is at the upper limit of the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	250	The HI for eye/nails/skin/immune system (mostly from PCBs in soil) exceeded 1.
Current Land Use					
Facility Area	Operations Area Worker	$2x10^{-4}$	Cancer risk is primarily due to ingestion and dermal contact exposure to PCBs from soil (risk = $1x10^{-4}$).	8	The HI for eye/nails/skin/immune system (mostly from PCBs in soil) exceeded 1.
	O&M Worker	$1x10^{-4}$	Cancer risk is at the upper limit of the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	5	The HI for eye/nails/skin/immune system (mostly from PCBs in soil) exceeded 1.
	Trespasser - Adolescent (7-16 yrs)	$8x10^{-5}$	Cancer risk is within the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	8	The HI for eye/nails/skin/immune system (mostly from PCBs in soil) exceeded 1.
Site Wide	Off-site Resident - Child to Adult (Lifetime Resident)	$2x10^{-6}$	Cancer risk is within the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	NA	There is no toxicity value for inhalation of PCBs.
	Off-site Resident - Child (0-6 yrs)	$1x10^{-6}$	Cancer risk is within the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	NA	There is no toxicity value for inhalation of PCBs.
Future Land Use					
Facility Area	Operations Area Worker	$6x10^{-3}$	Cancer risk is primarily due to ingestion and dermal contact exposure to PCBs from soil (risk = $6x10^{-3}$).	416	The HI for eye/nails/skin/immune system (mostly from PCBs in soil) exceeded 1.
	O&M Worker	$1x10^{-3}$	Cancer risk is primarily due to ingestion and dermal contact exposure to PCBs from soil (risk = $1x10^{-3}$).	79	The HI for eye/nails/skin/immune system (mostly from PCBs in soil) exceeded 1.
	Trespasser - Adolescent (7-16 yrs)	$7x10^{-4}$	Cancer risk is primarily due to ingestion and dermal contact exposure to PCBs from soil (risk = $7x10^{-4}$).	124	The HI for eye/nails/skin/immune system (mostly from PCBs in soil) exceeded 1.
Site Wide	Off-site Resident - Child to Adult (Lifetime Resident)	$4x10^{-1}$	Cancer risk is primarily due to ingestion and dermal contact exposure to PCBs from groundwater (risk = $4x10^{-1}$).	30,445	The HI for eye/nails/skin/immune system (mostly from PCBs in groundwater) exceeded 1.
	Off-site Resident - Child (0-6 yrs)	$2x10^{-1}$	Cancer risk is primarily due to ingestion and dermal contact exposure to PCBs from groundwater (risk = $2x10^{-1}$).	46,553	The HI for eye/nails/skin/immune system (mostly from PCBs in groundwater) exceeded 1.
	Operations Area Worker	$2x10^{-2}$	Cancer risk is primarily due to ingestion exposure to PCBs from groundwater (risk = $2x10^{-2}$).	1,212	The HI for eye/nails/skin (mostly from PCBs in groundwater) exceeded 1.
	O&M Worker	$2x10^{-3}$	Cancer risk is primarily due to ingestion exposure to PCBs from groundwater (risk = $2x10^{-3}$).	116	The HI for eye/nails/skin (mostly from PCBs in groundwater) exceeded 1.

Cancer risks: An excess lifetime cancer risk of $1x10^{-6}$ indicates that an individual experiencing the reasonable maximum exposure has a 1 in 1,000,000 chance of developing cancer as a result of site-related exposure. This is referred to as an "excess lifetime cancer risk" because it would be in addition to the risks of cancer individuals face from other causes. EPA's generally acceptable risk range for site-related exposures is $1x10^{-6}$ to $1x10^{-4}$ (one in one million to one in ten thousand).

Noncancer hazards: EPA Risk Assessment Guidance for Superfund (EPA 1989) states that, generally, a hazard index (HI) greater than 1 indicates the potential for adverse noncancer effects.

TABLE 6-2

SUMMARY OF CARCINOGENIC RISKS AND NON-CARCINOGENIC HEALTH HAZARDS

CENTRAL TENDENCY EXPOSURE

Anniston PCB Site, Operable Unit 3

Area	Receptor	Cancer Risk	Cancer Risk Note	Noncancer Hazard Index (HI)	Noncancer HI Note
Current/Future Land Use					
South Landfill	O&M Worker	$1x10^{-7}$	Cancer risk is below the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	0.04	HI value is below 1.
	Trespasser - Adolescent (7-16 yrs)	$1x10^{-7}$	Cancer risk is below the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	0.04	HI value is below 1.
West End Landfill	O&M Worker	$3x10^{-9}$	Cancer risk is below the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	NA	There is no detected data for surface soil in this area.
	Trespasser - Adolescent (7-16 yrs)	$7x10^{-10}$	Cancer risk is below the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	NA	There is no detected data for surface soil in this area.
Facility Area	Construction Worker	$3x10^{-5}$	Cancer risk is within the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	90	The HI for eye/nails/skin/immune system (mostly from PCBs in soil) exceeded 1.
Current Land Use					
Facility Area	Operations Area Worker	$4x10^{-5}$	Cancer risk is within the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	3	The HI for eye/nails/skin/immune system (mostly from PCBs in soil) exceeded 1.
	O&M Worker	$8x10^{-6}$	Cancer risk is within the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	1	The HI for eye/nails/skin/immune system (mostly from PCBs in soil) meets 1.
	Trespasser - Adolescent (7-16 yrs)	$1x10^{-5}$	Cancer risk is within the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	1	The HI for eye/nails/skin/immune system (mostly from PCBs in soil) meets 1.
Future Land Use					
Facility Area	Operations Area Worker	$1x10^{-3}$	Cancer risk is primarily due to ingestion and dermal contact exposure to PCBs from soil (risk = $1x10^{-3}$).	364	The HI for eye/nails/skin/immune system (mostly from PCBs in soil) exceeded 1.
	O&M Worker	$6x10^{-5}$	Cancer risk is within the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	20	The HI for eye/nails/skin/immune system (mostly from PCBs in soil) exceeded 1.
	Trespasser - Adolescent (7-16 yrs)	$6x10^{-5}$	Cancer risk is within the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	20	The HI for eye/nails/skin/immune system (mostly from PCBs in soil) exceeded 1.
Site Wide	Operations Area Worker	$3x10^{-3}$	Cancer risk is primarily due to ingestion exposure to PCBs from groundwater (risk = $3x10^{-3}$).	432	The HI for eye/nails/skin (mostly from PCBs in groundwater) exceeded 1.
	O&M Worker	$2x10^{-4}$	Cancer risk is primarily due to ingestion exposure to PCBs from groundwater (risk = $2x10^{-4}$).	66	The HI for eye/nails/skin (mostly from PCBs in groundwater) exceeded 1.

Cancer risks: An excess lifetime cancer risk of $1x10^{-6}$ indicates that an individual experiencing the reasonable maximum exposure has a 1 in 1,000,000 chance of developing cancer as a result of site-related exposure. This is referred to as an "excess lifetime cancer risk" because it would be in addition to the risks of cancer individuals face from other causes. EPA's generally acceptable risk range for site-related exposures is $1x10^{-6}$ to $1x10^{-4}$ (one in one million to one in ten thousand).

Noncancer hazards: EPA Risk Assessment Guidance for Superfund (EPA 1989) states that, generally, a hazard index (HI) greater than 1 indicates the potential for adverse noncancer effects.

range are made on a site-specific basis. Risks that exceed 1 in 10,000 often require remediation and/or mitigation; however, no "bright line" has been established at the upper end of the risk range, and, again, risk management decisions are made on a site-by-site basis.

Estimates of cancer risk and hazard indices are compared to the above targets to put the magnitude of cancer risks and non-cancer hazards into perspective for the risk manager.

6.1 Results of Risk Calculations

As discussed in Section 4, OU-3 is comprised of three distinct areas of concern: the Facility Area, the South Landfill and the West End Landfill. Potential risks were estimated for each area of concern for applicable receptors. In some instances, the site was considered as a whole (single exposure unit). Exposure to ambient air was considered a single exposure unit for current and future off-site residents, employing the site wide maximum detected concentration; and exposure to groundwater was considered a single exposure unit for future off-site residents, operations area workers and O&M workers, employing EPCs from the most impacted area of the plume.

6.1.1 Risk Summary for OU-3

Cancer risks and non-cancer health hazards for each receptor in each area under current/future, current, and future land use conditions are discussed in the following sections.

6.1.1.1 Current/Future Land Use

The following receptors were evaluated for current/future land use:

(1) Construction workers (Facility Area)
(2) O&M workers (South Landfill)
(3) Trespasser (South Landfill)
(4) O&M workers (West End Landfill)
(5) Trespasser (West End Landfill)

6.1.1.1.1 Facility Area

Construction Workers: Current/future construction workers at the Facility Area could be potentially exposed to contaminants in surface and subsurface soil via incidental ingestion and dermal contact as well as inhalation of ambient air.

The total estimated cancer risk for current/future construction workers in the Facility Area (1 x 10-4) meets the upper limit of EPA's target cancer risk range of 1 × 10-6 to 1 × 10-4 for the RME scenario. The cancer risk is predominately due to incidental ingestion (85%) and dermal contact (15%) exposure to total PCBs in surface and subsurface soil. When a more typical exposure is considered under the CTE scenario, the cancer risk (3x 10-5) is within EPA's target cancer risk range of 1 × 10-6 to 1 × 10-4.

The total HI for construction workers in the Facility Area exceeded EPA's non-cancer hazard threshold of 1 for both RME (250) and CTE (90) scenarios. Non-cancer health hazards are predominately due to incidental ingestion (85%) and dermal contact (15%) exposure to total PCBs in surface and subsurface soil which can cause adverse health effects to the eyes, nails, skin and immune system.

Other contaminants that contributed to cancer risk with individual chemical contributions within EPA's risk range included dioxin TEQ and arsenic. Arsenic also contributed to non-cancer hazard to a lesser extent, with skin as the target organ.

6.1.1.1.2 South Landfill

Similar to the Facility Area, potential risks for O&M workers and trespassers exposed to soil at the South Landfill were evaluated.

O&M Workers: Current/future O&M workers at the South Landfill may also be exposed to contaminants in surface soil via incidental ingestion and dermal contact, and inhalation of ambient air.

The total estimated cancer risk for current/future O&M workers in the South Landfill (3×10^{-6}) for the RME scenario is within EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4}. The cancer risk is due to incidental ingestion (36%) and dermal contact (64%) exposure to total PCBs in surface soil. As expected, cancer risk under the CTE scenario (1×10^{-7}) is below EPA's target cancer risk range. The total HI for O&M workers in the South Landfill is below EPA's non-cancer hazard threshold of 1 for both RME (0.2) and CTE (0.04) scenarios.

Trespasser (Adolescent 7 to 16 years): Current/future trespassers at the South Landfill could be potentially exposed to contaminants in surface soil via incidental ingestion and dermal contact, and inhalation of ambient air.

The total estimated cancer risk for current/future trespassers in the South Landfill (2×10^{-6}) under the RME scenario is at the low end of EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4}. The cancer risk is due to incidental ingestion (56%) and dermal contact (44%) exposure to total PCBs in surface soil. When a more typical exposure is considered under the CTE scenario, the cancer risk (1×10^{-7}) is below EPA's target cancer risk range. The total HI for trespassers in the South Landfill is below EPA's non-cancer threshold of 1 for both RME (0.3) and CTE (0.04) scenarios.

6.1.1.1.3 West End Landfill

Potential risks for O&M workers and trespassers exposed to soil at the West End Landfill were also evaluated.

O&M Workers: Current/future O&M workers at the West End Landfill may also be exposed to contaminants in surface soil via incidental ingestion and dermal contact, and inhalation of ambient air.

The total estimated cancer risk for current/future O&M workers in the West End Landfill (1×10^{-8}) for the RME scenario was well below EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4}. Non-cancer risk was not applicable at the West End Landfill, as no non-carcinogens were identified as COPCs.

Trespasser (Adolescent 7 to 16 years): Current/future trespassers at the West End Landfill could be potentially exposed to contaminants in surface soil via incidental ingestion and dermal contact, and inhalation of ambient air.

The total estimated cancer risk for current/future trespassers in the West End Landfill (7×10^{-9}) under the RME scenario is well below EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4}. Non-cancer risk was not applicable at the West End Landfill, as no non-carcinogens were identified as COPCs.

6.1.1.2 Current Land Use

The following receptors were evaluated for current land use:

(1) Operations area workers (Facility Area)
(2) O&M workers (Facility Area)
(3) Trespasser (Facility Area)
(4) Off-site residents (ambient air)

6.1.1.2.1 Facility Area

Operations Area Workers: Current operations area workers at the Facility Area may be exposed to contaminants in soil, via incidental ingestion and dermal contact, and inhalation of ambient air.

The total estimated cancer risk for current operations area workers in the Facility Area (2×10^{-4}) is above EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4} for the RME scenario. Cancer risk from dermal contact (54%) with and incidental ingestion (46%) of soil, the primary routes of exposure, is predominately due to total PCBs in surface soil. When a more typical exposure is considered (CTE), cancer risk (4×10^{-5}) is within EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4}, again due to incidental ingestion and dermal contact exposure to total PCBs in soil.

The total HI for operations area workers in the Facility Area (8) exceeded EPA's non-cancer threshold of 1 for the RME scenario. Non-cancer health effects from incidental ingestion (37%) and dermal contact (63%) with soil, the primary routes of exposure, are predominately due to total PCBs in surface soil. The total HI also exceeded EPA's non-cancer threshold of 1 (3) under the CTE scenario, again due to total PCBs. The exposure to PCBs can cause adverse effects to the eyes, nails, skin, and immune system. [Note that PCBs found at the site are consistent with Aroclor 1254, a mixture that contains relatively high levels of chlorination. Non-cancer health effects for total PCBs were, therefore, assessed using the RfD for Aroclor 1254. Neurotoxiciy and reproductive toxicity form the basis for non-cancer effects from exposure to Arochlors 1248 and 1016, respectively. Use of the RfD for Aroclor 1254 is not likely to underestimate the

magnitude of non-cancer health impacts, since this RfD is lower that those for other Aroclors. However, health impacts other than to the eyes, skin, nails and immune system are possible given the range of chlorination observed in PCB congener s at the site.]

Other contaminants that contributed to cancer risk with individual chemical contributions within EPA's risk range included benzo(a)pyrene, dioxin TEQ and arsenic. Chemicals contributing to non-cancer hazard to a lesser extent included arsenic, with skin as the target organ.

O&M Workers: Current O&M workers at the Facility Area may be exposed to contaminants in soil via incidental ingestion and dermal contact, and inhalation of ambient air.

The total estimated cancer risk for current O&M workers in the Facility Area (1×10^{-4}) is estimated at the upper limit of EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4} for the RME scenario. The cancer risk is predominately due to incidental ingestion (42%) and dermal contact (58%) exposure to total PCBs in surface soil. When a more typical exposure is considered under the CTE scenario, the cancer risk (8×10^{-6}) is within EPA's target cancer risk range.

The total HI for O&M workers in the Facility Area exceeded EPA's non-cancer threshold of 1 under the RME (5) scenario and met the limit under the CTE (1) scenario. Non-cancer health hazards are predominately due to incidental ingestion (37%) and dermal contact (63%) exposure to total PCBs in surface soil which causes adverse heath effects to the eyes, nails, skin, and immune system.

Other contaminants that contributed to cancer risk with individual chemical contributions within EPA's risk range included benzo(a)pyrene, dioxin TEQ and arsenic. Arsenic also contributed to non-cancer hazard to a lesser extent, with skin as the target organ.

Trespasser (Adolescent 7 to 16 years): Current trespassers at the Facility Area could be potentially exposed to contaminants in surface soil via incidental ingestion and dermal contact, and inhalation of ambient air.

The total estimated cancer risk for current trespassers in the Facility Area (8×10^{-5}) is within EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4} for the RME scenario. The cancer risk is predominately due to incidental ingestion (79%) and dermal contact (21%) exposure to total PCBs in surface soil. When a more typical exposure is considered under the CTE scenario, the cancer risk (1×10^{-5}) is also within EPA's target cancer risk range.

The total HI for trespassers in the Facility Area exceeds EPA's non-cancer threshold of 1 for the RME scenario (8) and meets the threshold for the CTE (1) scenario. Non-cancer health hazards are predominately due to incidental ingestion (76%) and dermal

contact (24%) exposure to total PCBs in surface soil. Exposure to total PCBs causes toxic effects to the eyes, nails, skin and immune system.

Other contaminants that contributed to cancer risk with individual chemical contributions within EPA's risk range included dioxin TEQ and arsenic. Arsenic also contributed to non-cancer hazard to a lesser extent, with skin as the target organ.

6.1.1.2.2 Site Wide Ambient Air

Current off-site residents may be exposed to on-site contaminants via inhalation of ambient air were evaluated on a screening basis for both lifetime exposures and childhood exposures (0-6 years). The EPC for these exposures was assumed to be equal to the highest detected value from air monitoring results. This maximum was detected by an on-site monitor.

Lifetime Off-site Resident: The total estimated cancer risk for current lifetime residents exposed to ambient air in the Facility Area (2×10^{-6}) is within EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4}. Total PCBs were the only COPCs identified in ambient air. No non-cancer inhalation toxicity information is available for PCBs, and therefore non-cancer effects were not evaluated.

Child (0-6 years old): The total estimated cancer risks for current child residents exposed to ambient air in the Facility Area (1×10^{-6}) is at the low end of EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4}. Total PCBs were the only COPCs identified in ambient air. No non-cancer inhalation toxicity information is available for PCBs, and therefore non-cancer effects were not evaluated.

Ambient air measurements were taken from several samplers placed on and near the facility and landfills. PCBs in the vapor phase were detected at all of these locations in most or all samples (detection frequencies ranged from 85 to 100 percent). Cancer risks for residents were estimated for one of these locations, representing roughly the middle of the facility area. Results from other sample locations can be evaluated using the results from this sample location.

Summary data for all sampling locations is provided in **Table 6-3**; data from the sampler at 6 - Near East was used in the risk calculations. Risks implied were estimated using the ratio of the EPC from 6 - Near East to the estimated cancer risk at this location to calculate the risk for EPCs calculated for other sampling locations. These implied risks for other air samplers are all less than the risk estimated for 6 - Near East, except for the risk at 7 - Northwest. The EPC for this location (83 ng/m^3) is slightly higher than the EPC used for the risk calculations (73 ng/m^3) and results in a risk that is about 14 percent higher. All risks due to inhalation of PCBs in ambient air near the facility fall at or below the low end of EPA's acceptable risk range.

Note that all of these risks were estimated as if the air samplers were located in a residential yard and residents were exposed to PCBs via inhalation constantly.

TABLE 6-3

SUMMARY OF AMBIENT AIR DATA AND ESTIMATED CANCER RISKS ASSOCIATED WITH INHALATION OF AMBIENT AIR

Anniston PCB Site, Operable Unit 3

	Units	Minimum Concentration	Maximum Concentration	Arithmetic Mean	EPC [1]	Detection Frequency	Implied Risk [2]
1 - East	ng/m^3	0.1	27.3	5.7	7	72 / 84	2.30E-07
1 - East (Colo)	ng/m^3	0.05	22.7	4.6	6.8	35 / 41	2.20E-07
2 - South	ng/m^3	0.1	39.2	5.6	7	76 / 82	2.30E-07
3 - West	ng/m^3	0.2	43.4	8.3	10.1	81 / 84	3.40E-07
4 - North	ng/m^3	0.1	115.6	21	26	80 / 83	8.60E-07
5 - Northeast	ng/m^3	0.6	90.8	11.6	13.6	73 / 74	4.50E-07
6 - Near East	ng/m^3	10.8	72.6	32.5	72.6	6 / 6	2.40E-06
7 - Northwest	ng/m^3	2.9	145.5	37.5	83.1	10 / 10	2.70E-06
8 - Far West	ng/m^3	6.1	26.6	15.2	26.6	6 / 6	8.80E-07

(1) Exposure point concentrations (EPCs) were estimated using ProUCL 4.0. ProUCL output is provided in Appendix C.

(2) Risk per ng/m^3.

Currently, no one lives adjacent to the landfill and any exposure that occurs will be intermittent, perhaps when people walk along the fence line or otherwise visit areas immediately surrounding the site. Any ongoing exposures to PCBs in ambient air will be less than those estimated for residents and any risks can be assumed to fall below EPA's risk range. Such low risks are typically considered negligible or *de minimis.*

Also note some data collected at air sampling locations on and near the operating facility were not available in electronic format for inclusion in the risk calculations, due to difficulties in communication with Solutia. Examination of the complete dataset, however, indicated that the results of the analysis of the air pathway would not change substantively if these additional data were considered. For example, many additional data points were available for sampling location 6 - Near East, but the maximum value of about 72 ng/m^3 did not change when considering these additional data. Since this maximum value was used as the exposure point concentration, risk estimates remain conservative. That is, any exposure point concentration calculated from the full dataset would be equal to or less than the EPC used in the calculations. Because risk estimates in this report are conservative, and because risks overall are at or below the low end of EPA's acceptable risk range, the risk analysis was not changed to include additional air data. The complete dataset for air can be found in the *Preliminary Site Characterization Report on Operable Unit 3* (Solutia 2005).

6.1.1.3 Future Land Use

The following receptors were evaluated for future land use:

(1) Operations area workers (Facility Area)
(2) O&M workers (Facility Area)
(3) Trespasser (Facility Area)
(4) Operations area workers (groundwater)
(5) O&M workers (groundwater)
(6) Off-site residents (groundwater)

6.1.1.3.1 Facility Area

Operations Area Workers: Future operations area workers at the Facility Area may be exposed to contaminants in soil via incidental ingestion and dermal contact, and inhalation of ambient air.

The total estimated cancer risk for future operations area workers in the Facility Area ($6x\ 10^{-3}$) is above EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4} for the RME scenario. Cancer risk from incidental ingestion (72%) and dermal contact (28%) with soil, the primary routes of exposure, is predominately due to total PCBs in surface soil. When a more typical exposure is considered (CTE), cancer risk (1×10^{-3}) still exceeds EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4}, again due to incidental ingestion and dermal contact exposure to total PCBs in soil.

The total HI for operations area workers in the Facility Area (416) exceeded EPA's non-cancer threshold of 1 for the RME scenario by over 2 orders of magnitude. Non-cancer health effects from incidental ingestion (72%) and dermal contact (28%) with soil, the primary routes of exposure, are predominately due to total PCBs in surface soil. The total HI also exceeded EPA's non-cancer threshold of 1 (364) under the CTE scenario, again due to total PCBs. The exposure to PCBs can cause adverse effects to the eyes, nails, skin, and immune system. [Note that PCBs found at the site are consistent with Aroclor 1254, a mixture that contains relatively high levels of chlorination. Non-cancer health effects for total PCBs were, therefore, assessed using the RfD for Aroclor 1254. Neurotoxiciy and reproductive toxicity form the basis for non-cancer effects from exposure to Arochlors 1248 and 1016, respectively. Use of the RfD for Aroclor 1254 is not likely to underestimate the magnitude of non-cancer health impacts, since this RfD is lower that those for other Aroclors. However, health impacts other than to the eyes, skin, nails and immune system are possible given the range of chlorination observed in PCB congener s at the site.]

Other contaminants that contributed to cancer risk with individual chemical contributions within EPA's risk range included benzo(a)pyrene, dibenzo(a,h)anthracene, heptachlor epoxide, dioxin TEQ and arsenic. Chemicals contributing to non-cancer hazard to a lesser extent included arsenic, with skin as the target organ.

O&M Workers: Future O&M workers at the Facility Area may be exposed to contaminants in soil via incidental ingestion and dermal contact, and inhalation of ambient air.

The total estimated cancer risk for future O&M workers in the Facility Area (1×10^{-3}) exceeds EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4} for the RME scenario. The cancer risk is predominately due to incidental ingestion (37%) and dermal contact (63%) exposure to total PCBs in surface soil. When a more typical exposure is considered under the CTE scenario, the cancer risk (6×10^{-5}) is within EPA's target cancer risk range.

The total HI for O&M workers in the Facility Area exceeded EPA's non-cancer threshold of 1 under both RME (79) and CTE (20) scenarios. Non-cancer health hazards are predominately due to incidental ingestion (36%) and dermal contact (64%) exposure to total PCBs in surface soil which causes adverse heath effects to the eyes, nails, skin, and immune system.

Other contaminants that contributed to cancer risk with individual chemical contributions within EPA's risk range included benzo(a)pyrene, dioxin TEQ and arsenic. Arsenic also contributed to non-cancer hazard to a lesser extent, with skin as the target organ.

Trespasser (Adolescent 7 to 16 years): Future trespassers at the Facility Area could be potentially exposed to contaminants in surface soil via incidental ingestion and dermal contact, and inhalation of ambient air.

The total estimated cancer risk for future trespassers in the Facility Area (7×10^{-4}) is above EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4} for the RME scenario. The cancer risk is predominately due to incidental ingestion (75%) and dermal contact (25%) exposure to total PCBs in surface soil. When a more typical exposure is considered under the CTE scenario, the cancer risk (6×10^{-5}) is within EPA's target cancer risk range.

The total HI for trespassers in the Facility Area exceeds EPA's non-cancer threshold of 1 for both RME (124) and CTE (20) scenarios. Non-cancer health hazards are predominately due to incidental ingestion (75%) and dermal contact (25%) exposure to total PCBs in surface soil. Exposure to total PCBs causes toxic effects to the eyes, nails, skin and immune system.

Other contaminants that contributed to cancer risk with individual chemical contributions within EPA's risk range included dioxin TEQ and arsenic. Arsenic also contributed to non-cancer hazard to a lesser extent, with skin as the target organ.

6.1.1.3.2 Site Wide Groundwater

Operations area workers, O&M workers and off-site residents were evaluated for potential risks using EPCs based on groundwater data. These receptors were evaluated for exposures to site-related contaminants in groundwater. As previously discussed, these receptors were assumed to use water from a well completed in the residuum and that draws water from a heavily contaminated portion of shallow groundwater.

Operations Area Workers: Should a potable well be installed in the future that draws water from the contaminated part of the aquifer for potable use at OU-3, future operations area workers may be exposed to groundwater via ingestion. The total estimated cancer risk for operations area workers (2×10^{-2}) is above EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4} for the RME scenario. Cancer risk is due to ingestion (100%) exposure to total PCBs in groundwater. When a more typical exposure is considered under the CTE scenario, the cancer risk (3×10^{-3}) is also above EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4}.

The total HI for operations area workers is above EPA's non-cancer threshold of 1 for both RME (1,212) and CTE (432) scenarios. Non-cancer health effects were due to ingestion (100%) exposure to total PCBs in groundwater which can cause toxic effects to the eyes, nails, skin and immune system. Other contaminants that may cause deleterious non-cancer effects are 2,4,6-trichlorophenol, methyl parathion, and parathion. Methyl parathion affects blood, while 2,4,6-trichlorophenol and parathion do not affect specific target organs.

O&M Workers: Should a potable well be installed in the future that draws water from the contaminated part of the aquifer for potable use at OU-3, future O&M workers may be exposed to groundwater via ingestion. The total estimated cancer risk for O&M workers ($2x\ 10^{-3}$) is above EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4} for the RME scenario. Cancer risk is due to ingestion (100%) exposure to total PCBs in groundwater. When a more typical exposure is considered under the CTE scenario, cancer risk (2×10^{-4}) is slightly above EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4}.

The total HI for operations area workers is above EPA's non-cancer threshold of 1 for both RME (116) and CTE (66) scenarios. Non-cancer health effects were due to ingestion (100%) exposure to total PCBs in groundwater which can cause toxic effects to the eyes, nails, skin and immune system. Other contaminants that may cause deleterious non-cancer effects are 2,4,6-trichlorophenol, methyl parathion, and parathion. Methyl parathion affects blood while 2,4,6-trichlorophenol and parathion do not affect specific target organs.

Off-site Residents: Should a potable well be installed in the future that draws water from the contaminated part of the aquifer for potable use, future off-site residents may be exposed to groundwater via incidental ingestion, dermal contact and inhalation of vapors in the bath as well as via inhalation of ambient air. Future on-site residents were evaluated for both lifetime exposures and childhood exposures (0-6 years old).

The total estimated cancer risks for lifetime off-site residents (4×10^{-1}) is above EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4}. Cancer risks are predominately due to incidental ingestion (19%) and dermal contact (81%) exposure to total PCBs in groundwater. Note that the emphasis of the HHRA for OU3 is on receptors expected to use the current operational facility and the two landfills. Residents will be evaluated in more detail in the risk assessment for OUs 1 and 2. Thus, only RME was evaluated for limited exposure pathways for residents. Both RME and CTE scenarios will be evaluated in subsequent risk assessments for a more complete set of exposure pathways.

The total HI for lifetime residents (30,445) exceeded EPA's non-cancer threshold of 1 by orders of magnitude. Non-cancer health hazards are predominately due to exposure to incidental ingestion (26%) and dermal contact (74%) exposure to total PCBs in groundwater which can cause adverse health effects to the eyes, nails, skin and immune system. Other contaminants which pose lesser but still potentially significant hazards include 2,4,6-trichlorophenol, methyl parathion, parathion, and arsenic. Exposure to methyl parathion affects the blood, and arsenic affects the skin. RfDs for parathion and 2,4,6-trichlorophenol are not based on specific target organ effects.

The total estimated cancer risks for child residents (0 – 6 years old) (2×10^{-1}) is above EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4}. Cancer risks are predominately

due to incidental ingestion (17%) and dermal contact (83%) exposure to total PCBs in groundwater.

The total HI for child residents (46,553) exceeded EPA's non-cancer threshold of 1. Similar to adults, non-cancer health effects are predominately due to exposure to incidental ingestion (17%) and dermal contact (83%) exposure to total PCBs in groundwater which can cause toxic effects to the eyes, nails, skin and immune system. Other contaminants that contributed less to total HI, but still could be associated with significant exposure include 2,4,6-trichlorophenol, methyl parathion, parathion and arsenic.

In summary, risks and hazards for receptors estimated using RME assumptions resulted in exceedences of the EPA threshold of 1×10^{-4} for future operations area workers, and future O&M workers, and trespassers exposed to contaminants in the Facility Area, as well as operations area workers, O&M workers and off-site residents exposed to groundwater within the most contaminated parts of the current groundwater plume. In addition, total HIs for non-cancer effects for all receptors exposed to soil in the Facility Area, and for operations area workers, O&M workers and off-site residents exposed to groundwater within the most contaminated parts of the current groundwater plume exceeded the EPA threshold of 1.

Risks and hazards were also estimated using CTE assumptions in cases where the RME assumptions resulted in risk estimates above EPA thresholds. The comparison of RME and CTE risks and health hazards provides information about the degree to which variability in and uncertainty about receptor behavior (e.g., number of days receptor is exposed) influence the risk estimates.

Risks and hazards estimated for receptors using CTE assumptions resulted in exceedences of the EPA threshold of 1×10^{-4} for future operations area workers exposed to contaminants in the Facility Area, as well as operations area workers and O&M workers exposed to groundwater. In addition, total HIs for non-cancer effects for the current/future construction worker, current operations area worker, and all future receptors exposed to the Facility Area; and for operations area workers and O&M workers exposed to groundwater exceeded the EPA threshold of 1.

Risks associated with inhalation of PCB vapors in ambient air were estimated to be at the lower end of or below the EPA risk range (see discussion in section 6.1.1.2.2). These risks, based on recent measurements of PCBs in ambient air at and near the facility are expected to be applicable to future conditions. PCBs are no longer manufactured at the facility and no increases in releases to ambient air are anticipated. Thus, risks based on current ambient air data are likely to be at least as high as any risks associated with future releases. At some point, the source of PCBs to ambient air will be depleted and risks associated with inhalation of PCBs will be eliminated. The time frame for such depletion is not known.

6.1.1.4 Site-specific Current/Future Land Use

In sections 6.1.1.1 through 6.1.1.3, assumptions were made based on RME and CTE, and, in most cases, values were specified by EPA guidance documents. Exposure assumptions for estimating RME are often taken from the upper range of those that are possible, while CTE are calculated using generally more realistic or typical assumptions.

Previous risk assessment efforts for OU-3, developed site-specific information that could be used to define risks for current workers. These assumptions were used to estimate CTE in this risk assessment. Site-specific exposure assumptions are presented in Tables B-4.4 and B-4.5.

Site-specific assumptions included reducing the O&M worker ingestion rate of soil from a default rate of 100 mg/day to 50 mg/day; increasing the exposure frequency from 24 days to 50 days; decreasing the skin surface area from a default of 3,300 cm^2 to 1,300 cm^2 for an adult head and 990 cm^2 for adult hands; and decreasing the dermal adherence from 0.9 mg/cm^2 to 0.004 mg/cm^2 for head and 0.046 mg/cm^2 for hands.

For the trespasser, exposure frequency was increased from 50 days to 60 days, skin surface area was increased from 2,800 cm^2 to 5,300 cm^2, and dermal adherence factor was decreased from 0.2 mg/cm^2 to 0.04 mg/cm^2. An intestinal absorption factor of 0.3 was also added for PCBs and arsenic.

For the construction worker, ingestion rate of soil was increased from 330 mg/day to 480 mg/day; exposure frequency was increased from 100 days to 120 days; skin surface area was increased from 3,300 cm^2 to 1,300 cm^2 for head and 990 cm^2 for hands; and dermal adherence factor was decreased from 0.3 mg/cm^2 to 0.029 mg/cm^2 for head and 0.24 mg/cm^2 for hands. An intestinal absorption factor of 0.3 was also added for PCBs and arsenic.

Cancer risk and non-cancer hazard calculations for all COPCs based on site-specific assumptions (modified exposures) for the O&M worker, trespasser, and construction worker are presented in RAGS Part D Tables F-7.1 through F-7.9 and then summarized in RAGS Part D Tables F-9.1 through F-9.9 and F-10.1 through F-10.9. Cancer and non-cancer risk estimates for each exposure are presented in **Table 6-4** for site-specific scenarios. **Table 6-5** provides a comparison of RME, CTE and site-specific risk estimates.

6.1.1.4.1 O&M Workers

Current/future O&M workers at the South Landfill and West End Landfill may be exposed to contaminants in soil via incidental ingestion and dermal contact. Using site-specific exposure assumptions, the total estimated RME cancer risk in the South Landfill was reduced by an order of magnitude from 3×10^{-6} to 4×10^{-7}, and the total RME HI was reduced from 0.2 to 0.02. In the West End Landfill the total estimated

TABLE 6-4

SUMMARY OF CARCINOGENIC RISKS AND NON-CARCINOGENIC HEALTH HAZARDS

MODIFIED EXPOSURE

Anniston PCB Site, Operable Unit 3

Area	Receptor	Cancer Risk	Cancer Risk Note	Noncancer Hazard Index (HI)	Noncancer HI Note
Current/Future Land Use					
South Landfill	O&M Worker	$4x10^{-7}$	Cancer risk is below the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	0.02	HI value is below 1.
	Trespasser - Adolescent (7-16 yrs)	$6x10^{-7}$	Cancer risk is below the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	0.1	HI value is below 1.
West End Landfill	O&M Worker	$3x10^{-8}$	Cancer risk is below the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	NA	There is no detected data for surface soil in this area.
	Trespasser - Adolescent (7-16 yrs)	$8x10^{-9}$	Cancer risk is below the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	NA	There is no detected data for surface soil in this area.
Facility Area	Construction Worker	$8x10^{-5}$	Cancer risk is within the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	124	The HI for eye/nails/skin/immune system (mostly from PCBs in soil) exceeded 1.
Current Land Use					
Facility Area	O&M Worker	$2x10^{-5}$	Cancer risk is within the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	1	The HI for eye/nails/skin/immune system (mostly from PCBs in soil) meets 1.
	Trespasser - Adolescent (7-16 yrs)	$4x10^{-5}$	Cancer risk is within the EPA target range of $1x10^{-4}$ to $1x10^{-6}$	3	The HI for eye/nails/skin/immune system (mostly from PCBs in soil) exceeded 1.
Future Land Use					
Facility Area	O&M Worker	$2x10^{-4}$	Cancer risk is primarily due to ingestion and dermal contact exposure to PCBs from soil (risk = $2x10^{-4}$).	11	The HI for eye/nails/skin/immune system (mostly from PCBs in soil) exceeded 1.
	Trespasser - Adolescent (7-16 yrs)	$3x10^{-4}$	Cancer risk is primarily due to ingestion and dermal contact exposure to PCBs from soil (risk = $3x10^{-4}$).	48	The HI for eye/nails/skin/immune system (mostly from PCBs in soil) exceeded 1.

Cancer risks: An excess lifetime cancer risk of $1x10^{-6}$ indicates that an individual experiencing the reasonable maximum exposure has a 1 in 1,000,000 chance of developing cancer as a result of site-related exposure. This is referred to as an "excess lifetime cancer risk" because it would be in addition to the risks of cancer individuals face from other causes. EPA's generally acceptable risk range for site-related exposures is $1x10^{-6}$ to $1x10^{-4}$ (one in one million to one in ten thousand).

Noncancer hazards: EPA Risk Assessment Guidance for Superfund (EPA 1989) states that, generally, a hazard index (HI) greater than 1 indicates the potential for adverse noncancer effects.

TABLE 6-5
SUMMARY OF CARCINOGENIC RISKS AND NON-CARCINOGENIC HEALTH HAZARDS
RME, CTE AND MODIFIED EXPOSURE
Anniston PCB Site, Operable Unit 3

Area	Receptor	Cancer Risk			Noncancer Hazard Index (HI)		
		RME	CTE	Modified	RME	CTE	Modified
Current/Future Land Use							
South Landfill	O&M Worker	$3x10^{-6}$	$1x10^{-7}$	$4x10^{-7}$	0.2	0.04	0.02
	Trespasser - Adolescent (7-16 yrs)	$2x10^{-6}$	$1x10^{-7}$	$6x10^{-7}$	0.3	0.04	0.1
West End Landfill	O&M Worker	$1x10^{-8}$	$3x10^{-9}$	$3x10^{-8}$	NA	NA	NA
	Trespasser - Adolescent (7-16 yrs)	$7x10^{-9}$	$7x10^{-10}$	$8x10^{-9}$	NA	NA	NA
Facility Area	Construction Worker	$1x10^{-4}$	$3x10^{-5}$	$8x10^{-5}$	250	90	124
Current Land Use							
Facility Area	Operation Area Worker	$2x10^{-4}$	$4x10^{-5}$	NA	8	3	NA
	O&M Worker	$1x10^{-4}$	$8x10^{-6}$	$2x10^{-5}$	5	1	1
	Trespasser - Adolescent (7-16 yrs)	$8x10^{-5}$	$1x10^{-5}$	$4x10^{-5}$	8	1	3
Site Wide	Off-site Resident - Child to Adult (Lifetime Resident)	$2x10^{-6}$	NA	NA	NA	NA	NA
	Off-site Resident - Child (0-6 yrs)	$1x10^{-6}$	NA	NA	NA	NA	NA
Future Land Use							
Facility Area	Operation Area Worker	$6x10^{-3}$	$1x10^{-3}$	NA	416	364	NA
	O&M Worker	$1x10^{-3}$	$6x10^{-5}$	$2x10^{-4}$	79	20	11
	Trespasser - Adolescent (7-16 yrs)	$7x10^{-4}$	$6x10^{-5}$	$3x10^{-4}$	124	20	48
Site Wide	Off-site Resident - Child to Adult (Lifetime Resident)	$4x10^{-1}$	NA	NA	30,445	NA	NA
	Off-site Resident - Child (0-6 yrs)	$2x10^{-1}$	NA	NA	46,553	NA	NA
	Operations Area Worker	$2x10^{-2}$	$3x10^{-3}$	NA	1,212	432	NA
	O&M Worker	$2x10^{-3}$	$2x10^{-4}$	NA	116	66	NA

Cancer risks: An excess lifetime cancer risk of $1x10^{-6}$ indicates that an individual experiencing the reasonable maximum exposure has a 1 in 1,000,000 chance of developing cancer as a result of site-related exposure. This is referred to as an "excess lifetime cancer risk" because it would be in addition to the risks of cancer individuals face from other causes. EPA's generally acceptable risk range for site-related exposures is $1x10^{-6}$ to $1x10^{-4}$ (one in one million to one in ten thousand).

Noncancer hazards: EPA Risk Assessment Guidance for Superfund (EPA 1989) states that, generally, a hazard index (HI) greater than 1 indicates the potential for adverse noncancer effects.

NA: Scenario was not applicable.

RME cancer risk was increased from 1 x 10^{-8} to 3 x 10^{-8}, and HIs were not applicable because no chemicals were detected in surface soil.

Current and future O&M workers at the Facility Area may be exposed to contaminants in soil via incidental ingestion and dermal contact. Using site-specific exposure assumptions for current conditions, the total estimated RME cancer risk in the Facility Area was reduced by an order of magnitude from 1 x 10^{-4} to 2 x 10^{-5}, and the total RME HI was reduced from 5 to 1. Using site-specific exposure assumptions for future conditions, the total estimated RME cancer risk in the Facility Area was reduced by an order of magnitude from 1 x 10^{-3} to 2 x 10^{-4}, and the total RME HI was reduced from 79 to 11.

6.1.1.4.2 Current/Future Trespasser (Adolescent 7 to 16 years)

Current/future trespassers at the South Landfill and West End Landfill may be exposed to contaminants in surface soil via incidental ingestion and dermal contact. Using site-specific exposure assumptions, the total estimated RME cancer risk for trespassers in the South Landfill was reduced from 2 x 10^{-6} to 6 x 10^{-7}, and the total HI for was reduced from 0.3 to 0.1. In the West End Landfill the total estimated RME cancer risk increased from 7 x 10^{-9} to 8 x 10^{-9}, and HIs were not applicable, because no chemicals were detected in surface soil.

Current and future trespassers at the Facility Area can be potentially exposed to contaminants in surface soil via incidental ingestion and dermal contact. Using site-specific exposure assumptions for current conditions, the total estimated RME cancer risk for trespassers in the Facility Area was reduced from 8 x 10^{-5} to 4 x 10^{-5}, and the total HI was reduced from 8 to 3. Using site-specific exposure assumptions for future conditions, the total estimated RME cancer risk for trespassers in the Facility Area was reduced from 7 x 10^{-4} to 3 x 10^{-4}, and the total HI was reduced from 124 to 48.

6.1.1.4.3 Current/Future Construction Worker

Current/future construction workers at the Facility Area can be potentially exposed to contaminants in subsurface soil via incidental ingestion and dermal contact as well as inhalation of ambient air. Using site-specific exposure assumptions, the total estimated RME cancer risk for construction workers in the Facility Area was reduced from 1 x 10^{-4} to 8 x 10^{-5}, and the total HI was reduced from 250 to 124.

In general, site-specific exposure assumptions for current exposure conditions suggest potential risks and hazards that are about a factor of two less than those estimated using typical default values. Risks and hazards fall in a range similar to CTE estimates presented above.

6.2 Uncertainty in the Risk Assessment

As in any risk assessment, the estimates of potential health threats (cancer risks and non-cancer health hazards) have numerous associated uncertainties. The primary areas of uncertainty and limitations are qualitatively discussed here. Uncertainties in the following areas are discussed separately:

- Environmental data.
- Exposure parameter assumptions.
- Toxicological data.
- Risk characterization.

6.2.1 Environmental Data

Uncertainty is always involved in the estimation of chemical concentrations. Errors in the analytical data may stem from errors inherent in sampling and/or laboratory procedures. One of the most effective methods of minimizing procedural or systematic error is to subject the data to a strict QC review. This QC review procedure helps to eliminate many laboratory errors. However, even with all data vigorously validated, it must be realized that error is inherent in all laboratory procedures.

Additional uncertainty is associated with chemicals reported in samples at concentrations below the reported quantitation limits but still included in the analysis. These values are estimated and may result in the over- or underestimation of risk.

6.2.1.1 Groundwater Data

Groundwater data used in this assessment contributes a significant degree of uncertainty to the overall assessment. For the most part, these data represent current groundwater quality for areas where the plume is located. However, prediction of future concentrations, especially over the long time period that OU-3 may continue to operate, is not possible using current information. Groundwater data are used, without modification, to represent potential future exposures. The presumption that contaminant concentrations will remain the same over time may overestimate the potential risk because dispersion and other natural processes are not accounted for.

Exposure to contaminants in groundwater at OU-3 is not ongoing for any current receptors. If, in the future, wells were installed in the vicinity OU-3, exposure to contaminants in groundwater would be of concern and could potentially pose a risk to exposed operations area workers, O&M workers or off-site residents using water for domestic purposes. The HHRA evaluated these hypothetical scenarios to provide risk managers an indication of degree of contamination of groundwater in the plume area. Risk estimates should be considered as rough indications of the magnitude of contamination in the worst part of existing plumes. When OUs 1 and 2 are evaluated, additional groundwater data may allow more confident estimation of potential risks.

Exposure to contaminated groundwater is made even more conservative by the assumption that exposure to COPCs in groundwater remains constant over time. This assumption suggests a nondiminishing source of contamination and that concentrations will remain at present levels for up to 30 years. In reality, COPCs that currently exist in groundwater will migrate, degrade, and volatilize. Future concentrations of COPCs in groundwater may vary substantially and will most likely be reduced, resulting in exposures significantly less than those calculated in this assessment.

6.2.1.2 Background Conditions

Inorganic EPCs for the Facility Area (the only area with identified inorganic COPCs) were compared to background upper prediction limits (UPLs) calculated from background data collected at Fort McClellan. For those inorganic constituents identified as COPCs in current and future surface soil in the operations area, aluminum, chromium, iron, manganese, and vanadium were all below the background UPLs (**Table 6-6**), typically by a factor of 2 to 3. The antimony EPC was just above the UPL, arsenic was detected at concentrations approximately 20 times the UPL, cadmium was approximately 4 times the UPL, lead exceeded the UPL by about 90 times, and mercury was detected at almost 25 times the UPL.

EPCs of combined surface and subsurface soil for barium, iron and vanadium in the Facility Area were also below the background UPL. Aluminum, antimony, cadmium, chromium and manganese concentrations in the Facility Area were slightly higher than the background UPL, while the arsenic EPC was about 5 times higher than the UPL, lead was almost 90 times the UPL, mercury was just over 20 times the UPL and nickel was just over 30 times the UPL.

These findings indicate several COPCs for the Facility Area are present only at local ambient concentrations and therefore are not site-related. However, because these chemicals do not contribute significantly to health hazards, the ultimate impact to risk estimates is negligible.

6.2.1.3 Surface Soil Data

As discussed briefly in Section 3.3, duplicate results for sample location SSRI-11 vary by almost an order of magnitude. The EPC for calculation of RME for surface soil used the higher of the two duplicate results. This EPC suggested a risk of 2×10^{-4} for current operations workers. One cannot determine whether the high or low result is representative of the actual sample concentration. Thus, use of the larger value could overestimate potential exposures. If the average of the duplicate values was used for EPC calculation, the resulting risk estimate is reduced to 1×10^{-4}. This risk is slightly less than the original estimate, showing that the treatment of data for SSRI-11 does not make a dramatic difference in surface soil EPCs.

Note also that the location of SSRI-11 is in an area of the facility not currently used by operations workers. Inclusion of this data point in calculations increases EPC estimates and may cause risk estimates for current conditions be biased high. However, the current worker scenario is intended to address working conditions and worker behaviors under Solutia management of the site. Minor changes in Solutia operations could in theory change the way the portion of the site where SSRI-11 is located is used. Thus, inclusion of SSRI-11 data was considered appropriate for this assessment.

TABLE 6-6
FACILITY AREA EPCS COMPARED TO FORT McCLELLAN BACKGROUND UPLS
Annitson PCB Site, Operable Unit 3

Chemical	Surface Soil			Surface/Subsurface Soil	
	Ft. McClellan Background UPL	Facility Area Current Land-Use Scenario EPC	Facility Area Future Land-Use Scenario EPC	Ft. McClellan Background UPL	Facility Area EPC
Aluminum	22,900	19,000	19,000	11,500	19,000
Antimony	7.14	9	9	7.14	9
Arsenic	19.5	390	390	31.5	148
Barium	161	NS	NS	205	192
Cadmium	1.2	5	5	0.7	1
Chromium	52.9	23	23	41.1	49
Iron	41,700	26,000	26,000	40,900	26,000
Lead	50.8	4,700	4,700	29.7	2,609
Manganese	2,520	830	830	2,060	2,786
Mercury	0.125	3	3	0.093	2
Nickel	14.6	NS	NS	27.5	890
Vanadium	88.1	40	40	67.8	47

NC: Not calculated. All samples returned results of non-detect.
NS: Not selected as a COPC.
UPL: Upper prediction limit.

If data from SSRI-11 were excluded, risk estimates for current operations workers would decrease by a factor of about 5 and would fall within EPA's risk range. The resulting EPC would be about 73 mg/kg compared to the value of 374 mg/kg used in the risk assessment. To assess current operations workers, a risk based on RME of about 4×10^{-5} may be most appropriate. For decisions on the need for site remediation, the RME risk between 2×10^{-4} and 6×10^{-3}, both of which are based on EPCs that use data from SSRI-11 may be more appropriate.

6.2.2 Exposure Parameter Assumptions

There are two major areas of uncertainty affecting exposure parameter estimation. The first relates to estimation of EPCs. The second relates to parameter values used to estimate chemical intake (e.g., ingestion rate, exposure frequency).

6.2.2.1 Exposure Point Concentrations

As discussed in Section 3, exposure point concentrations (EPCs) were calculated from datasets where the larger of values from duplicate samples was assumed to represent the actual sample concentration. This approach could lead to some overestimation of EPCs for some datasets. However, since it is not possible to determine which duplicate result is more representative, the magnitude any errors cannot be determined. In general, the larger the dataset and the small the difference between duplicate results, the smaller the error. Overall, the effect of treatment of duplicate samples on EPCs is expected to be relatively small.

The approach used in this HHRA to calculate EPCs may over- or underestimate potential exposures and thus risks. These methods were based on EPA guidance (EPA 2004a) and used ProUCL Version 4.0 (EPA, 2007a). EPA expects that their current methods will provide the best statistical estimates of EPCs for individual areas of concern. It should be noted, however, that ProUCL Version 4.0 does not have a recommendation for handling EPCs with high percentage of NDs. As a result, the 95th percentile was calculated as the EPC where the frequency of NDs is greater than 80%. This approach is uncertain and could lead to overestimation of exposure concentrations.

Inclusion of non-detect results in EPC calculations adds increased uncertainty. A ND result does not indicate whether the chemical is absent from the medium, present at a concentration just above zero, or present at a concentration just below the reporting limit. For chemicals that were infrequently detected, many of values used to estimate EPCs were based on reporting limits. In these cases, uncertainty may be high, but this uncertainty typically lies in a range of concentrations that are low compared to concentrations that might be of concern. Thus, the impact of this uncertainty on the results of the risk assessment is minimal.

Additional uncertainty is associated with chemicals reported in samples at concentrations below the reported quantitation limits, but still included in the analysis. These values are estimated and may result in the overestimation or

underestimation of risk. For example several analytical results for PCBs in soil were qualified as estimated (i.e., J qualified) and the EPCs calculated for these COPCs based on estimated values may be under- or overestimated. Typically, J qualified values made up only a small fraction of data set used to calculate EPCs, and significant effects on risk calculations are not expected.

The approach used to calculate EPCs may also overestimate potential exposures and thus risks due to certain data limitations. The 95% UCL is strongly influenced by sample size and variability and in some cases the 95% UCL estimate falls above the maximum detected concentration. In such cases, the EPC defaults to the maximum. This default occurred for surface soil EPCs for certain areas. Use of maximum concentrations may have had a substantial impact on estimated risks or hazards for a few COPCs in these areas. However, overall, the impact on total estimated risks and hazards was not substantial.

6.2.2.2 Exposure Parameter Assumptions

Exposure parameter values used are also uncertain. For example, assumptions were made for exposure time, frequency, and duration of potential chemical exposures as well as for the quantity of material ingested, inhaled, or absorbed. In general, assumptions were made based on RME and CTE, and, in most cases, values were specified in EPA guidance documents. Exposure assumptions for estimating RME are often taken from the upper range of those that are possible, while CTE are generally more realistic. Overall, use of RME values for many parameters is expected to be protective for most if not all groups of receptors. For this risk assessment, site-specific exposure parameters were also utilized; these parameters were taken from a previous risk assessment (Solutia 2002). These values are considered representative for current, but not future, activities at the site. Comparison of cancer risks and non-cancer hazards calculated using typical default parameters versus those calculated using site-specific parameters suggest that risk and hazards for current conditions could be overstated by a factor of 2 or more depending on receptor group and location.

6.2.3 Toxicological Data

Toxicological data uncertainty is a large source of uncertainty in this risk assessment. One source of uncertainty includes using dose-response information from effects observed at high doses in animals to predict adverse health effects from low level exposures to humans in contact with the chemical in the environment. Another source is the use of dose-response information from short-term exposure studies to predict the effects of long-term exposure. Uncertainties also arise from using dose-response information in animals to predict human health effects and from homogeneous animal and healthy human populations to predict effects likely to be observed in the general population, which consists of individuals with varying sensitivities.

Additionally, surrogate toxicity values of hexavalent chromium, methyl mercury and nickel as soluble salt were respectively employed for chromium, mercury and nickel.

The use of toxicity information for total PCBs also adds uncertainty to the characterization. PCBs found at the site are consistent with Aroclor 1254, a mixture that contains relatively high levels of chlorination. Non-cancer health effects for total PCBs were, therefore, assessed using the RfD for Aroclor 1254. Neurotoxiciy and reproductive toxicity form the basis for non-cancer effects from exposure to Arochlors 1248 and 1016, respectively. Use of the RfD for Aroclor 1254 is not likely to underestimate the magnitude of non-cancer health impacts, since this RfD is lower that those for other Aroclors. However, health impacts other than to the eyes, skin, nails and immune system are possible given the range of chlorination observed in PCB congeners at the site. For carcinogenic assessment of exposures to PCBs in soil and groundwater, the upperbound oral CSF for total PCBs of 2 $(mg/kg\text{-}day)^{-1}$ was used for RME scenarios and the central estimate oral CSF for total PCBs of 1 $(mg/kg\text{-}day)^{-1}$ was used for CTE scenarios. These choices for use of slope factors were based on the observation that Aroclors found at the site tend to reflect high levels of chlorination (e.g. Aroclors 1248, 1254, 1260 and 1268). Many of the higher chlorinated congeners are the most toxic, and suggest the highest risks from environmental exposures. These slope factors seem unlikely to underestimate risks, but could overestimate risks depending on the variety of factors discussed in Section 5.

6.2.4 Congener Data

PCBs were evaluated in this HHRA quantitatively by calculating cancer risks and non-cancer hazards using toxicity values derived from PCB Aroclors. In addition to PCB Aroclors, a select number of soil and groundwater samples were additionally analyzed for PCB congeners. PCBs were manufactured as a complex mixture of 209 different congeners. Commercial mixtures with higher proportions of chlorine contain higher percentages of the more heavily chlorinated congeners. Twelve of the 209 PCB congeners are considered "dioxin-like" based on their toxicity and certain features of their chemical structure. Dioxin has been associated with reproductive, immune and thyroid toxic effects and neurotoxicity. Dioxin-equivalent potency factors have been developed by the World Health Organization (WHO) (Van den Berg 1998) to assess this toxicity. PCB-126, for example, is considered the most potent congener with a TEF of 0.1, indicating that it is one tenth as toxic as TCDD. While the toxicity values of Aroclors included in the IRIS database reflect the contribution from the 12 dioxin-like congeners as well as any of the other 197 congeners that may be present in the PCB mixture, a qualitative discussion of dioxin-like PCB congener toxicity is also presented.

Table 6-7 presents the PCB congener results for the 12 dioxin-like congeners as well as the dioxin toxic equivalent (TEQ) concentrations for surface soil samples SSRI-04-06, SSRI-07-06, and SSRI-11-6. In the S*treamlined Risk Evaluation for Residential Areas Anniston PCB Site* (EPA 2002c), a cleanup goal of 1 µg/kg for dioxin TEQ was recommended for residential soils. The dioxin TEQ of 0.3 µg/kg derived for SSRI-04-

06 was below the cleanup goal, however, the TEQs for SSRI-07-06 (134 µg/kg) and SSRI-11-06 (21 µg/kg) were higher than the cleanup goal. The total PCB concentrations based on Aroclors for these three samples were 12 mg/kg (SSRI-04-06),

TABLE 6-7
PCB CONGENER AND AROCLOR SOIL SAMPLING RESULTS
Anniston PCB Site, Operable Unit 3

Analyte	SSRI-04-06 µg/Kg	SSRI-07-06 µg/Kg	SSRI-11-06 µg/Kg
WHO Congeners			
PCB-77	39.1 J	16700 J	649 J
PCB-81	1.56 J	562 J	26.9 J
PCB-105	238 J	135000 J	12300 J
PCB-114	10.5 J	5730 J	758 J
PCB-118	403 J	286000 J	32400 J
PCB-123	9.88 J	5380 J	647 J
PCB-126	1.65 J	567 J	98.1 J
PCB-156/157	192 J	58400 J	11900 J
PCB-167	45.7 J	16400 J	4590 J
PCB-169	0.0628 UJ	28.6 UJ	3.14 UJ
PCB-189	25.1 J	4900 J	1570 J
PCB-209	456 J	371000 J	80000 J
TEQ Congeners	0.3 J	134.0 J	21.0 J
Total Homolog Groups			
Total Mono-CBs	15 J	26,700 J	265 J
Total Di-CBs	152 J	52,600 J	1,420 J
Total Tri-CBs	545 J	138,000 J	5,590 J
Total Tetra-CBs	1,610 J	1,090,000 J	47,800 J
Total Penta-CBs	2,970 J	1,990,000 J	202,000 J
Total Hexa-CBs	2,670 J	1,730,000 J	385,000 J
Total Hepta-CBs	1,730 J	1,020,000 J	236,000 J
Total Octa-CBs	1,190 J	734,000 J	133,000 J
Total Nona-CBs	825 J	532,000 J	102,000 J
PCB-209 (Deca-CB)	456 J	371,000 J	80,000 J
Total PCB Congeners	12,163 J	7,684,300 J	1,193,075 J
PCB-153	421 J	350,000 J	78,900 J
PCB Arolclors			
Aroclor 1016	0 U	0 U	0 U
Aroclor 1221	0 U	0 U	0 U
Aroclor 1232	0 U	0 U	0 U
Aroclor 1242	0 U	0 U	0 U
Aroclor 1248	1,700 J	15,000	0 U
Aroclor 1254	4,700	48,000	52,000
Aroclor 1260	4,000	45,000	66,000
Aroclor 1268	1,800	18,000	36,000
Total PCB Aroclors	12,200	126,000	154,000

Notes:
U = Below Detection Limit
UJ = Quantitation Limit Estimated
J = Estimated
TEQ calculated with ND=1/2DL and EMPC=EMPC.

126 mg/kg (SSRI-07-06), and 154 mg/kg (SSRI-11-06) as presented in Table 6-7. These results are not expected to be proportional since each Aroclor has a different mixture of congeners and the detected proportions of Aroclors differed in each of these three samples. In addition, once released into the environment and subjected to weathering or taken in by plants or animals and partially stored/metabolized/excreted, substantial changes occur in congener ratios.

Two groundwater samples employed in the risk characterization were analyzed for both PCB Aroclors and congeners as presented in **Table 6-8.** Both Aroclors and congeners were non-detect in the groundwater sample collected from location MW-14 in June 2005. The highest dioxin TEQ concentration in groundwater (1.3×10^{-4} µg/L) was detected in the groundwater sample collected from location T4. This concentration of 1.3×10^{-4} µg/L is elevated relative to the EPA Region 9 dioxin tap water PRG of 4.5×10^{-7} µg/L. In the total PCB sample from T4, only Aroclor 1232 was detected in the sample at a concentration of 120 µg/L. This concentration is also elevated relative to the EPA Region 9 total PCB tap water PRG of 0.96 µg/L.

While the soil and groundwater congener data are insufficient to support a congener-specific risk assessment, available data do suggest that risks based on dioxin-like congeners may be high. This general conclusion is consistent with the high risks estimated using total PCBs.

6.2.5 Risk Characterization

Some uncertainty in assessing risks is associated with exposures to mixtures of chemicals. In this assessment, the effects of exposure to each contaminant had initially been considered separately. However, COPCs occur together at OU-3, and individuals may be exposed to mixtures of these chemicals. Prediction of how mixtures of chemicals will interact must be based on an understanding of mechanisms of toxic action of chemicals in the body. Individual compounds may interact chemically in the body, yielding a new toxic component or causing different effects on different target organs. Suitable data are not currently available to rigorously characterize the effects of chemical mixtures. Consequently, as recommended by EPA (EPA 1989), chemicals present at the site were assumed to act additively, and potential health risks were evaluated by summing ELCR risks and calculating HIs for non-cancer effects. This approach to assessing risk and hazard associated with mixtures of chemicals assumes that no synergistic or antagonistic interactions among the chemicals occur at the levels of exposure estimated. To the extent that these assumptions are incorrect, actual risks could be under- or overestimated. Additionally, although risk and hazard estimates are very high, actual exposure is highly dependent on receptor behavior. For workers, risks would only be realized if activities involving frequent contact with soil occurred on a regular basis. Thus, currently, an O&M worker could have the greatest actual exposure even though their exposure frequency is much less that of an operations area worker. Trespassing is very unlikely currently because of fencing and on-site security. Risks for trespassers would most likely be realized if the site was abandoned in the future.

TABLE 6-8
PCB CONGENER AND AROCLOR GROUNDWATER SAMPLING RESULTS
Anniston PCB Site, Operable Unit 3

Analyte	T4 µg/L	MW-14 µg/L
WHO Congeners		
PCB-77	1.32E-01 J	1.44E-05 UJ
PCB-81	6.24E-03 J	1.44E-05 UJ
PCB-105	1.78E-01 J	1.28E-05 UJ
PCB-114	1.22E-02 J	1.23E-05 UJ
PCB-118	2.53E-01 J	1.24E-05 UJ
PCB-123	7.69E-03 J	1.29E-05 UJ
PCB-126	6.64E-04 J	1.43E-05 UJ
PCB-156/157	4.70E-03 J	1.74E-05 UJ
PCB-167	1.31E-03 J	1.26E-05 UJ
PCB-169	3.11E-05 J	1.48E-05 UJ
PCB-189	1.08E-04 J	1.37E-05 UJ
PCB-209	1.04E-04 J	7.21E-05 UJ
TEQ Congeners	1.33E-04 J	8.03E-07 J
Total Homolog Groups		
Total Mono-CBs	4.17E+01 J	1.78E-04 J
Total Di-CBs	2.36E+01 J	8.54E-05 J
Total Tri-CBs	3.06E+01 J	1.36E-04 J
Total Tetra-CBs	1.73E+01 J	2.15E-04 J
Total Penta-CBs	3.06E+00 J	1.02E-04 UJ
Total Hexa-CBs	2.43E-01 J	1.35E-05 UJ
Total Hepta-CBs	3.02E-02 J	1.18E-05 UJ
Total Octa-CBs	6.80E-03 J	1.28E-05 UJ
Total Nona-CBs	1.41E-03 J	7.12E-05 UJ
PCB-209 (Deca-CB)	1.04E-04 J	7.21E-05 UJ
Total PCB Congeners	1.17E+02 J	8.98E-04 J
PCB-153	3.26E-02 J	- UJ
PCB Aroclors		
Aroclor 1016	0 U	0 U
Aroclor 1221	0 U	0 U
Aroclor 1232	120 J	0 U
Aroclor 1242	0 U	0 U
Aroclor 1248	0 U	0 U
Aroclor 1254	0 U	0 U
Aroclor 1260	0 U	0 U
Aroclor 1268	0 U	0 U
Total PCB Aroclors	120 J	0 U

Notes:
U = Below Detection Limit
UJ = Quantitation Limit Estimated
J = Estimated
TEQ calculated with ND=1/2DL and EMPC=EMPC.

Construction worker risks are also predicated on excavation work in areas with significant contamination. In many locations, PCB contamination is relatively low and potential worker's risks would be much less than those reported.

The release of PCBs as vapor from the site could result in a negligible exposure to off-site residents. However, these estimates are not based on a large data set, and do not consider wind direction and wind speed. A more complete analysis would likely result in lower risk estimates.

Residents were not evaluated for on-site exposure in the future because of an existing deed restriction on the property. This approach seems reasonable and future residential exposure is highly unlikely. High risks for on-site workers suggest the current deed restrictions for residents, whose exposure would be expected to be higher, is an important protective mechanism.

Groundwater risks are highly uncertain and should only be interpreted as very general indications of the magnitude of groundwater contamination in the plume area. A more complete assessment of groundwater will likely be undertaken in the risk evaluation of OUs 1 and 2.

As a result of the uncertainties described above, this risk assessment should not be construed as presenting absolute risks or hazards. Rather, it is a conservative analysis intended to reflect potential risks and hazards at the upper end of those possible.

Section 7
Summary and Conclusions

7.1 Summary

7.1.1 Approach

In the HHRA, contaminants in surface soil, subsurface soil, ambient air and/or groundwater at OU-3 were quantitatively evaluated for potential health threats to the following receptors:

- Current and future land use:
  (1) O&M workers (South Landfill, West End Landfill)
  (2) Trespasser (South Landfill, West End Landfill)
  (3) Construction workers (Facility Area)

- Current land use:
  (1) Operations area workers (Facility Area)
  (2) O&M workers (Facility Area)
  (3) Trespasser (Facility Area)
  (4) Off-site residents (ambient air)

- Future land use:
  (1) Operations area workers (Facility Area)
  (2) O&M workers (Facility Area)
  (3) Trespasser (Facility Area)
  (4) Operations area workers (groundwater)
  (5) O&M workers (groundwater)
  (6) Off-site residents (groundwater)

Estimates of cancer risks and non-cancer health hazards were developed, and COPCs which make the greatest chemical contributions to these estimates were identified.

COPCs were selected based on a comparison to EPA Region 9 residential soil PRGs, drinking water PRGs, and ambient air PRGs. COPCs evaluated in the risk assessment were primarily PCBs in soil, groundwater and air, and inorganic constituents in soil.

Exposure routes and human receptor groups were identified and estimates of the magnitude, frequency, and duration of exposure were calculated. EPCs were estimated using the lower of the 95% UCL and the maximum detected concentration.. The EPA ProUCL Version 4.0 program (EPA 2007a) was used to calculate 95%UCLs. Chronic daily intakes were calculated based on RME scenarios, estimates of exposures well above average and among the highest expected to occur at OU-3, and CTE scenarios, estimates of exposures based on more typical assumptions. Chronic daily intakes were also calculated based on site-specific exposure assumptions developed in previous risk assessment efforts at the site.

In the toxicity assessment, current human toxicity criteria (i.e., reference doses/concentrations and slope factors) were obtained from various sources using EPA's IRIS online database and NCEA values.

Risk characterization integrated exposure and toxicity assessments into quantitative expressions of cancer risks and non-cancer health hazards. Specifically, chronic daily intakes were multiplied by CSFs to estimate incremental cancer risks, or were divided by reference doses or reference concentrations to estimate potential for non-cancer health hazards.

Generally, EPA uses a target cancer risk range of 10^{-6} to 10^{-4} (1 in 1,000,000 to 1 in 10,000) to evaluate the need for remediation or mitigation at a site (EPA 1991b). Cancer risks below 1 in 1,000,000 are typically assumed to be *de minimus* and would require no remediation or mitigation. Risks within the risk range are typically considered acceptable, but decisions on whether to remediate or mitigate risks that fall in this range are made on a site-specific basis. Risks that exceed 1 in 10,000 often require remediation and/or mitigation; however, no "bright line" has been established at the upper end of the risk range, and again, risk management decisions are made on a site-by-site basis.

For non-cancer hazards, EPA typically uses a target HI of unity (one). Where HIs exceed this target, remediation and/or mitigation may be indicated. However, no bright line is established at an HI of one, and risk management decisions are made on a site-by-site basis. Estimates of cancer risk and hazard indices are compared to the above targets as a means of providing perspective on levels of risk and hazard for the risk manager.

7.1.2 Summary of Site Risks

Total cancer risks and non-cancer health hazards for each receptor, including each exposure scenario that was quantitatively evaluated for potential health threats, are presented below.

7.1.2.1 Current/Future Land Use

Potential risks for receptors exposed to contaminants in environmental media released at the Facility Area and South Landfill were evaluated under the current/future land-use conditions.

7.1.2.1.1 Facility Area

The total incremental lifetime cancer risk estimates are:

- Construction workers: $1x10^{-4}$ for RME and $3x10^{-5}$ for CTE

The total HIs are:

- Construction workers: 250 for RME and 90 for CTE

The total estimated cancer risks for construction workers exposed to the Facility Area are above EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4}. Cancer risks are predominately due to ingestion and dermal contact with total PCBs in soil. Non-cancer health hazards calculated for these receptors exceed EPA's non-cancer threshold of unity. Non-cancer health hazards are predominately due to exposure to total PCBs in soil which can cause adverse health effects to the eyes, nails, skin, and immune system.

7.1.2.1.2 South Landfill

The total incremental lifetime cancer risk estimates are:

- O&M workers: $3x10^{-6}$ for RME and $1x10^{-7}$ for CTE
- Trespassers (Adolescent 7 to 16 years): $2x10^{-6}$ for RME and $1x10^{-7}$ for CTE

The total HIs are:

- O&M workers: 0.2 for RME and 0.04 for CTE
- Trespasser (Adolescent 7 to 16 years): 0.3 for RME and 0.04 for CTE

The total estimated cancer risks for O&M workers and trespassers exposed to the South Landfill are within EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4} for the RME scenarios and below the risk range for the CTE scenarios. Non-cancer health hazards calculated for these receptors were below EPA's non-cancer threshold of unity.

7.1.2.1.3 West End Landfill

The total incremental lifetime cancer risk estimates are:

- O&M workers: $1x10^{-8}$ for RME and $3x10^{-9}$ for CTE
- Trespassers (Adolescent 7 to 16 years): $7x10^{-9}$ for RME and $7x10^{-10}$ for CTE

The total estimated cancer risks for O&M workers and trespassers exposed to the West End Landfill for both RME and CTE scenarios are well below EPA's target cancer risk range of 1 × 10-6 to 1 × 10-4. Non-cancer health hazards were not calculated, because COPCs evaluated for noncancer effects were not detected in surface soil.

7.1.2.2 Current Land Use

Potential risks for receptors exposed to contaminants in environmental media released at the Facility Area were evaluated under current conditions for the operations area workers, O&M workers, and trespassers, while off-site residents were evaluated under current site wide ambient air conditions.

7.1.2.2.1 Facility Area

The total incremental lifetime cancer risk estimates are:

- Operations area workers: $2x10^{-4}$ for RME and $4x10^{-5}$ for CTE

- O&M workers: $1x10^{-4}$ for RME and $8x10^{-6}$ for CTE
- Trespasser (Adolescent 7 to 16 years): $8x10^{-5}$ for RME and $1x10^{-5}$ for CTE

The total HIs are:

- Operations area workers: 8 for RME and 3 for CTE
- O&M workers: 5 for RME and 1 for CTE
- Trespasser (Adolescent 7 to 16 years): 8 for RME and 1 for CTE

Under RME scenarios, the total estimated cancer risks for operations area workers and O&M workers exposed to the Facility Area are above EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4}, while trespassers exposed to the Facility Area are at the upper limit of the risk range. CTE estimates for the all three receptors fell within the risk range. Cancer risks are predominately due to ingestion and dermal contact with total PCBs in soil.

Non-cancer health hazards calculated for these receptors exceed EPA's non-cancer threshold of unity, with the exception of the O&M worker and trespasser CTE estimates, which met the threshold. Non-cancer health hazards are predominately due to exposure to total PCBs in soil which can cause adverse health effects to the eyes, nails, skin, and immune system.

7.1.2.2.2 Site Wide Ambient Air

The total incremental lifetime cancer risk estimates are:

- Off-site residents (lifetime residents): 2×10^{-6} for RME
- Off-site residents (child 0 to 6 years): 1×10^{-6} for RME

The total estimated cancer risks for adult and child residents exposed to site wide ambient air are at the low end of EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4}. Cancer risks are due to inhalation of total PCBs in ambient air. Non-cancer health hazards were not calculated, as non-cancer toxicity information is not available for inhalation of PCBs.

7.1.2.3 Future Land Use

Potential risks for receptors exposed to contaminants in environmental media released at the Facility Area and to groundwater were evaluated under the future land-use conditions.

7.1.2.3.1 Facility Area

The total incremental lifetime cancer risk estimates are:

- Operations area workers: $6x\ 10^{-3}$ for RME and $1x\ 10^{-3}$ for CTE
- O&M workers: $1x\ 10^{-3}$ for RME and $6x\ 10^{-5}$ for CTE
- Trespasser (adolescent 7 to 16 years): $7x\ 10^{-4}$ for RME and $6x\ 10^{-5}$ for CTE

The total HIs are:

- Operations area workers: 416 for RME and 364 for CTE
- O&M workers: 79 for RME and 270 for CTE
- Trespasser (adolescent 7 to 16 years): 124 for RME and 20 for CTE

The total estimated cancer risks for operations area workers, O&M workers and trespassers exposed to the Facility Area are above EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4} for RME scenarios and the operations area worker CTE scenario. Estimates for the O&M workers and trespassers fell within the risk range for CTE estimates. Cancer risks are predominately due to ingestion and dermal contact with total PCBs in soil.

Non-cancer health hazards calculated for these receptors exceed EPA's non-cancer threshold of unity. Non-cancer health hazards are predominately due to exposure to total PCBs in soil which can cause adverse health effects to the eyes, nails, skin and immune system.

7.1.2.3.2 Site Wide Groundwater

The total incremental lifetime cancer risk estimates are:

- Operations area workers: $2x10^{-2}$ for RME and $3x10^{-3}$ for CTE
- O&M workers: $2x10^{-3}$ for RME and $2x10^{-4}$ for CTE
- Off-site residents (lifetime residents): 4×10^{-1} for RME
- Off-site residents (child 0 to 6 years): 2×10^{-1} for RME

The total HIs are:

- Operations area workers: 1,212 for RME and 432 for CTE
- O&M workers: 116 for RME and 66 for CTE
- Off-site residents (lifetime residents): 30,445 for RME
- Off-site residents (child 0 to 6 years): 46,553 for RME

The total estimated cancer risks for operations area workers, O&M workers and off-site residents are above EPA's target cancer risk range of 1×10^{-6} to 1×10^{-4}. Cancer risks are predominately due to total PCBs in groundwater.

Non-cancer health hazards calculated for these receptors exceed EPA's non-cancer threshold of unity. Non-cancer health hazards are predominately due to exposure to total PCBs in groundwater which can cause adverse health effects to the eyes, nails, skin and immune system.

7.2 Conclusions

Generally, cancer risks and non-cancer hazards for current and future workers within the Facility Area exceed EPA's thresholds, often by orders of magnitude. This conclusion generally holds for risk and hazard estimates developed from default EPA exposure assumptions, and from site-specific assumptions used previously at the site.

Even when site-specific information was used, risks and hazards remain elevated in the Facility Area for current/future construction workers; current trespassers; and future O&M workers and trespassers.

These estimates suggest that cancer risks for the site may be above the acceptable range as defined by EPA, due mainly to PCBs in soil and groundwater. These risks are associated with existing contamination in the Facility Area and are dependent on receptor behavior. For example, office workers at the site may receive little exposure and estimates of risk and hazards may be greatly overestimated for this population. On the other hand, risks may be more appropriately applied to workers that have opportunity for frequent contact with soil. Workers involved in outdoor maintenance, clean-up, sampling, and monitoring might fall into this category.

In contrast, risks and hazards are estimated to be at or below EPA thresholds for workers that frequent the South and West End Landfills currently and in the future, indicating that health threats for these exposure areas are minimal. Note, however, that the risk assessment did not evaluate a scenario where current landfill containment was compromised. The assessment assumes that landfill covers would remain intact as part of site remediation and closure activities.

Risks to future receptors exposed to groundwater exceeded acceptable cancer risk and non-cancer health hazard threshold, again by orders of magnitude, suggesting the potential for significant exposure if shallow groundwater were to be used for drinking. These risks and hazards would be realized only if wells are installed in the residuum at locations where they would draw water from the most contaminated part of existing plumes. Given the availability of municipal water supplies, installation of drinking water wells in such locations seems unlikely. However, risks are sufficiently high to suggest some consideration be given to ensuring the pathway remains incomplete indefinitely.

Cancer risks associated with exposure of off-site residents to PCB vapors in ambient air are low and may indicate that no unacceptable health threats currently exist. The highest risks for residents, which assume a worst case ambient air concentration of PCBs (2 in one million) is only slightly higher than the bottom of the EPA's risk range. Adjustment of air concentrations based on wind speed and direction would very likely lower estimated ambient air concentrations to the point where estimated risks would fall within the range considered negligible.

Finally, risks and hazards associated with trespassers in the landfill areas are low and suggest negligible risk and hazard. Current and future use of these areas by occasional visitors does not appear to be associated with significant health threats from exposure to PCBs and other site-related chemicals. However, risks and hazards associated with trespassers in the Facility Area are at the high end of or exceed acceptable cancer risk and the non-cancer health hazard threshold, suggesting significant exposure could occur if trespassing became common. Facility security appears to be sufficient to deter most or all trespassing currently.

Section 8
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Appendix A

Sample Information and Sampling Location Maps

List of Tables and Figures Included in Appendix A
Anniston PCB Site, Operable Unit 3

TABLES

FIGURES

TABLE A-1
SURFACE SOIL SAMPLE INFORMATION
Anniston PCB Site, Operable Unit 3
Anniston, Alabama

Exposure Area	Location	Sample ID	Sample Depth (feet)	Date	Comment	Use in Risk Assessment-Current Scenarios	Use in Risk Assessment-Future Scenarios
Operations Area	AOC-A	AOC-A-6A	0-0.5	1/28/03		Y	Y
	SSR-01	SSR-01	0-2	8/19/98		Y	Y
	SSR-02	SSR-02	0-2	8/19/98		Y	Y
	SSR-03	SSR-03	0.5-2.5	8/18/98		N (1)	N (1)
	SSR-18	SSR-18	0.25-0.5	8/20/98		N (3)	Y
		SSR-18	0.25-0.5	8/20/98	Duplicate	N (3)	Y (2)
	SSR-21	SSR-21	0.33-2.5	8/20/98		Y	Y
	SSRI-01	SSRI-01-6	0-0.5	6/2/05		Y	Y
	SSRI-02	SSRI-02-6	0-0.5	6/1/05		Y	Y
	SSRI-03	SSRI-03-6	0-0.5	6/1/05		Y	Y
	SSRI-04	SSRI-04-6	0-0.5	6/1/05		Y	Y
		SSRI-04-06	0-0.5	7/6/05	Duplicate	Y (2)	Y (2)
	SSRI-05	SSRI-05-6	0-0.5	6/1/05		Y	Y
	SSRI-06	SSRI-06-6	0-0.5	6/2/05		Y	Y
	SSRI-07	SSRI-07-6	0-0.5	6/6/05		Y	Y
		SSRI-07-06	0-0.5	7/6/05	Duplicate	Y (2)	Y (2)
	SSRI-08	SSRI-08-6	0-0.5	6/2/05		Y	Y
	SSRI-09	SSRI-09-6	0-0.5	6/3/05		Y	Y
	SSRI-10	SSRI-10-6	0-0.5	6/3/05		Y	Y
	SSRI-11	SSRI-11-6	0-0.5	6/6/05		Y	Y
		SSRI-11-06	0-0.5	7/6/05	Duplicate	Y (5)	Y (2)
	SSRI-12	SSRI-12-6	0-0.5	6/6/05		Y	Y
	SSRI-13	SSRI-13-6	0-0.5	6/6/05		Y	Y
	SSRI-14	SSRI-14-6	0-0.5	6/6/05		Y	Y
	SWMU-17	SWMU-17-6A	0-0.5	1/28/03		Y	Y
	SWMU-25	SWMU-25-6A	0-0.5	1/28/03		Y	Y
	SWMU-31	SWMU-31-6A	0-0.5	1/28/03		Y	Y
	SWMU-42	SWMU-42-6A	0-0.5	2/20/03		Y	Y
		SWMU-42-6B	0-0.5	2/20/03	Duplicate	Y (2)	Y (2)
	SWMU-12-24A	SWMU-12-24A	0-2	1/29/03		Y	Y
		SWMU-12-24A-X	0-2	1/29/03	Duplicate	Y (2)	Y (2)
	SWMU-12-24B	SWMU-12-24B	0-2	1/29/03		Y	Y
	SWMU-12-24C	SWMU-12-24C	0-2	1/29/03		Y	Y
	SWMU-12-24D	SWMU-12-24D	0-2	1/29/03		Y	Y
	SWMU-12-24E	SWMU-12-24E	0-2	1/29/03		Y	Y
	SWMU-12-24F	SWMU-12-24F	0-2	1/29/03		Y	Y
	SWMU-12-24G	SWMU-12-24G	0-2	1/29/03		Y	Y
	SWMU-12-24H	SWMU-12-24H	0-2	1/29/03		Y	Y
	SWMU-12-24I	SWMU-12-24I	0-2	1/29/03		Y	Y
South Landfill	LFSL89	NA	NA	NA	May 23. 2006 letter from Solutia to US EPA (4)	Y	Y
	LFSL93	NA	NA	NA	May 23. 2006 letter from Solutia to US EPA (4)	Y	Y
	LFSL94	NA	NA	NA	May 23. 2006 letter from Solutia to US EPA (4)	Y	Y
	LFSL99	NA	NA	NA	May 23. 2006 letter from Solutia to US EPA (4)	Y	Y
	LFSL103	NA	NA	NA	May 23. 2006 letter from Solutia to US EPA (4)	Y	Y
	SL-3A	SL-3A	0-0.25	1/29/03		Y	Y
	SL-3B	SL-3B	0-0.25	1/29/03		Y	Y
	SL-3C	SL-3C	0-0.25	1/29/03		Y	Y
	SL-3D	SL-3D	0-0.25	1/29/03		Y	Y
	SLGM-3A	SLGM-3A	0-0.25	2/20/03		Y	Y
	SLGM-3B	SLGM-3B	0-0.25	2/20/03		Y	Y
	SLGM-3C	SLGM-3C	0-0.25	2/20/03		Y	Y
	SLGM-3D	SLGM-3D	0-0.25	2/20/03		Y	Y
West Landfill	SSRI-15	SSRI-15-6	0-0.5	6/6/05		Y	Y
		Dup-3	0-0.5	6/6/05	Duplicate	Y (2)	Y (2)
	SSRI-16	SSRI-16-6	0-0.5	6/6/05		Y	Y

N = No. Not used in risk assessment.
Y = Yes. Used in risk assessment.
NA = Sample information is not available.
(1) Samples are not included in the risk calculation since the location where they were sampled has been excavated.
(2) Maximum values of duplicate sample results and their original samples are used in risk calculations.
(3) Samples are not included in the risk calculation since the location where they were sampled is currently inaccessible due to a concrete cap.
(4) Data obtained from the figure attached to the May 23, 2006 letter from Solutia to Ms. Langston Scully at US EPA.
(5) Average of the duplicate sample results and the original sample results is used in risk calculations under central tendency exposure scenario.

TABLE A-2
SUBSURFACE SOIL SAMPLE INFORMATION
Anniston PCB Site, Operable Unit 3
Anniston, Alabama

Exposure Area	Location	Sample ID	Sample Depth (feet)	Date	Comment	Use in Risk Assessment-Current/Future Scenarios
Operations Area	AOC-A	AOC-A-6A	0-0.5	1/28/03		Y
	SSR-01	SSR-01	0-2	8/19/98		Y
	SSR-02	SSR-02	0-2	8/19/98		Y
	SSR-03	SSR-03	0.5-2.5	8/18/98		N (1)
	SSR-04	SSR-04	6-10	8/17/98		Y
	SSR-05	SSR-05	2.5-4.5	8/19/98		Y
	SSR-06	SSR-06	0.67-2	8/19/98		Y
	SSR-07	SSR-07	2-3	8/19/98		Y
	SSR-08	SSR-08	1-3	8/19/98		Y
	SSR-09	SSR-09	0.58-2.58	8/19/98		Y
	SSR-10	SSR-10	19-21	8/18/98		N (2)
	SSR-11	SSR-11	6-10	8/18/98		Y
	SSR-12	SSR-12	6-8	8/18/98		Y
	SSR-13	SSR-13	6-8	8/18/98		Y
	SSR-14	SSR-14	10-12	8/18/98		Y
	SSR-15	SSR-15	6-10	8/17/98		Y
		SSR-15-Q	6-10	8/17/98	Duplicate	Y (3)
	SSR-16	SSR-16	0.83-3	8/20/98		N (1)
	SSR-17	SSR-17	1.25-3.5	8/20/98		Y
	SSR-18	SSR-18	0.25-0.5	8/20/98		Y
		SSR-18	0.25-0.5	8/20/98	Duplicate	Y (3)
	SSR-19	SSR-19	0.67-3	8/20/98		Y
	SSR-21	SSR-21	0.33-2.5	8/20/98		Y
	SSRI-01	SSRI-01-6	0-0.5	6/2/05		Y
		SSRI-01-36	3-4	6/2/05		Y
	SSRI-02	SSRI-02-6	0-0.5	6/1/05		Y
		SSRI-02-36	3-4	6/1/05		Y
	SSRI-03	SSRI-03-6	0-0.5	6/1/05		Y
		SSRI-03-36	3-4	6/1/05		Y
	SSRI-04	SSRI-04-6	0-0.5	6/1/05		Y
		SSRI-04-06	0-0.5	7/6/05	Duplicate	Y (3)
		SSRI-04-36	3-4	6/1/05		Y
	SSRI-05	SSRI-05-6	0-0.5	6/1/05		Y
		SSRI-05-36	3-4	6/1/05		Y
	SSRI-06	SSRI-06-6	0-0.5	6/2/05		Y
		SSRI-06-36	3-4	6/2/05		Y
		DUP-1	3-4	6/2/05	Duplicate	Y (3)
	SSRI-07	SSRI-07-6	0-0.5	6/6/05		Y
		SSRI-07-06	0-0.5	7/6/05	Duplicate	Y (3)
		SSRI-07-42	3.5-3.5	6/6/05		Y
	SSRI-08	SSRI-08-6	0-0.5	6/2/05		Y
		SSRI-08-36	3-4	6/2/05		Y
	SSRI-09	SSRI-09-6	0-0.5	6/3/05		Y
		SSRI-09-36	3-4	6/3/05		Y
	SSRI-10	SSRI-10-6	0-0.5	6/3/05		Y
		SSRI-10-36	3-4	6/3/05		Y
	SSRI-11	SSRI-11-6	0-0.5	6/6/05		Y
		SSRI-11-06	0-0.5	7/6/05	Duplicate	Y (3)
		SSRI-11-36	3-4	6/6/05		Y
	SSRI-12	SSRI-12-6	0-0.5	6/6/05		Y
		SSRI-12-36	3-4	6/6/05		Y
		DUP-2	3-4	6/6/05	Duplicate	Y (3)
	SSRI-13	SSRI-13-6	0-0.5	6/6/05		Y
		SSRI-13-36	3-4	6/6/05		Y
	SSRI-14	SSRI-14-6	0-0.5	6/6/05		Y
		SSRI-14-36	3-4	6/6/05		Y
	SWMU-17	SWMU-17-6A	0-0.5	1/28/03		Y
	SWMU-25	SWMU-25-6A	0-0.5	1/28/03		Y
	SWMU-31	SWMU-31-6A	0-0.5	1/28/03		Y

TABLE A-2
SUBSURFACE SOIL SAMPLE INFORMATION
Anniston PCB Site, Operable Unit 3
Anniston, Alabama

Exposure Area	Location	Sample ID	Sample Depth (feet)	Date	Comment	Use in Risk Assessment-Current/Future Scenarios
Operations Area	SWMU-42	SWMU-42-6A	0-0.5	2/20/03		Y
		SWMU-42-6B	0-0.5	2/20/03	Duplicate	Y (3)
	SWMU-12-24A	SWMU-12-24A	0-2	1/29/03		Y
		SWMU-12-24A-X	0-2	1/29/03	Duplicate	Y (3)
	SWMU-12-24B	SWMU-12-24B	0-2	1/29/03		Y
	SWMU-12-24C	SWMU-12-24C	0-2	1/29/03		Y
	SWMU-12-24D	SWMU-12-24D	0-2	1/29/03		Y
	SWMU-12-24E	SWMU-12-24E	0-2	1/29/03		Y
	SWMU-12-24F	SWMU-12-24F	0-2	1/29/03		Y
	SWMU-12-24G	SWMU-12-24G	0-2	1/29/03		Y
	SWMU-12-24H	SWMU-12-24H	0-2	1/29/03		Y
	SWMU-12-24I	SWMU-12-24I	0-2	1/29/03		Y
South Landfill	LFSL89	NA	NA	NA	May 23, 2006 letter from Solutia to US EPA (4)	Y
	LFSL93	NA	NA	NA	May 23, 2006 letter from Solutia to US EPA (4)	Y
	LFSL94	NA	NA	NA	May 23, 2006 letter from Solutia to US EPA (4)	Y
	LFSL99	NA	NA	NA	May 23, 2006 letter from Solutia to US EPA (4)	Y
	LFSL103	NA	NA	NA	May 23, 2006 letter from Solutia to US EPA (4)	Y
	SL-3A	SL-3A	0-0.25	1/29/03		Y
	SL-3B	SL-3B	0-0.25	1/29/03		Y
	SL-3C	SL-3C	0-0.25	1/29/03		Y
	SL-3D	SL-3D	0-0.25	1/29/03		Y
	SLGM-3A	SLGM-3A	0-0.25	2/20/03		Y
	SLGM-3B	SLGM-3B	0-0.25	2/20/03		Y
	SLGM-3C	SLGM-3C	0-0.25	2/20/03		Y
	SLGM-3D	SLGM-3D	0-0.25	2/20/03		Y
West Landfill	SSRI-15	SSRI-15-6	0-0.5	6/6/05		Y
		Dup-3	0-0.5	6/6/05	Duplicate	Y (3)
	SSRI-16	SSRI-16-6	0-0.5	6/6/05		Y

N = No. Not used in risk assessment.
Y = Yes. Used in risk assessment.
NA = Sample information is not available.
(1) Samples are not included in the risk calculation since the location where they were sampled has been excavated.
(2) Sample was not included in the risk calculation since the sampling depth was greater than expected excavation depth.
(3) Maximum values of duplicate sample results and their original samples are used in risk calculations.
(4) Data obtained from the figure attached to the May 23, 2006 letter from Solutia to Ms. Langston Scully at US EPA.

TABLE A-3
GROUNDWATER SAMPLE INFORMATION
Anniston PCB Site, Operable Unit 3
Anniston, Alabama

Location	Sample ID	Date	Comment	Use in Risk Assessment
MW-07	MW-07	6/29/05		Y
	MW-07-F	6/29/05	Duplicate	Y (1)
MW-09A	MW-9R	4/7/03		Y
	MW-9R-04A	4/12/04		Y
	MW-9R	4/26/05		Y
	MW-34	4/26/05	Duplicate	Y
MW-14	MW-14	6/29/05		Y
	MW-14F	6/29/05	Duplicate	Y (1)
MW-15	MW-15	4/14/03		Y
	MW-15-F	4/14/03	Duplicate	Y (1)
	MW-15-03B	10/17/03		Y
	MW-15-03B-F	10/17/03	Duplicate	Y (1)
	MW-15-04A	4/12/04		Y
	MW-15-04A-F	4/12/04	Duplicate	Y (1)
	MW-15	10/7/04		Y
	MW-15F	10/7/04	Duplicate	Y (1)
	MW-15	4/25/05		Y
	MW-15-F	4/25/05	Duplicate	Y (1)
MW-16	MW-16	4/10/03		Y
	MW-16-03B	10/14/03		Y
	MW-16-04A	4/19/04		Y
	MW-16	10/7/04		Y
	MW-16	4/25/05		Y
MW-20A	MW-20A	4/10/03		Y
	MW-20A-03B	10/17/03		Y
	MW-D3	10/17/03	Duplicate	Y (1)
	MW-20A-04A	4/23/04		Y
	MW-20A	10/7/04		Y
	MW-03	10/7/04	Duplicate	Y (1)
	MW-20A	4/21/05		Y
OW-21A	OW-21R	2/17/03		Y
	OW-21RF	2/17/03	Duplicate	Y (1)
	OW-21R	4/7/03		Y
	OW-21RF	4/7/03	Duplicate	Y (1)
	OW-21A-04A	4/20/04		Y
	OW-21A-04A-F	4/20/04	Duplicate	Y (1)
	OW-21R	6/18/04		Y
	OW-21R-F	6/18/04	Duplicate	Y (1)
	OW-21A	4/27/05		Y
	OW-21A-F	4/27/05	Duplicate	Y (1)
T-4	T-4	6/29/05		Y
	T-4-F	6/29/05	Duplicate	Y (1)
	DUP-1	6/29/05	Duplicate	Y (1)
	DUP-1-F	6/29/05	Duplicate	Y (1)

N = No. Not used in risk assessment.
Y = Yes. Used in risk assessment.
(1) Maximum values of duplicate sample results and their original samples are used in risk calculations.

TABLE A-4
AIR SAMPLE INFORMATION
Anniston PCB Site, Operable Unit 3
Anniston, Alabama

Exposure Area	Location	Sample ID	Date	Comment	Use in Risk Assessment
Operations Area	6 - Near East	6 - Near East	8/14/03		Y
		6 - Near East	8/15/03		Y
		6 - Near East	9/10/03		Y
		6 - Near East	9/11/03		Y
		6 - Near East	10/22/03		Y
		6 - Near East	10/23/03		Y
South Landfill	2 - South	2 - South	1/26/00		Y
		2 - South	2/29/00		Y
		2 - South	3/28/00		Y
		2 - South	3/29/00		Y
		2 - South	4/29/00		Y
		2 - South	4/30/00		Y
		2 - South	5/21/00		Y
		2 - South	5/22/00		Y
		2 - South	6/28/00		Y
		2 - South	6/29/00		Y
		2 - South	7/26/00		Y
		2 - South	7/27/00		Y
		2 - South	8/23/00		Y
		2 - South	8/24/00		Y
		2 - South	9/28/00		Y
		2 - South	9/29/00		Y
		2 - South	10/26/00		Y
		2 - South	10/27/00		Y
		2 - South	11/28/00		Y
		2 - South	11/29/00		Y
		2 - South	12/20/00		Y
		2 - South	12/21/00		Y
		2 - South	1/17/01		Y
		2 - South	1/18/01		Y
		2 - South	5/16/01		Y
		2 - South	5/17/01		Y
		2 - South	6/19/01		Y
		2 - South	6/20/01		Y
		2 - South	7/20/01		Y
		2 - South	8/16/01		Y
		2 - South	8/17/01		Y
		2 - South	9/19/01		Y
		2 - South	9/20/01		Y
		2 - South	10/17/01		Y
		2 - South	10/18/01		Y
		2 - South	11/15/01		Y
		2 - South	11/16/01		Y
		2 - South	12/13/01		Y
		2 - South	12/14/01		Y
		2 - South	1/17/02		Y

TABLE A-4
AIR SAMPLE INFORMATION
Anniston PCB Site, Operable Unit 3
Anniston, Alabama

Exposure Area	Location	Sample ID	Date	Comment	Use in Risk Assessment
South Landfill	2 - South	2 - South	3/14/02		Y
		2 - South	3/15/02		Y
		2 - South	4/18/02		Y
		2 - South	4/19/02		Y
		2 - South	5/21/02		Y
		2 - South	5/22/02		Y
		2 - South	6/18/02		Y
		2 - South	6/19/02		Y
		2 - South	7/10/02		Y
		2 - South	7/11/02		Y
		2 - South	8/13/02		Y
		2 - South	8/14/02		Y
		2 - South	9/17/02		Y
		2 - South	9/18/02		Y
		2 - South	10/15/02		Y
		2 - South	10/16/02		Y
		2 - South	11/19/02		Y
		2 - South	11/20/02		Y
		2 - South	12/17/02		Y
		2 - South	12/18/02		Y
		2 - South	1/15/03		Y
		2 - South	1/16/03		Y
		2 - South	2/27/03		Y
		2 - South	2/28/03		Y
		2 - South	3/26/03		Y
		2 - South	3/27/03		Y
		2 - South	4/16/03		Y
		2 - South	4/17/03		Y
		2 - South	5/21/03		Y
		2 - South	5/22/03		Y
		2 - South	6/18/03		Y
		2 - South	6/19/03		Y
		2 - South	7/15/03		Y
		2 - South	7/16/03		Y
		2 - South	8/14/03		Y
		2 - South	8/15/03		Y
		2 - South	9/10/03		Y
		2 - South	9/11/03		Y
		2 - South	10/22/03		Y
		2 - South	10/23/03		Y
		2 - South (80)	2/21/02		Y
		2 - South (81)	2/21/02		Y
West Landfill	3 - West	3 - West	1/26/00		Y
		3 - West	1/27/00		Y
		3 - West	2/25/00		Y
		3 - West	2/29/00		Y

TABLE A-4
AIR SAMPLE INFORMATION
Anniston PCB Site, Operable Unit 3
Anniston, Alabama

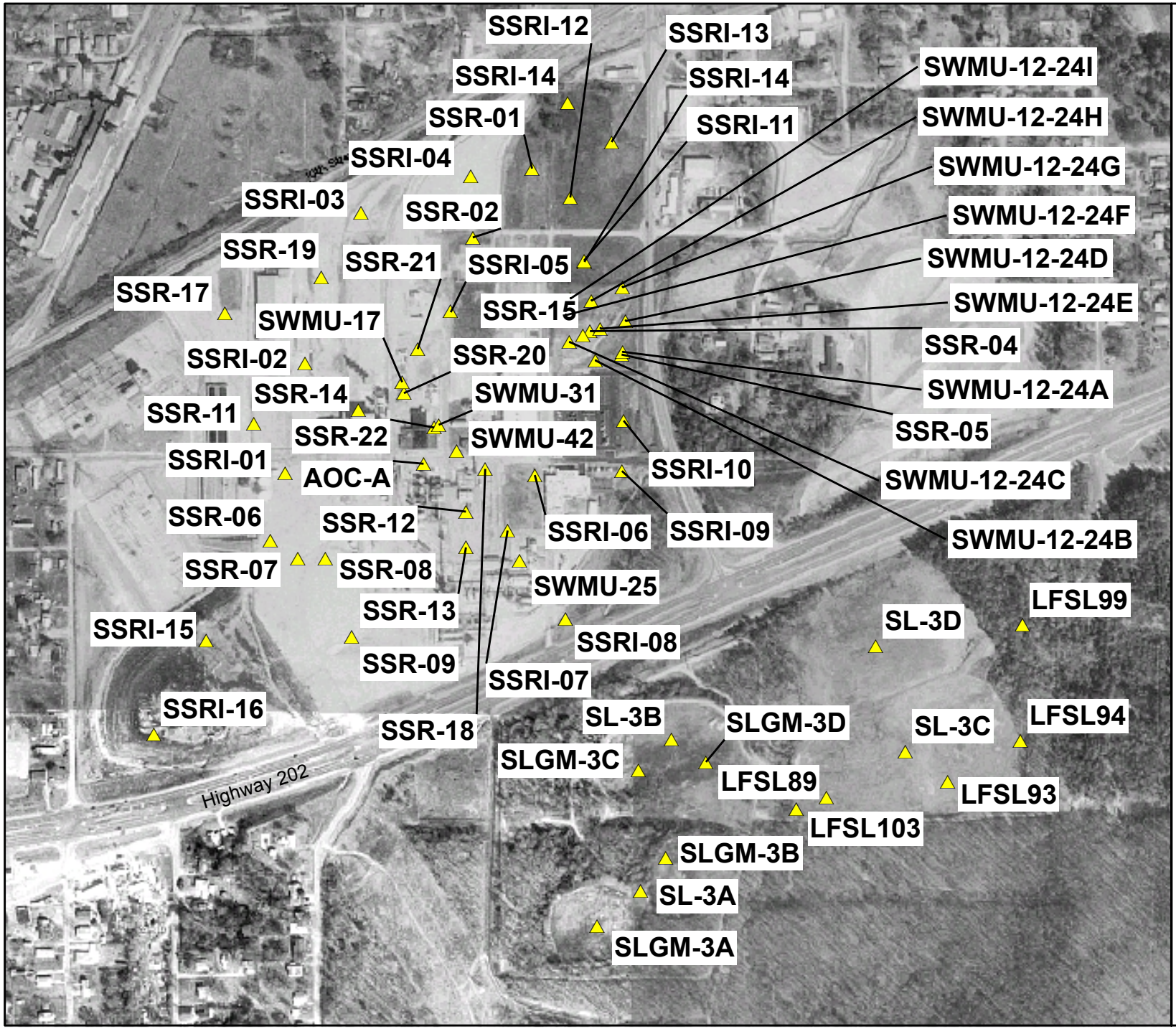
Exposure Area	Location	Sample ID	Date	Comment	Use in Risk Assessment
West Landfill	3 - West	3 - West	3/28/00		Y
		3 - West	3/29/00		Y
		3 - West	4/29/00		Y
		3 - West	4/30/00		Y
		3 - West	5/21/00		Y
		3 - West	5/22/00		Y
		3 - West	6/28/00		Y
		3 - West	6/29/00		Y
		3 - West	7/26/00		Y
		3 - West	7/27/00		Y
		3 - West	8/23/00		Y
		3 - West	8/24/00		Y
		3 - West	9/28/00		Y
		3 - West	9/29/00		Y
		3 - West	10/26/00		Y
		3 - West	10/27/00		Y
		3 - West	11/28/00		Y
		3 - West	11/29/00		Y
		3 - West	12/20/00		Y
		3 - West	12/21/00		Y
		3 - West	1/17/01		Y
		3 - West	1/18/01		Y
		3 - West	5/16/01		Y
		3 - West	5/17/01		Y
		3 - West	6/19/01		Y
		3 - West	6/20/01		Y
		3 - West	7/20/01		Y
		3 - West	8/16/01		Y
		3 - West	8/17/01		Y
		3 - West	9/19/01		Y
		3 - West	9/20/01		Y
		3 - West	10/17/01		Y
		3 - West	10/18/01		Y
		3 - West	11/15/01		Y
		3 - West	11/16/01		Y
		3 - West	12/13/01		Y
		3 - West	12/14/01		Y
		3 - West	1/16/02		Y
		3 - West	1/17/02		Y
		3 - West	3/14/02		Y
		3 - West	3/15/02		Y
		3 - West	4/18/02		Y
		3 - West	4/19/02		Y
		3 - West	5/21/02		Y
		3 - West	5/22/02		Y
		3 - West	6/18/02		Y

TABLE A-4
AIR SAMPLE INFORMATION
Anniston PCB Site, Operable Unit 3
Anniston, Alabama

Exposure Area	Location	Sample ID	Date	Comment	Use in Risk Assessment
West Landfill	3 - West	3 - West	7/10/02		Y
		3 - West	7/11/02		Y
		3 - West	8/13/02		Y
		3 - West	8/14/02		Y
		3 - West	9/17/02		Y
		3 - West	9/18/02		Y
		3 - West	10/15/02		Y
		3 - West	10/16/02		Y
		3 - West	11/19/02		Y
		3 - West	11/20/02		Y
		3 - West	12/17/02		Y
		3 - West	12/18/02		Y
		3 - West	1/15/03		Y
		3 - West	1/16/03		Y
		3 - West	2/27/03		Y
		3 - West	2/28/03		Y
		3 - West	3/26/03		Y
		3 - West	3/27/03		Y
		3 - West	4/16/03		Y
		3 - West	4/17/03		Y
		3 - West	5/21/03		Y
		3 - West	5/22/03		Y
		3 - West	6/18/03		Y
		3 - West	6/19/03		Y
		3 - West	7/15/03		Y
		3 - West	7/16/03		Y
		3 - West	8/14/03		Y
		3 - West	8/15/03		Y
		3 - West	9/10/03		Y
		3 - West	9/11/03		Y
		3 - West	10/22/03		Y
		3 - West	10/23/03		Y
		3 - West (80)	2/21/02		Y
		3 - West (81)	2/21/02		Y

N = No. Not used in risk assessment.
Y = Yes. Used in risk assessment.

densvr2\cdmprojects\Anniston\P:\Anniston\Anniston\gis\mxd scp 111907



Legend

SoilLocs_swmu-12

Soil Sample Locations

N

W E

S

0 125 250 500

Feet

1:6,000

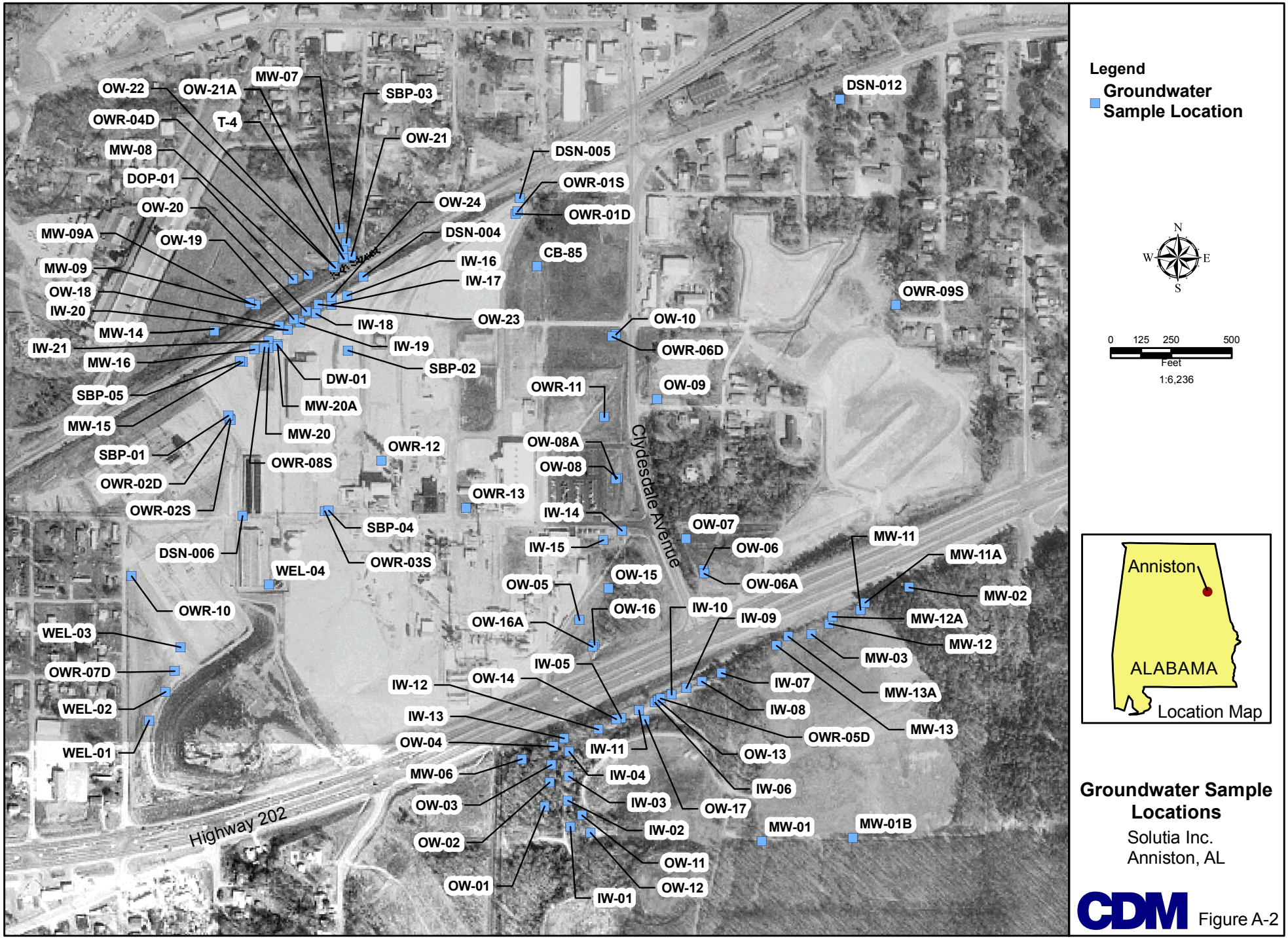
Sample Locations
Soil Samples

Solutia Inc.
Anniston, AL

CDM

Figure A-1

densvr2\cdmprojects\Anniston\gis\mxd\Anniston_GWSamples.mxd scp 050907



densvr2\cdmprojects\Anniston\gis\mxd\Anniston_AirSamples.mxd scp 050907

Legend

Air Sample Location

N
W
E
S

0 125 250 500
Feet
1:6,000

Air Sample Locations

Solutia Inc.
Anniston, AL

CDM

Figure A-3

Appendix B

RAGS D Standard Tables –RME

List of Tables Included in Appendix B
Anniston PCB Site, Operable Unit 3

TABLES

List of Tables Included in Appendix B
Anniston PCB Site, Operable Unit 3

TABLES

TABLE B-1

SELECTION OF EXPOSURE PATHWAYS

Anniston PCB Site, Operable Unit 3

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 / Future	Surface Soil	Surface Soil	South Landfill	O&M Worker	Adult	Dermal	On-Site	Quant	Workers may have exposed skin surfaces come into contact with soil
						Incidental Ingestion	On-Site	Quant	Workers may incidentally ingest soil
				Trespassers	Adolescent (7-16 yrs)	Dermal	On-Site	Quant	Trespassers may have exposed skin surfaces come into contact with soil
						Incidental Ingestion	On-Site	Quant	Trespassers may incidentally ingest soil
			West End Landfill	O&M Worker	Adult	Dermal	On-Site	Quant	Workers may have exposed skin surfaces come into contact with soil
						Incidental Ingestion	On-Site	Quant	Workers may incidentally ingest soil
				Trespassers	Adolescent (7-16 yrs)	Dermal	On-Site	Quant	Trespassers may have exposed skin surfaces come into contact with soil
						Incidental Ingestion	On-Site	Quant	Trespassers may incidentally ingest soil
	Surface/ Subsurface Soil	Surface/ Subsurface Soil	Facility Area	Construction Worker	Adult	Dermal	On-Site	Quant	Workers may have exposed skin surfaces come into contact with soil
						Incidental Ingestion	On-Site	Quant	Workers may incidentally ingest soil
	Air	Ambient Air	South Landfill	O&M Worker	Adult	Inhalation	On-Site	Quant	Workers may inhale ambient air
				Trespassers	Adolescent (7-16 yrs)	Inhalation	On-Site	Quant	Trespassers may inhale ambient air
			West End Landfill	O&M Worker	Adult	Inhalation	On-Site	Quant	Workers may inhale ambient air
				Trespassers	Adolescent (7-16 yrs)	Inhalation	On-Site	Quant	Trespassers may inhale ambient air
			Facility Area	Construction Worker	Adult	Inhalation	On-Site	Quant	Workers may inhale ambient air
Current	Surface Soil	Surface Soil	Facility Area	Operations Area Worker	Adult	Dermal	On-Site	Quant	Workers may have exposed skin surfaces come into contact with soil
						Incidental Ingestion	On-Site	Quant	Workers may incidentally ingest soil
				O&M Worker	Adult	Dermal	On-Site	Quant	Workers may have exposed skin surfaces come into contact with soil
						Incidental Ingestion	On-Site	Quant	Workers may incidentally ingest soil
				Trespassers	Adolescent (7-16 yrs)	Dermal	On-Site	Quant	Trespassers may have exposed skin surfaces come into contact with soil
						Incidental Ingestion	On-Site	Quant	Trespassers may incidentally ingest soil

TABLE B-1

SELECTION OF EXPOSURE PATHWAYS

Anniston PCB Site, Operable Unit 3

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	Air	Ambient Air	Facility Area	Operations Area Worker	Adult	Inhalation	On-Site	Quant	Workers may inhale ambient air
				O&M Worker	Adult	Inhalation	On-Site	Quant	Workers may inhale ambient air
				Trespassers	Adolescent (7-16 yrs)	Inhalation	On-Site	Quant	Trespassers may inhale ambient air
			Ambient Air[1]	Off-site Resident	Child to Adult	Inhalation	Off-Site	Quant	Residents may inhale ambient air
					Child (0-6 yrs)	Inhalation	Off-Site	Quant	Residents may inhale ambient air
Future	Surface Soil	Surface Soil	Facility Area	Operations Area Worker	Adult	Dermal	On-Site	Quant	Workers may have exposed skin surfaces come into contact with soil
						Incidental Ingestion	On-Site	Quant	Workers may incidentally ingest soil
				O&M Worker	Adult	Dermal	On-Site	Quant	Workers may have exposed skin surfaces come into contact with soil
						Incidental Ingestion	On-Site	Quant	Workers may incidentally ingest soil
				Trespassers	Adolescent (7-16 yrs)	Dermal	On-Site	Quant	Trespassers may have exposed skin surfaces come into contact with soil
						Incidental Ingestion	On-Site	Quant	Trespassers may incidentally ingest soil
	Groundwater	Groundwater	Tap	Off-site Resident	Child to Adult	Dermal	Off-Site	Quant	Groundwater is potable. It may be developed for drinking water use in the future.
						Ingestion	Off-Site	Quant	Groundwater is potable. It may be developed for drinking water use in the future.
					Child (0-6 yrs)	Dermal	Off-Site	Quant	Groundwater is potable. It may be developed for drinking water use in the future.
						Ingestion	Off-Site	Quant	Groundwater is potable. It may be developed for drinking water use in the future.
				Operations Area Worker	Adult	Ingestion	On-Site	Quant	Groundwater is potable. It may be developed for drinking water use in the future.
				O&M Worker	Adult	Ingestion	On-Site	Quant	Groundwater is potable. It may be developed for drinking water use in the future.
		Air	Vapors in Bath	Off-site Resident	Child to Adult	Inhalation	Off-Site	Quant	Groundwater is potable. It may be developed for drinking water use in the future.
					Child (0-6 yrs)	Inhalation	Off-Site	Quant	Groundwater is potable. It may be developed for drinking water use in the future.

TABLE B-1

SELECTION OF EXPOSURE PATHWAYS

Anniston PCB Site, Operable Unit 3

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
Future	Air	Ambient Air	Ambient Air[1]	Off-site Resident	Child to Adult	Inhalation	Off-Site	Quant	Residents may inhale ambient air
					Child (0-6 yrs)	Inhalation	Off-Site	Quant	Residents may inhale ambient air
				Operations Area Worker	Adult	Inhalation	On-Site	Quant	Workers may inhale ambient air
				O&M Worker	Adult	Inhalation	On-Site	Quant	Workers may inhale ambient air
				Trespassers	Adolescent (7-16 yrs)	Inhalation	On-Site	Quant	Trespassers may inhale ambient air

Quant = Quantitative risk analysis performed.

[1]The highest of air exposure point at Facility Area, South Landfill, or West End Landfill.

TABLE B-2.1
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Site-wide Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Unit	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (nc/ca) (2)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (3)
Surface Soil		**VOCs**													
	67-64-1	Acetone	25 J	35 J	µg/kg	SSRI-11	2 / 3	49 - 49	3.5E+01	NA	1.4E+06 nc	NA	NA	NO	BSL
	75-15-0	Carbon disulfide	2.3 J	2.3 J	µg/kg	SSRI-04	1 / 3	4.9 - 8.3	2.3E+00	NA	3.6E+04 nc	NA	NA	NO	BSL
		SVOCs													
	92-52-4	1,1'-Biphenyl	45 J	140 J	µg/kg	SSRI-04	3 / 3	390 - 420	1.4E+02	NA	3.0E+05 nc	NA	NA	NO	BSL
	91-57-6	2-Methylnaphthalene	32 J	32 J	µg/kg	SSRI-11	1 / 3	390 - 420	3.2E+01	NA	5.6E+03 nc	NA	NA	NO	BSL
	120-12-7	Anthracene	41 J	120 J	µg/kg	SSRI-11	2 / 3	390 - 420	1.2E+02	NA	2.2E+06 nc	NA	NA	NO	BSL
	56-55-3	Benzo(a)anthracene	46 J	830	µg/kg	SSRI-11	3 / 3	390 - 420	8.3E+02	NA	6.2E+02 ca	NA	NA	YES	ASL
	50-32-8	Benzo(a)pyrene	24 J	1,900	µg/kg	SSRI-11	3 / 3	390 - 420	1.9E+03	NA	6.2E+01 ca	NA	NA	YES	ASL
	205-99-2	Benzo(b)fluoranthene	50 J	2,100	µg/kg	SSRI-11	3 / 3	390 - 420	2.1E+03	NA	6.2E+02 ca	NA	NA	YES	ASL
	191-24-2	Benzo(g,h,i)perylene	40 J	2,100	µg/kg	SSRI-11	3 / 3	390 - 420	2.1E+03	NA	2.3E+05 nc	NA	NA	NO	BSL
	207-08-9	Benzo(k)fluoranthene	88 J	1,500	µg/kg	SSRI-11	2 / 3	390 - 420	1.5E+03	NA	6.2E+03 ca	NA	NA	NO	BSL
	117-81-7	bis(2-Ethylhexyl)phthalate	57 J	200 J	µg/kg	SSRI-07	3 / 3	390 - 420	2.0E+02	NA	3.5E+04 ca	NA	NA	NO	BSL
	86-74-8	Carbazole	62 J	62 J	µg/kg	SSRI-11	1 / 3	390 - 420	6.2E+01	NA	2.4E+04 ca	NA	NA	NO	BSL
	218-01-9	Chrysene	290 J	1,900	µg/kg	SSRI-11	3 / 3	390 - 420	1.9E+03	NA	6.2E+04 ca	NA	NA	NO	BSL
	53-70-3	Dibenz(a,h)anthracene	41 J	620	µg/kg	SSRI-11	2 / 3	390 - 420	6.2E+02	NA	6.2E+01 ca	NA	NA	YES	ASL
	132-64-9	Dibenzofuran	31 J	31 J	µg/kg	SSRI-11	1 / 3	390 - 420	3.1E+01	NA	1.5E+04 nc	NA	NA	NO	BSL
	84-74-2	Di-n-butylphthalate	49 J	49 J	µg/kg	SSRI-07	1 / 3	390 - 420	4.9E+01	NA	6.1E+05 nc	NA	NA	NO	BSL
	206-44-0	Fluoranthene	42 J	940	µg/kg	SSRI-11	3 / 3	390 - 420	9.4E+02	NA	2.3E+05 nc	NA	NA	NO	BSL
	86-73-7	Fluorene	28 J	28 J	µg/kg	SSRI-07	1 / 3	390 - 420	2.8E+01	NA	2.7E+05 nc	NA	NA	NO	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	59 J	1,300	µg/kg	SSRI-11	2 / 3	390 - 420	1.3E+03	NA	6.2E+02 ca	NA	NA	YES	ASL
	91-20-3	Naphthalene	37 J	37 J	µg/kg	SSRI-11	1 / 3	390 - 420	3.7E+01	NA	5.6E+03 nc	NA	NA	NO	BSL
	85-01-8	Phenanthrene	74 J	470	µg/kg	SSRI-11	3 / 3	390 - 420	4.7E+02	NA	2.3E+05 nc	NA	NA	NO	BSL
	129-00-0	Pyrene	340 J	1,200	µg/kg	SSRI-11	3 / 3	390 - 420	1.2E+03	NA	2.3E+05 nc	NA	NA	NO	BSL
		P/PCBs													
	1336-36-3	PCBs, Total (4)	23	17,000,000	µg/kg	SSR-18	34 / 41	5.1 - 3,800,000	1.7E+07	NA	2.2E+02 ca	NA	NA	YES	ASL
	1024-57-3	Heptachlor epoxide	380	380	µg/kg	SSRI-11	1 / 3	31 - 380	3.8E+02	NA	5.3E+01 ca	NA	NA	YES	ASL
	298-00-0	Methyl parathion	49	100	µg/kg	SSR-18	2 / 7	20 - 21	1.0E+02	NA	1.5E+03 nc	NA	NA	NO	BSL
	56-38-2	Parathion	56 J	56 J	µg/kg	SSR-21	1 / 6	39 - 42	5.6E+01	NA	3.7E+04 nc	NA	NA	NO	BSL
		Dioxin													
	NA	Dioxin TEQ	0.191	0.756	µg/kg	SSRI-07	1 / 4	NA - NA	7.6E-01	NA	3.9E-03 ca	NA	NA	YES	ASL
		Inorganics													
	7429-90-5	Aluminum	11,000	19,000	mg/kg	SSRI-11	3 / 3	23 - 25	1.9E+04	NA	7.6E+03 nc	NA	NA	YES	ASL
	7440-36-0	Antimony	8.7	8.7	mg/kg	SSRI-11	1 / 3	2.3 - 2.5	8.7E+00	NA	3.1E+00 nc	NA	NA	YES	ASL
	7440-38-2	Arsenic	3.8	390	mg/kg	SSRI-11	7 / 7	1.1 - 1.2	3.9E+02	NA	3.9E-01 ca	NA	NA	YES	ASL/TOX
	7440-39-3	Barium	18	230	mg/kg	SSRI-11	7 / 7	1.1 - 1.2	2.3E+02	NA	5.4E+02 nc	NA	NA	NO	BSL
	7440-41-7	Beryllium	0.47 J	1	mg/kg	SSR-02	4 / 7	0.45 - 0.61	1.0E+00	NA	1.5E+01 nc	NA	NA	NO	BSL
	7440-43-9	Cadmium	0.52 J	4.7	mg/kg	SSRI-11	3 / 7	0.51 - 0.62	4.7E+00	NA	3.7E+00 nc	NA	NA	YES	ASL
	7440-70-2	Calcium	24,000	59,000	mg/kg	SSRI-04	3 / 3	56 - 62	5.9E+04	NA	NA	NA	NA	NO	NUT

TABLE B-2.1
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Site-wide Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Unit	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (nc/ca) (2)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (3)
	7440-47-3	Chromium	13	23	mg/kg	SSRI-11	7 / 7	1.1 - 1.2	2.3E+01	NA	3.0E+01 nc	NA	NA	YES	TOX
	7440-48-4	Cobalt	2	11	mg/kg	SSRI-07	7 / 7	1.1 - 1.2	1.1E+01	NA	9.0E+02 nc	NA	NA	NO	BSL
	7440-50-8	Copper	13	280	mg/kg	SSRI-11	3 / 3	2.3 - 2.5	2.8E+02	NA	3.1E+02 nc	NA	NA	NO	BSL
	57-12-5	Cyanide	0.65	0.65	mg/kg	SSRI-11	1 / 3	0.58 - 0.64	6.5E-01	NA	1.2E+02 nc	NA	NA	NO	BSL
	7439-89-6	Iron	19,000	26,000	mg/kg	SSRI-11	3 / 3	5.6 - 6.2	2.6E+04	NA	2.3E+03 nc	NA	NA	YES	ASL
	7439-92-1	Lead	8.7	4,700	mg/kg	SSRI-11	7 / 7	0.56 - 6.1	4.7E+03	NA	4.0E+01 nc	NA	NA	YES	ASL
	7439-95-4	Magnesium	850	34,000	mg/kg	SSRI-04	3 / 3	56 - 62	3.4E+04	NA	NA	NA	NA	NO	NUT
	7439-96-5	Manganese	70	830	mg/kg	SSRI-07	7 / 7	1.1 - 1.2	8.3E+02	NA	1.8E+02 nc	NA	NA	YES	ASL
	7439-97-6	Mercury	0.17	2.6	mg/kg	SSRI-07	6 / 7	0.024 - 0.42	2.6E+00	NA	2.3E+00 nc	NA	NA	YES	ASL
	7440-02-0	Nickel	8.6	33	mg/kg	SSRI-04	6 / 7	4.5 - 5	3.3E+01	NA	1.6E+02 nc	NA	NA	NO	BSL
	7440-09-7	Potassium	1,000	1,800	mg/kg	SSRI-04	3 / 3	110 - 120	1.8E+03	NA	NA	NA	NA	NO	NUT
	7782-49-2	Selenium	4.5	4.5	mg/kg	SSRI-11	1 / 3	2.8 - 3.1	4.5E+00	NA	3.9E+01 nc	NA	NA	NO	BSL
	7440-22-4	Silver	12	12	mg/kg	SSRI-11	1 / 3	1.1 - 1.2	1.2E+01	NA	3.9E+01 nc	NA	NA	NO	BSL
	7440-23-5	Sodium	150	400	mg/kg	SSRI-11	3 / 3	110 - 120	4.0E+02	NA	NA	NA	NA	NO	NUT
	7440-62-2	Vanadium	15	40	mg/kg	SSR-21	7 / 7	1.1 - 1.2	4.0E+01	NA	7.8E+00 nc	NA	NA	YES	ASL
	7440-66-6	Zinc	25	610	mg/kg	SSRI-11	3 / 3	2.3 - 2.5	6.1E+02	NA	2.3E+03 nc	NA	NA	NO	BSL

(1) Maximum detected concentration used for screening, units adjusted to ug/kg for organics and mg/kg for inorganics.

(2) Screened against EPA Region 9 Preliminary Remediation Goals (PRGs) for residential soil adjusted to cancer benchmark = 1E-6 and HQ = 0.1. The more conservative value of the combined cancer and combined hazard values (after adjustment) was used.Units adjusted to µg/kg for organics and mg/kg for inorganics. http://www.epa.gov/region09/waste/sfund/prg/index.htm.

(3) Rationale Codes:

Selection Reason: ASL = Above Screening Level.
TOX = Group A Carcinogen.
Deletion Reason: BSL = Below Screening Level.
NUT = Essential Nutrient.

Toxicity value surrogates:

Screening toxicity value for naphthalene applied to 2-methylnaphthalene.
Screening toxicity value for pyrene applied to benzo(g,h,i)perylene and phenanthrene.
Screening toxicity value for chromium VI applied to total chromium.

(4) Total PCBs calculated using sum of the detected Aroclors when at least one Aroclor detected or maximum practical quantitation limit for non-detected Aroclors when none of the Aroclors are detected.

Definitions: NA = Not Available.
nc = Screening Toxcity Value is based on noncancer effects.
ca = Screening Toxicity Value is based on cancer effects.
COPC = Chemical of Potential Concern.
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered.
TEQ = Toxic equivalents.
VOCs = Volatile organic compounds.
SVOCs = Semi-volatile organic compounds.
P/PCBs = Pesticides/polychlorinated biphenyls.
J = Estimated value.

TABLE B-2.2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Medium:	Surface/Subsurface Soil
Exposure Medium:	Site-wide Surface/Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Unit	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (nc/ca) (2)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (3)
Surface/		**VOCs**													
Subsurface	67-64-1	Acetone	25 J	35 J	µg/kg	SSRI-11	2 / 3	49 - 49	3.5E+01	NA	1.4E+06 nc	NA	NA	NO	BSL
Soil	75-15-0	Carbon disulfide	2.3 J	2.3 J	µg/kg	SSRI-04	1 / 3	4.9 - 8.3	2.3E+00	NA	3.6E+04 nc	NA	NA	NO	BSL
	108-90-7	Chlorobenzene	17	17	ug/kg	SSR-12/SSR-15	2 / 20	4.5 - 8.3	1.7E+01	NA	1.5E+04 nc	NA	NA	NO	BSL
	75-09-2	Methylene chloride	33	33	ug/kg	SSR-11	1 / 17	4.5 - 8.3	3.3E+01	NA	9.1E+03 ca	NA	NA	NO	BSL
		SVOCs													
	92-52-4	1,1'-Biphenyl	45 J	140 J	µg/kg	SSRI-04	3 / 3	390 - 420	1.4E+02	NA	3.0E+05 nc	NA	NA	NO	BSL
	91-57-6	2-Methylnaphthalene	32 J	32 J	µg/kg	SSRI-11	1 / 3	390 - 420	3.2E+01	NA	5.6E+03 nc	NA	NA	NO	BSL
	120-12-7	Anthracene	41 J	120 J	µg/kg	SSRI-11	2 / 3	390 - 420	1.2E+02	NA	2.2E+06 nc	NA	NA	NO	BSL
	56-55-3	Benzo(a)anthracene	46 J	830	µg/kg	SSRI-11	3 / 3	390 - 420	8.3E+02	NA	6.2E+02 ca	NA	NA	YES	ASL
	50-32-8	Benzo(a)pyrene	24 J	1,900	µg/kg	SSRI-11	3 / 3	390 - 420	1.9E+03	NA	6.2E+01 ca	NA	NA	YES	ASL
	205-99-2	Benzo(b)fluoranthene	50 J	2,100	µg/kg	SSRI-11	3 / 3	390 - 420	2.1E+03	NA	6.2E+02 ca	NA	NA	YES	ASL
	191-24-2	Benzo(g,h,i)perylene	40 J	2,100	µg/kg	SSRI-11	3 / 3	390 - 420	2.1E+03	NA	2.3E+05 nc	NA	NA	NO	BSL
	207-08-9	Benzo(k)fluoranthene	88 J	1,500	µg/kg	SSRI-11	2 / 3	390 - 420	1.5E+03	NA	6.2E+03 ca	NA	NA	NO	BSL
	117-81-7	bis(2-Ethylhexyl)phthalate	57 J	200 J	µg/kg	SSRI-07	3 / 3	390 - 420	2.0E+02	NA	3.5E+04 ca	NA	NA	NO	BSL
	86-74-8	Carbazole	62 J	62 J	µg/kg	SSRI-11	1 / 3	390 - 420	6.2E+01	NA	2.4E+04 ca	NA	NA	NO	BSL
	218-01-9	Chrysene	290 J	1,900	µg/kg	SSRI-11	3 / 3	390 - 420	1.9E+03	NA	6.2E+04 ca	NA	NA	NO	BSL
	53-70-3	Dibenz(a,h)anthracene	41 J	620	µg/kg	SSRI-11	2 / 3	390 - 420	6.2E+02	NA	6.2E+01 ca	NA	NA	YES	ASL
	132-64-9	Dibenzofuran	31 J	31 J	µg/kg	SSRI-11	1 / 3	390 - 420	3.1E+01	NA	1.5E+04 nc	NA	NA	NO	BSL
	84-74-2	Di-n-butylphthalate	49 J	49 J	µg/kg	SSRI-07	1 / 3	390 - 420	4.9E+01	NA	6.1E+05 nc	NA	NA	NO	BSL
	206-44-0	Fluoranthene	42 J	940	µg/kg	SSRI-11	3 / 3	390 - 420	9.4E+02	NA	2.3E+05 nc	NA	NA	NO	BSL
	86-73-7	Fluorene	28 J	28 J	µg/kg	SSRI-07	1 / 3	390 - 420	2.8E+01	NA	2.7E+05 nc	NA	NA	NO	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	59 J	1,300	µg/kg	SSRI-11	2 / 3	390 - 420	1.3E+03	NA	6.2E+02 ca	NA	NA	YES	ASL
	91-20-3	Naphthalene	37 J	37 J	µg/kg	SSRI-11	1 / 3	390 - 420	3.7E+01	NA	5.6E+03 nc	NA	NA	NO	BSL
	85-01-8	Phenanthrene	74 J	470	µg/kg	SSRI-11	3 / 3	390 - 420	4.7E+02	NA	2.3E+05 nc	NA	NA	NO	BSL
	129-00-0	Pyrene	340 J	1,200	µg/kg	SSRI-11	3 / 3	390 - 420	1.2E+03	NA	2.3E+05 nc	NA	NA	NO	BSL
		P/PCBs													
	1336-36-3	PCBs, Total (4)	23	17,000,000	µg/kg	SSR-18	57 / 68	5.1 - 3,800,000	1.7E+07	NA	2.2E+02 ca	NA	NA	YES	ASL
	1024-57-3	Heptachlor epoxide	380	380	µg/kg	SSRI-11	1 / 3	31 - 380	3.8E+02	NA	5.3E+01 ca	NA	NA	YES	ASL
	298-00-0	Methyl parathion	49	100	µg/kg	SSR-18	2 / 20	18 - 22,000	1.0E+02	NA	1.5E+03 nc	NA	NA	NO	BSL
	56-38-2	Parathion	56 J	56 J	µg/kg	SSR-21	1 / 17	37 - 42,000	5.6E+01	NA	3.7E+04 nc	NA	NA	NO	BSL
		Dioxin													
	NA	Dioxin TEQ	0.191	0.756	µg/kg	SSRI-07	1 / 4	NA - NA	7.6E-01	NA	3.9E-03 ca	NA	NA	YES	ASL
		Inorganics													
	7429-90-5	Aluminum	11,000	19,000	mg/kg	SSRI-11	3 / 3	23 - 25	1.9E+04	NA	7.6E+03 nc	NA	NA	YES	ASL
	7440-36-0	Antimony	8.7	8.7	mg/kg	SSRI-11	1 / 3	2.3 - 2.5	8.7E+00	NA	3.1E+00 nc	NA	NA	YES	ASL
	7440-38-2	Arsenic	3.8	390	mg/kg	SSR-11	19 / 20	1.1 - 12	3.9E+02	NA	3.9E-01 ca	NA	NA	YES	ASL/TOX
	7440-39-3	Barium	18	780	mg/kg	SSRI-09	20 / 20	1.1 - 13	7.8E+02	NA	5.4E+02 nc	NA	NA	YES	ASL

TABLE B-2.2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Medium:	Surface/Subsurface Soil
Exposure Medium:	Site-wide Surface/Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Unit	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (nc/ca) (2)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (3)
	7440-41-7	Beryllium	0.47 J	1	mg/kg	SSR-02/SSR-13	9 / 20	0.45 - 6	1.0E+00	NA	1.5E+01 nc	NA	NA	NO	BSL
	7440-43-9	Cadmium	0.52 J	4.7	mg/kg	SSRI-11	5 / 20	0.56 - 0.62	4.7E+00	NA	3.7E+00 nc	NA	NA	YES	ASL
	7440-70-2	Calcium	24,000	59,000	mg/kg	SSRI-04	3 / 3	56 - 62	5.9E+04	NA	NA	NA	NA	NO	NUT
	7440-47-3	Chromium	12	110	mg/kg	SSR-13	19 / 20	1.1 - 12	1.1E+02	NA	3.0E+01 nc	NA	NA	YES	ASL/TOX
	7440-48-4	Cobalt	2	74	mg/kg	SSR-17	20 / 20	1.1 - 13	7.4E+01	NA	9.0E+02 nc	NA	NA	NO	BSL
	7440-50-8	Copper	13	280	mg/kg	SSRI-11	3 / 3	2.3 - 2.5	2.8E+02	NA	3.1E+02 nc	NA	NA	NO	BSL
	57-12-5	Cyanide	0.65	0.65	mg/kg	SSRI-11	1 / 3	0.58 - 0.64	6.5E-01	NA	1.2E+02 nc	NA	NA	NO	BSL
	7439-89-6	Iron	19,000	26,000	mg/kg	SSRI-11	3 / 3	5.6 - 6.2	2.6E+04	NA	2.3E+03 nc	NA	NA	YES	ASL
	7439-92-1	Lead	8.7	4,700	mg/kg	SSRI-11	20 / 20	0.56 - 29	4.7E+03	NA	4.0E+01 nc	NA	NA	YES	ASL
	7439-95-4	Magnesium	850	34,000	mg/kg	SSRI-04	3 / 3	56 - 62	3.4E+04	NA	NA	NA	NA	NO	NUT
	7439-96-5	Manganese	68	12,000	mg/kg	SSR-09	20 / 20	1.1 - 13	1.2E+04	NA	1.8E+02 nc	NA	NA	YES	ASL
	7439-97-6	Mercury	0.032	3.3	mg/kg	SSR-15	19 / 20	0.024 - 0.71	3.3E+00	NA	2.3E+00 nc	NA	NA	YES	ASL
	7440-02-0	Nickel	7.5	2,400	mg/kg	SSR-07	19 / 20	4.4 - 53	2.4E+03	NA	1.6E+02 nc	NA	NA	YES	ASL
	7440-09-7	Potassium	1,000	1,800	mg/kg	SSRI-04	3 / 3	110 - 120	1.8E+03	NA	NA	NA	NA	NO	NUT
	7782-49-2	Selenium	4.5	4.5	mg/kg	SSRI-11	1 / 3	2.8 - 3.1	4.5E+00	NA	3.9E+01 nc	NA	NA	NO	BSL
	7440-22-4	Silver	12	12	mg/kg	SSRI-11	1 / 3	1.1 - 1.2	1.2E+01	NA	3.9E+01 nc	NA	NA	NO	BSL
	7440-23-5	Sodium	150	400	mg/kg	SSRI-11	3 / 3	110 - 120	4.0E+02	NA	NA	NA	NA	NO	NUT
	7440-62-2	Vanadium	15	93	mg/kg	SSR-19	20 / 20	1.1 - 13	9.3E+01	NA	7.8E+00 nc	NA	NA	YES	ASL
	7440-66-6	Zinc	25	610	mg/kg	SSRI-11	3 / 3	2.3 - 2.5	6.1E+02	NA	2.3E+03 nc	NA	NA	NO	BSL

(1) Maximum detected concentration used for screening, units adjusted to ug/kg for organics and mg/kg for inorganics.

(2) Screened against EPA Region 9 Preliminary Remediation Goals (PRGs) for residential soil adjusted to cancer benchmark = 1E-6 and HQ = 0.1. The more conservative value of the combined cancer and combined hazard values (after adjustment) was used.Units adjusted to µg/kg for organics and mg/kg for inorganics. http://www.epa.gov/region09/waste/sfund/prg/index.htm.

(3) Rationale Codes:

Selection Reason: ASL = Above Screening Level.
TOX = Group A Carcinogen.
Deletion Reason: BSL = Below Screening Level.
NUT = Essential Nutrient.

Toxicity value surrogates:

Screening toxicity value for naphthalene applied to 2-methylnaphthalene.
Screening toxicity value for pyrene applied to benzo(g,h,i)perylene and phenanthrene.
Screening toxicity value for chromium VI applied to total chromium.

(4) Total PCBs calculated using sum of the detected Aroclors when at least one Aroclor detected or maximum practical quantitation limit for non-detected Aroclors when none of the Aroclors are detected.

Definitions: NA = Not Available.
nc = Screening Toxcity Value is based on noncancer effects.
ca = Screening Toxicity Value is based on cancer effects.
COPC = Chemical of Potential Concern.
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered.
TEQ = Toxic equivalents.
VOCs = Volatile organic compounds.
SVOCs = Semi-volatile organic compounds.
P/PCBs = Pesticides/polychlorinated biphenyls.
J = Estimated value.

TABLE B-2.3
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Site-wide Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Unit	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (nc/ca) (2)	Potential ARAR/TBC Value	Potential ARAR/TBC Source (3)	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Tap		**VOCs**													
	120-82-1	1,2,4-Trichlorobenzene	11	11	µg/L	T-4	1 / 2	1 - 1	1.1E+01	NA	7.2E-01 nc	70	MCL	YES	ASL
	95-50-1	1,2-Dichlorobenzene	1.7	22	µg/L	OW-21A	4 / 19	1 - 2,000	2.2E+01	NA	3.7E+01 nc	600	MCL	NO	BSL
	106-46-7	1,4-Dichlorobenzene	2.6	2.6	µg/L	MW-20A	1 / 19	1 - 2,000	2.6E+00	NA	5.0E-01 ca	75	MCL	YES	ASL
	108-90-7	Chlorobenzene	3.4	12	µg/L	OW-21A	6 / 25	1 - 100	1.2E+01	NA	1.1E+01 nc	100	MCL	YES	ASL
	156-59-2	cis-1,2-Dichloroethene	10	10	µg/L	T-4	1 / 2	1 - 1	1.0E+01	NA	6.1E+00 nc	70	MCL	YES	ASL
	75-09-2	Methylene chloride	0.62	1	µg/L	MW-16	2 / 25	5 - 500	1.0E+00	NA	4.3E+00 ca	5	MCL	NO	BSL
	87-86-5	Pentachlorophenol	11	26	µg/L	MW-20A	5 / 25	0.94 - 5,000	2.6E+01	NA	5.6E-01 ca	1	MCL	YES	ASL
	156-60-5	trans-1,2-Dichloroethene	8.2	8.2	µg/L	T-4	1 / 2	1 - 1	8.2E+00	NA	1.2E+01 nc	100	MCL	NO	BSL
	79-01-6	Trichloroethylene	3.4	3.4	µg/L	T-4	1 / 2	1 - 1	3.4E+00	NA	2.8E-02 ca	5	MCL	YES	ASL
		SVOCs													
	95-95-4	2,4,5-Trichlorophenol	4.3	4.3	µg/L	MW-20A	1 / 25	9.4 - 5,000	4.3E+00	NA	3.6E+02 nc	NA	NA	NO	IFD
	88-06-2	2,4,6-Trichlorophenol	9.4	17	µg/L	MW-20A	5 / 25	9.4 - 5,000	1.7E+01	NA	3.6E-01 nc	NA	NA	YES	ASL
	120-83-2	2,4-Dichlorophenol	1.4	1.4	µg/L	MW-20A	1 / 25	9.4 - 5,000	1.4E+00	NA	1.1E+01 nc	NA	NA	NO	IFD
	100-02-7	4-Nitrophenol	140	30,000	µg/L	OW-21A	5 / 25	50 - 5,300	3.0E+04	NA	NA	NA	NA	NO	NTX
	83-32-9	Acenaphthene	2	2	µg/L	T-4	1 / 2	9.9 - 10	2.0E+00	NA	3.7E+01 nc	NA	NA	NO	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	0.73	0.73	µg/L	MW-14	1 / 2	9.9 - 10	7.3E-01	NA	9.2E-02 ca	NA	NA	YES	ASL
	126-68-1	O,O,O-Triethylphosphorothioate	25	340	µg/L	OW-21A	6 / 25	9.4 - 2,500	3.4E+02	NA	NA	NA	NA	NO	NTX
		P/PCBs													
	1336-36-3	PCBs, Total (5)	2.8	15,500	µg/L	OW-21A	7 / 26	0.47 - 1,000	1.6E+04	NA	3.4E-02 ca	0.5	MCL	YES	ASL
	58-89-9	gamma-BHC	0.55	0.55	µg/L	T-4	1 / 2	0.047 - 0.048	5.5E-01	NA	5.2E-02 ca	0.2	MCL	YES	ASL
	298-00-0	Methyl parathion	74	74	µg/L	OW-21A	1 / 3	0.5 - 0.5	7.4E+01	NA	9.1E-01 nc	NA	NA	YES	ASL
	56-38-2	Parathion	51	23,000	µg/L	OW-21A	4 / 26	0.94 - 1,100	2.3E+04	NA	2.2E+01 nc	NA	NA	YES	ASL
	3689-24-5	Sulfotepp	0.33	150	µg/L	OW-21A	5 / 25	0.47 - 500	1.5E+02	NA	NA	NA	NA	NO	NTX
		Dioxin													
	NA	Dioxin TEQ	3.61E-06	3.61E-06	µg/L	T-4	1 / 2	NA - NA	3.6E-06	NA	4.5E-07 ca	NA	NA	YES	ASL
		Inorganics													
	7429-90-5	Aluminum	56	210	µg/L	MW-14	2 / 2	200 - 200	2.1E+02	NA	3.6E+03 nc	NA	NA	NO	BSL
	7440-36-0	Antimony	5.1	5.1	µg/L	T-4	1 / 2	20 - 20	5.1E+00	NA	1.5E+00 nc	6	MCL	YES	ASL
	7440-38-2	Arsenic	6.1	6.1	µg/L	T-4	1 / 2	10 - 10	6.1E+00	NA	4.5E-02 ca	10	MCL	YES	ASL/TOX
	7440-39-3	Barium	13	53	µg/L	OW-21A	3 / 3	10 - 10	5.3E+01	NA	2.6E+02 nc	2,000	MCL	NO	BSL
	7440-41-7	Beryllium	0.13	0.13	µg/L	MW-14	1 / 3	4 - 4	1.3E-01	NA	7.3E+00 nc	4	MCL	NO	BSL
	7440-70-2	Calcium	6,000	41,000	µg/L	T-4	2 / 2	500 - 500	4.1E+04	NA	NA	NA	NA	NO	NUT
	7440-48-4	Cobalt	1.9	62	µg/L	OW-21A	10 / 26	10 - 10	6.2E+01	NA	7.3E+01 nc	NA	NA	NO	BSL
	7439-89-6	Iron	40	78	µg/L	MW-14	2 / 2	50 - 50	7.8E+01	NA	1.1E+03 nc	NA	NA	NO	BSL
	7439-92-1	Lead	3.3	3.3	µg/L	T-4	1 / 3	5 - 5	3.3E+00	NA	NA	15	MCL	NO	BSL2
	7439-95-4	Magnesium	1,400	6,500	µg/L	T-4	2 / 2	500 - 500	6.5E+03	NA	NA	NA	NA	NO	NUT
	7439-96-5	Manganese	36	1,300	µg/L	OW-21A	3 / 3	10 - 10	1.3E+03	NA	8.8E+01 nc	NA	NA	YES	ASL
	7439-97-6	Mercury	1	4.1	µg/L	MW-15	6 / 19	0.2 - 0.2	4.1E+00	NA	1.1E+00 nc	2	MCL	YES	ASL

TABLE B-2.3
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Site-wide Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Unit	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (nc/ca) (2)	Potential ARAR/TBC Value	Potential ARAR/TBC Source (3)	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
	7440-09-7	Potassium	1,500	5,100	µg/L	T-4	2 / 2	1,000 - 1,000	5.1E+03	NA	NA	NA	NA	NO	NUT
	7440-23-5	Sodium	6,800	28,000	µg/L	T-4	2 / 2	1,000 - 1,000	2.8E+04	NA	NA	NA	NA	NO	NUT
	7440-62-2	Vanadium	2.3	2.3	µg/L	T-4	1 / 3	10 - 10	2.3E+00	NA	3.6E+00 nc	NA	NA	NO	BSL
	7440-66-6	Zinc	210	210	µg/L	T-4	1 / 2	20 - 20	2.1E+02	NA	1.1E+03 nc	NA	NA	NO	BSL

(1) Maximum detected concentration used for screening.

(2) Screened against EPA Region 9 Preliminary Remediation Goals (PRGs) for residential tap water adjusted to cancer benchmark = 1E-6 and HQ = 0.1. The more conservative value of the combined cancer and combined hazard values (after adjustment) was used.Units are ug/L. http://www.epa.gov/region09/waste/sfund/prg/index.htm.

(3) MCL = Maximum contaminant level.

(4) Rationale Codes:

Selection Reason: ASL = Above Screening Level.
TOX = Group A Carcinogen.

Deletion Reason: BSL = Below Screening Level.
BSL = Below ARAR/TBC Value.
NUT = Essential Nutrient.
NTX = Not Toxicity Value Available.

(5) Total PCBs calculated using sum of the detected Aroclors when at least one Aroclor detected or maximum practical quantitation limit for non-detected Aroclors when none of the Aroclors are detected.

Definitions: NA = Not Available.
nc = Screening Toxcity Value is based on noncancer effects.
ca = Screening Toxicity Value is based on cancer effects.
COPC = Chemical of Potential Concern.
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered.
VOCs = Volatile organic compounds.
SVOCs = Semi-volatile organic compounds.
P/PCBs = Pesticides/polychlorinated biphenyls.

TABLE B-2.4
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Medium:	Air
Exposure Medium:	Site-wide Ambient Air

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Unit	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (nc/ca) (2)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (3)
Air		**PCBs**													
	1336-36-3	PCBs, Total (4)	0.11	72.6	ng/m^3	6-Near East	163 / 172	NA - NA	7.3E+01	NA	3.4E+00 ca	NA	NA	YES	ASL

(1) Maximum detected concentration used for screening.

(2) Screened against EPA Region 9 Preliminary Remediation Goals (PRGs) for ambient air for cancer benchmark = 1E-6. Units adjusted to ng/m^3. http://www.epa.gov/region09/waste/sfund/prg/index.htm.

(3) Rationale Code:
Selection Reason: ASL = Above Screening Level.

(4) Total PCBs calculated using zero for non-detected homologs.

Definitions: NA = Not Available.
ca = Screening Toxicity Value is based on cancer effects.
COPC = Chemical of Potential Concern.
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered.
PCBs = Polychlorinated biphenyls.

TABLE B-3.1
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Medium:	Surface Soil
Exposure Medium:	Surface Soil

Exposure Point	Chemical of Potential Concern	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Unit	Detection Frequency	Range of Detection Limit	Arithmetic Mean	95% UCL of Distribution	Exposure Point Concentration (1)			
									Value	Unit	Statistic	Rationale (2)
Facility Area	**SVOCs**											
	Benzo(a)anthracene	46 J	830	µg/kg	3 / 3	390 - 420	352	NA	830	µg/kg	Max	<ten samples
	Benzo(a)pyrene	24 J	1,900	µg/kg	3 / 3	390 - 420	701	NA	1,900	µg/kg	Max	<ten samples
	Benzo(b)fluoranthene	50 J	2,100	µg/kg	3 / 3	390 - 420	787	NA	2,100	µg/kg	Max	<ten samples
	Dibenz(a,h)anthracene	41 J	620	µg/kg	2 / 3	390 - 420	289	NA	620	µg/kg	Max	<ten samples
	Indeno(1,2,3-cd)pyrene	59 J	1,300	µg/kg	2 / 3	390 - 420	521	NA	1,300	µg/kg	Max	<ten samples
	P/PCBs											
	PCBs, Total (3,4)	23	930,000	µg/kg	27 / 30	37 - 88,000	58,994	373,914	373,914	µg/kg	UCL-NP	99% KM (Chebyshev) UCL
	Heptachlor epoxide	380	380	µg/kg	1 / 3	31 - 380	182	NA	380	µg/kg	Max	<ten samples
	Dioxin											
	Dioxin TEQ	0.191	0.756	µg/kg	1 / 4	NA - NA	NA	NA	0.756	µg/kg	Max	<ten samples
	Inorganics											
	Aluminum	11,000	19,000	mg/kg	3 / 3	23 - 25	14,333	NA	19,000	mg/kg	Max	<ten samples
	Antimony	8.7	8.7	mg/kg	1 / 3	2.3 - 2.5	4	NA	9	mg/kg	Max	<ten samples
	Arsenic	3.8	390	mg/kg	6 / 6	1.1 - 1.2	70	NA	390	mg/kg	Max	<ten samples
	Cadmium	0.52 J	4.7	mg/kg	3 / 6	0.54 - 0.62	1	NA	5	mg/kg	Max	<ten samples
	Chromium	13	23	mg/kg	5 / 6	1.1 - 1.2	17	NA	23	mg/kg	Max	<ten samples
	Iron	19,000	26,000	mg/kg	3 / 3	5.6 - 6.2	22,000	NA	26,000	mg/kg	Max	<ten samples
	Lead	8.7	4,700	mg/kg	5 / 6	0.56 - 6.1	813	NA	4,700	mg/kg	Max	<ten samples
	Manganese	70	830	mg/kg	5 / 6	1.1 - 1.2	498	NA	830	mg/kg	Max	<ten samples
	Mercury	0.091	2.6	mg/kg	7 / 8	0.024 - 0.42	0.7	NA	3	mg/kg	Max	<ten samples
	Vanadium	23	40	mg/kg	5 / 6	1.1 - 1.2	32	NA	40	mg/kg	Max	<ten samples

Statistics: Maximum Detected Value (Max); 95 th Percentile (Perc); Normal Distribution (UCL-N); Lognormal Distribution (UCL-T); Gamma Distribution (UCL-G); Non-parametric UCL (UCL-NP).

(1) Exposure point concentration (EPC) is the lower of the maximum concentration and the 95% Upper Confidence Limit (UCL) or 95 th Percentile.

(2) The UCL listed were calculated using ProUCL 4.0 program.

(3) Total PCBs calculated using sum of the detected Aroclors when at least one Aroclor detected or maximum practical quantitation limit for non-detected Aroclors when none of the Aroclors are detected. EPC was calculated using one-half the practical quantitation limit for non-detected Aroclors.

(4) Under Central Tendency Exposure (CTE) scenario, duplicate sample at SSRI-11 were average to calculate EPC. The mean value was selected as EPC.

TABLE B-3.2
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil

Exposure Point	Chemical of Potential Concern	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Unit	Detection Frequency	Range of Detection Limit	Arithmetic Mean	95% UCL of Distribution	Exposure Point Concentration (1)			
									Value	Unit	Statistic	Rationale (2)
Facility Area	**SVOCs**											
	Benzo(a)anthracene	46 J	830	µg/kg	3 / 3	390 - 420	352	NA	830	µg/kg	Max	<ten samples
	Benzo(a)pyrene	24 J	1,900	µg/kg	3 / 3	390 - 420	701	NA	1,900	µg/kg	Max	<ten samples
	Benzo(b)fluoranthene	50 J	2,100	µg/kg	3 / 3	390 - 420	787	NA	2,100	µg/kg	Max	<ten samples
	Dibenz(a,h)anthracene	41 J	620	µg/kg	2 / 3	390 - 420	289	NA	620	µg/kg	Max	<ten samples
	Indeno(1,2,3-cd)pyrene	59 J	1,300	µg/kg	2 / 3	390 - 420	521	NA	1,300	µg/kg	Max	<ten samples
	P/PCBs											
	PCBs, Total (3)	23	17,000,000	µg/kg	28 / 31	37 - 3,800,000	605,472	6,061,165	6,061,165	µg/kg	UCL-NP	99% KM (Chebyshev) UCL
	Heptachlor epoxide	380	380	µg/kg	1 / 3	31 - 380	182	NA	380	µg/kg	Max	<ten samples
	Dioxin											
	Dioxin TEQ	0.191	0.756	µg/kg	1 / 4	NA - NA	NA	NA	0.756	µg/kg	Max	<ten samples
	Inorganics											
	Aluminum	11,000	19,000	mg/kg	3 / 3	23 - 25	14,333	NA	19,000	mg/kg	Max	<ten samples
	Antimony	8.7	8.7	mg/kg	1 / 3	2.3 - 2.5	4	NA	9	mg/kg	Max	<ten samples
	Arsenic	3.8	390	mg/kg	7 / 7	1.1 - 1.2	64	NA	390	mg/kg	Max	<ten samples
	Cadmium	0.52 J	4.7	mg/kg	3 / 7	0.51 - 0.62	1	NA	5	mg/kg	Max	<ten samples
	Chromium	13	23	mg/kg	7 / 7	1.1 - 1.2	18	NA	23	mg/kg	Max	<ten samples
	Iron	19,000	26,000	mg/kg	3 / 3	5.6 - 6.2	22,000	NA	26,000	mg/kg	Max	<ten samples
	Lead	8.7	4,700	mg/kg	7 / 7	0.56 - 28	712	NA	4,700	mg/kg	Max	<ten samples
	Manganese	70	830	mg/kg	7 / 7	1.1 - 1.2	480	NA	830	mg/kg	Max	<ten samples
	Mercury	0.091	2.6	mg/kg	8 / 9	0.024 - 0.42	0.7	NA	3	mg/kg	Max	<ten samples
	Vanadium	15	40	mg/kg	7 / 7	1.1 - 1.2	29	NA	40	mg/kg	Max	<ten samples

Statistics: Maximum Detected Value (Max); 95 th Percentile (Perc); Normal Distribution (UCL-N); Lognormal Distribution (UCL-T); Gamma Distribution (UCL-G); Non-parametric UCL (UCL-NP).

(1) Exposure point concentration (EPC) is the lower of the maximum concentration and the 95% Upper Confidence Limit (UCL) or 95 th Percentile.

(2) The UCL listed were calculated using ProUCL 4.0 program.

(3) Total PCBs calculated using sum of the detected Aroclors when at least one Aroclor detected or maximum practical quantitation limit for non-detected Aroclors when none of the Aroclors are detected. EPC was calculated using one-half the practical quantitation limit for non-detected Aroclors.

TABLE B-3.3
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Anniston PCB Site, Operable Unit 3

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

Exposure Point	Chemical of Potential Concern	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Unit	Detection Frequency	Range of Detection Limit	Arithmetic Mean	95% UCL of Distribution	Exposure Point Concentration (1)			
									Value	Unit	Statistic	Rationale (2)
South Landfill	**SVOCs**											
	Benzo(a)anthracene	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Benzo(a)pyrene	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Benzo(b)fluoranthene	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Dibenz(a,h)anthracene	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	P/PCBs											
	PCBs, Total (3)	226	27,000	µg/kg	11 / 13	40 - 43	4,447	13,642	13,642	µg/kg	UCL-NP	95% KM (Chebyshev) UCL
	Heptachlor epoxide	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Dioxin											
	Dioxin TEQ	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Inorganics											
	Aluminum	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Antimony	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Arsenic	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Cadmium	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Chromium	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Iron	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Lead	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Manganese	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Mercury	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Vanadium	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data

Statistics: Maximum Detected Value (Max); 95 th Percentile (Perc); Normal Distribution (UCL-N); Lognormal Distribution (UCL-T); Gamma Distribution (UCL-G); Non-parametric UCL (UCL-NP).

(1) Exposure point concentration (EPC) is the lower of the maximum concentration and the 95% Upper Confidence Limit (UCL) or 95 th Percentile.

(2) The UCL listed were calculated using ProUCL 4.0 program.

(3) Total PCBs calculated using sum of the detected Aroclors when at least one Aroclor detected or maximum practical quantitation limit for non-detected Aroclors when none of the Aroclors are detected. EPC was calculated using one-half the practical quantitation limit for non-detected Aroclors.

TABLE B-3.4
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Anniston PCB Site, Operable Unit 3

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

Exposure Point	Chemical of Potential Concern	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Unit	Detection Frequency	Range of Detection Limit	Arithmetic Mean	95% UCL of Distribution	Exposure Point Concentration (1)			
									Value	Unit	Statistic	Rationale (2)
West End Landfill	**SVOCs**											
	Benzo(a)anthracene	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Benzo(a)pyrene	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Benzo(b)fluoranthene	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Dibenz(a,h)anthracene	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	P/PCBs											
	PCBs, Total (3)	ND	ND	µg/kg	0 / 2	38 - 44	NA	NA	NA	NA	NA	No Detected Value
	Heptachlor epoxide	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Dioxin											
	Dioxin TEQ	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Inorganics											
	Aluminum	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Antimony	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Arsenic	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Cadmium	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Chromium	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Iron	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Lead	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Manganese	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Mercury	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data
	Vanadium	NA	NA	NA	NA / NA	NA - NA	NA	NA	NA	NA	NA	No Data

Statistics: Maximum Detected Value (Max); 95 th Percentile (Perc); Normal Distribution (UCL-N); Lognormal Distribution (UCL-T); Gamma Distribution (UCL-G); Non-parametric UCL (UCL-NP).

(1) Exposure point concentration (EPC) is the lower of the maximum concentration and the 95% Upper Confidence Limit (UCL) or 95 th Percentile.

(2) The UCL listed were calculated using ProUCL 4.0 program.

(3) Total PCBs calculated using sum of the detected Aroclors when at least one Aroclor detected or maximum practical quantitation limit for non-detected Aroclors when none of the Aroclors are detected. EPC was calculated using one-half the practical quantitation limit for non-detected Aroclors.

TABLE B-3.5
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Medium:	Surface/Subsurface Soil
Exposure Medium:	Surface/Subsurface Soil

Exposure Point	Chemical of Potential Concern	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Unit	Detection Frequency	Range of Detection Limit	Arithmetic Mean	95% UCL of Distribution	Exposure Point Concentration (1)			
									Value	Unit	Statistic	Rationale (2)
Facility Area	**SVOCs**											
	Benzo(a)anthracene	46 J	830	µg/kg	3 / 3	390 - 420	352	NA	830	µg/kg	Max	<ten samples
	Benzo(a)pyrene	24 J	1,900	µg/kg	3 / 3	390 - 420	701	NA	1,900	µg/kg	Max	<ten samples
	Benzo(b)fluoranthene	50 J	2,100	µg/kg	3 / 3	390 - 420	787	NA	2,100	µg/kg	Max	<ten samples
	Dibenz(a,h)anthracene	41 J	620	µg/kg	2 / 3	390 - 420	289	NA	620	µg/kg	Max	<ten samples
	Indeno(1,2,3-cd)pyrene	59 J	1,300	µg/kg	2 / 3	390 - 420	521	NA	1,300	µg/kg	Max	<ten samples
	P/PCBs											
	PCBs, Total (3)	23	17,000,000	µg/kg	51 / 58	37 - 3,800,000	355,060	3,272,601	3,272,601	µg/kg	UCL-NP	99% KM (Chebyshev) UCL
	Heptachlor epoxide	380	380	µg/kg	1 / 3	31 - 380	182	NA	380	µg/kg	Max	<ten samples
	Dioxin											
	Dioxin TEQ	0.191	0.756	µg/kg	1 / 4	NA - NA	NA	NA	0.756	µg/kg	Max	<ten samples
	Inorganics											
	Aluminum	11,000	19,000	mg/kg	3 / 3	23 - 25	14,333	NA	19,000	mg/kg	Max	<ten samples
	Antimony	8.7	8.7	mg/kg	1 / 3	2.3 - 2.5	4	NA	9	mg/kg	Max	<ten samples
	Arsenic	3.8	390	mg/kg	19 / 20	1.1 - 12	29	148	148	mg/kg	UCL-NP	97.5% KM (Chebyshev) UCL
	Barium	18	780	mg/kg	20 / 20	1.1 - 13	123	192	192	mg/kg	UCL-T	95% H-UCL
	Cadmium	0.52 J	4.7	mg/kg	5 / 20	0.53 - 6	1	1	1	mg/kg	UCL-NP	95% KM (% Bootstrap) UCL
	Chromium	12	110	mg/kg	19 / 20	1.1 - 12	26	47	47	mg/kg	UCL-NP	95% KM (Chebyshev) UCL
	Iron	19,000	26,000	mg/kg	3 / 3	5.6 - 6.2	22,000	NA	26,000	mg/kg	Max	<ten samples
	Lead	8.7	4,700	mg/kg	20 / 20	0.56 - 29	300	2,609	2,609	mg/kg	UCL-NP	99% Chebyshev (Mean, Sd) UCL
	Manganese	68	12,000	mg/kg	20 / 20	1.1 - 13	1,346	2,786	2,786	mg/kg	UCL-NP	95% Chebyshev (MVUE) UCL
	Mercury	0.032	3.3	mg/kg	21 / 22	0.024 - 0.71	1	2	2	mg/kg	UCL-NP	95% KM (Chebyshev) UCL
	Nickel	7.5	2,400	mg/kg	19 / 20	4.4 - 53	147	890	890	mg/kg	UCL-NP	97.5% KM (Chebyshev) UCL
	Vanadium	15	93	mg/kg	20 / 20	1.1 - 13	40	47	47	mg/kg	UCL-G	95% Approximate Gamma UCL

Statistics: Maximum Detected Value (Max); 95th Percentile (Perc); Normal Distribution (UCL-N); Lognormal Distribution (UCL-T); Gamma Distribution (UCL-G); Non-parametric UCL (UCL-NP).

(1) Exposure point concentration (EPC) is the lower of the maximum concentration and the 95% Upper Confidence Limit (UCL) or 95th Percentile.

(2) The UCL listed were calculated using ProUCL 4.0 program.

(3) Total PCBs calculated using sum of the detected Aroclors when at least one Aroclor detected or maximum practical quantitation limit for non-detected Aroclors when none of the Aroclors are detected. EPC was calculated using one-half the practical quantitation limit for non-detected Aroclors.

TABLE B-3.6
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Anniston PCB Site, Operable Unit 3

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

Exposure Point	Chemical of Potential Concern	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Unit	Detection Frequency	Range of Detection Limit	Arithmetic Mean	95% UCL of Distribution	Exposure Point Concentration (1)			
									Value	Unit	Statistic	Rationale (2)
Tap	**VOCs**											
	1,2,4-Trichlorobenzene	11	11	µg/L	1 / 2	1 - 1	6	NA	11	µg/L	Max	<ten samples
	1,4-Dichlorobenzene	2.6	2.6	µg/L	1 / 19	1 - 2,000	2	2	2	µg/L	Perc	>80% Non-Detected Value
	Chlorobenzene	3.4	12	µg/L	6 / 25	1 - 100	4	5	5	µg/L	UCL-NP	95% KM (% Bootstrap) UCL
	cis-1,2-Dichloroethene	10	10	µg/L	1 / 2	1 - 1	5	NA	10	µg/L	Max	<ten samples
	Pentachlorophenol	11	26	µg/L	5 / 25	0.94 - 5,000	5	20	20	µg/L	Perc	>80% Non-Detected Value
	Trichloroethylene	3.4	3.4	µg/L	1 / 2	1 - 1	2	NA	3	µg/L	Max	<ten samples
	SVOCs											
	2,4,6-Trichlorophenol	9.4	17	µg/L	5 / 25	9.4 - 5,000	11	15	15	µg/L	Perc	>80% Non-Detected Value
	Indeno(1,2,3-cd)pyrene	0.73	0.73	µg/L	1 / 2	9.9 - 10	3	NA	0.73	µg/L	Max	<ten samples
	P/PCBs											
	PCBs, Total (3)	2.8	18,000	µg/L	7 / 26	0.47 - 1,000	1,178	2,435	2,435	µg/L	UCL-NP	95% KM (t) UCL
	gamma-BHC	0.55	0.55	µg/L	1 / 2	0.047 - 0.048	0.29	NA	0.55	µg/L	Max	<ten samples
	Methyl parathion	74	74	µg/L	1 / 3	0.5 - 0.5	37	NA	74	µg/L	Max	<ten samples
	Parathion	51	23,000	µg/L	4 / 26	0.94 - 1,100	1,484	9,375	9,375	µg/L	Perc	>80% Non-Detected Value
	Dioxin											
	Dioxin TEQ	3.61E-06	3.61E-06	µg/L	1 / 2	NA - NA	NA	NA	3.61E-06	µg/L	Max	<ten samples
	Inorganics											
	Antimony	5.1	5.1	µg/L	1 / 2	20 - 20	NA	NA	5	µg/L	Max	<ten samples
	Arsenic	6.1	6.1	µg/L	1 / 2	10 - 10	NA	NA	6	µg/L	Max	<ten samples
	Manganese	36	1,300	µg/L	3 / 3	10 - 10	629	NA	1,300	µg/L	Max	<ten samples
	Mercury	1	4.1	µg/L	6 / 19	0.2 - 0.2	1	2	2	µg/L	UCL-NP	95% KM (Percentile Bootstrap) UCL

Statistics: Maximum Detected Value (Max); 95th Percentile (Perc); Normal Distribution (UCL-N); Lognormal Distribution (UCL-T); Gamma Distribution (UCL-G); Non-parametric UCL (UCL-NP).

(1) Exposure point concentration (EPC) is the lower of the maximum concentration and the 95% Upper Confidence Limit (UCL) or 95th Percentile.

(2) The UCL listed were calculated using ProUCL 4.0 program.

(3) Total PCBs calculated using sum of the detected Aroclors when at least one Aroclor detected or maximum practical quantitation limit for non-detected Aroclors when none of the Aroclors are detected. EPC was calculated using one-half the practical quantitation limit for non-detected Aroclors.

TABLE B-3.7
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Medium:	Air
Exposure Medium:	Ambient Air

Exposure Point	Chemical of Potential Concern	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Unit	Detection Frequency	Range of Detection Limit	Arithmetic Mean	95% UCL of Distribution	Exposure Point Concentration (1)			
									Value	Unit	Statistic	Rationale (2)
Facility Area	**P/PCBs**											
	PCBs, Total (3)	11	73	ng/m^3	6 / 6	NA - NA	33	NA	73	ng/m^3	Max	<ten samples

Statistics: Maximum Detected Value (Max); 95 th Percentile (Perc); Normal Distribution (UCL-N); Lognormal Distribution (UCL-T); Gamma Distribution (UCL-G); Non-parametric UCL (UCL-NP).

(1) Exposure point concentration (EPC) is the lower of the maximum concentration and the 95% Upper Confidence Limit (UCL) or 95 th Percentile.

(2) The UCL listed were calculated using ProUCL 4.0 program.

(3) Total PCBs calculated using zero for non-detected homologs.

TABLE B-3.8
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Medium:	Air
Exposure Medium:	Ambient Air

Exposure Point	Chemical of Potential Concern	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Unit	Detection Frequency	Range of Detection Limit	Arithmetic Mean	95% UCL of Distribution	Exposure Point Concentration (1)			
									Value	Unit	Statistic	Rationale (2)
South Landfill	**P/PCBs**											
	PCBs, Total (3)	0.1	39	ng/m^3	76 / 82	NA - NA	6	7	7	ng/m^3	UCL-G	95% Approximate Gamma UCL

Statistics: Maximum Detected Value (Max); 95th Percentile (Perc); Normal Distribution (UCL-N); Lognormal Distribution (UCL-T); Gamma Distribution (UCL-G); Non-parametric UCL (UCL-NP).

(1) Exposure point concentration (EPC) is the lower of the maximum concentration and the 95% Upper Confidence Limit (UCL) or 95 th Percentile.

(2) The UCL listed were calculated using ProUCL 4.0 program.

(3) Total PCBs calculated using zero for non-detected homologs.

TABLE B-3.9
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Medium:	Air
Exposure Medium:	Ambient Air

Exposure Point	Chemical of Potential Concern	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Unit	Detection Frequency	Range of Detection Limit	Arithmetic Mean	95% UCL of Distribution	Exposure Point Concentration (1)			
									Value	Unit	Statistic	Rationale (2)
West End Landfill	**P/PCBs**											
	PCBs, Total (3)	0.2	43	ng/m^3	81 / 84	NA - NA	8	10	10	ng/m^3	UCL-G	95% Approximate Gamma UCL

Statistics: Maximum Detected Value (Max); 95 th Percentile (Perc); Normal Distribution (UCL-N); Lognormal Distribution (UCL-T); Gamma Distribution (UCL-G); Non-parametric UCL (UCL-NP).

(1) Exposure point concentration (EPC) is the lower of the maximum concentration and the 95% Upper Confidence Limit (UCL) or 95 th Percentile.

(2) The UCL listed were calculated using ProUCL 4.0 program.

(3) Total PCBs calculated using zero for non-detected homologs.

TABLE B-4.1
VALUES USED FOR DAILY INTAKE CALCULATIONS
Anniston PCB Site, Operable Unit 3

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

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Unit	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Operations Area Worker (current)	Adult	Surface Soil	CS	Chemical Concentration in Soil	mg/kg	See Tables B-3.1 to B-3.4	See Tables B-3.1 to B-3.4	See Tables B-3.1 to B-3.4	See Tables B-3.1 to B-3.4	Chronic Daily Intake (CDI) (mg/kg-day) =
				CF	Conversion Factor	kg/mg	1E-06	--	1E-06	--	CS x CF x IR-S x IAF x EF x ED x
				IR-S	Ingestion Rate of Soil	mg/day	50	Solutia 2002; EPA 1991	50	Solutia 2002; EPA 1991	1/BW x 1/AT
				IAF	Intestinal Absorption Factor for PCBs and As	unitless	0.3	Solutia 2002	0.3	Solutia 2002	
				EF	Exposure Frequency	days/year	250	Solutia 2002; EPA 2002	219	EPA 2004a	
				ED	Exposure Duration	years	25	EPA 2002	9	EPA 2004a	
				BW	Body Weight	kg	70	EPA 2002	70	EPA 2002	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA 1989	25,550	EPA 1989	
				AT-N	Averaging Time (Noncancer)	days	9,125	EPA 1989	3,285	EPA 1989	
	Operations Area Worker (future)	Adult	Surface Soil	CS	Chemical Concentration in Soil	mg/kg	See Tables B-3.1 to B-3.4	See Tables B-3.1 to B-3.4	See Tables B-3.1 to B-3.4	See Tables B-3.1 to B-3.4	Chronic Daily Intake (CDI) (mg/kg-day) =
				CF	Conversion Factor	kg/mg	1E-06	--	1E-06	--	CS x CF x IR-S x EF x ED x
				IR-S	Ingestion Rate of Soil	mg/day	100	EPA 2002	100	EPA 2002	1/BW x 1/AT
				EF	Exposure Frequency	days/year	250	EPA 2002	219	EPA 2004a	
				ED	Exposure Duration	years	25	EPA 2002	9	EPA 2004a	
				BW	Body Weight	kg	70	EPA 2002	70	EPA 2002	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA 1989	25,550	EPA 1989	
				AT-N	Averaging Time (Noncancer)	days	9,125	EPA 1989	3,285	EPA 1989	
	Trespasser	Adolescent (7-16 yrs)	Surface Soil	CS	Chemical Concentration in Soil	mg/kg	See Tables B-3.1 to B-3.4	See Tables B-3.1 to B-3.4	See Tables B-3.1 to B-3.4	See Tables B-3.1 to B-3.4	Chronic Daily Intake (CDI) (mg/kg-day) =
				CF	Conversion Factor	kg/mg	1E-06	--	1E-06	--	CS x CF x IR-S x EF x ED x
				IR-S	Ingestion Rate of Soil	mg/day	100	professional judgment	100	professional judgment	1/BW x 1/AT
				EF	Exposure Frequency	days/year	50	professional judgment	10	professional judgment	
				ED	Exposure Duration	years	10	EPA 2000	10	professional judgment	
				BW	Body Weight	kg	45	EPA 2000	45	EPA 2000	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA 1989	25,550	EPA 1989	
				AT-N	Averaging Time (Noncancer)	days	3,650	EPA 1989	3,650	EPA 1989	
	O&M Worker	Adult	Surface Soil	CS	Chemical Concentration in Soil	mg/kg	See Tables B-3.1 to B-3.4	See Tables B-3.1 to B-3.4	See Tables B-3.1 to B-3.4	See Tables B-3.1 to B-3.4	Chronic Daily Intake (CDI) (mg/kg-day) =
				CF	Conversion Factor	kg/mg	1E-06	--	1E-06	--	CS x CF x IR-S x EF x ED x
				IR-S	Ingestion Rate of Soil	mg/day	100	EPA 2002	100	EPA 2002	1/BW x 1/AT
				EF	Exposure Frequency	days/year	24	professional judgment	12	professional judgment	
				ED	Exposure Duration	years	25	EPA 2002	9	EPA 2004a	
				BW	Body Weight	kg	70	EPA 2002	70	EPA 2002	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA 1989	25,550	EPA 1989	
				AT-N	Averaging Time (Noncancer)	days	9,125	EPA 1989	3,285	EPA 1989	
	Construction Worker	Adult	Surface/ Subsurface Soil	CS	Chemical Concentration in Soil	mg/kg	See Tables B-3.5	See Tables B-3.5	See Tables B-3.5	See Tables B-3.5	Chronic Daily Intake (CDI) (mg/kg-day) =
				CF	Conversion Factor	kg/mg	1E-06	--	1E-06	--	CS x CF x IR-S x EF x ED x
				IR-S	Ingestion Rate of Soil	mg/day	330	EPA 2002	330	EPA 2002	1/BW x 1/AT
				EF	Exposure Frequency	days/year	100	professional judgment	40	professional judgment	
				ED	Exposure Duration	years	1	professional judgment	1	professional judgment	
				BW	Body Weight	kg	70	EPA 2002	70	EPA 2002	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA 1989	25,550	EPA 1989	
				AT-N	Averaging Time (Noncancer)	days	365	EPA 1989	365	EPA 1989	

TABLE B-4.1
VALUES USED FOR DAILY INTAKE CALCULATIONS
Anniston PCB Site, Operable Unit 3

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

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Unit	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Dermal	Operations Area Worker (current)	Adult	Surface Soil	CS	Chemical Concentration in Soil	mg/kg	See Tables B-3.1 to B-3.4	See Tables B-3.1 to B-3.4	See Tables B-3.1 to B-3.4	See Tables B-3.1 to B-3.4	Chronic Daily Intake (CDI) (mg/kg-day) =
				CF	Conversion Factor	kg/mg	1E-06	--	1E-06	--	CS x CF x SA x AF x ABS x EF x ED x
				SA	Skin Surface Area Available for Contact	cm^2	2,290	Solutia 2002; EPA 2001	2,290	Solutia 2002; EPA 2001	1/BW x 1/AT
				AF	Adherence Factor	mg/cm^2	0.2	Solutia 2002; EPA 2001	0.02	EPA 2004a	
				ABS	Absorption Factor	unitless	See Table 4-2	See Table 4-2	See Table 4-2	See Table 4-2	
				EF	Exposure Frequency	days/year	250	EPA 2002	219	EPA 2004a	
				ED	Exposure Duration	years	25	EPA 2002	9	EPA 2004a	
				BW	Body Weight	kg	70	EPA 2002	70	EPA 2002	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA 1989	25,550	EPA 1989	
				AT-N	Averaging Time (Noncancer)	days	9,125	EPA 1989	3,285	EPA 1989	
	Operations Area Worker (future)	Adult	Surface Soil	CS	Chemical Concentration in Soil	mg/kg	See Tables B-3.1 to B-3.4	See Tables B-3.1 to B-3.4	See Tables B-3.1 to B-3.4	See Tables B-3.1 to B-3.4	Chronic Daily Intake (CDI) (mg/kg-day) =
				CF	Conversion Factor	kg/mg	1E-06	--	1E-06	--	CS x CF x SA x AF x ABS x EF x ED x
				SA	Skin Surface Area Available for Contact	cm^2	3,300	EPA 2004a (1)	3,300	EPA 2004a (1)	1/BW x 1/AT
				AF	Adherence Factor	mg/cm^2	0.2	EPA 2004a	0.02	EPA 2004a	
				ABS	Absorption Factor	unitless	See Table 4-2	See Table 4-2	See Table 4-2	See Table 4-2	
				EF	Exposure Frequency	days/year	250	EPA 2002	219	EPA 2004a	
				ED	Exposure Duration	years	25	EPA 2002	9	EPA 2004a	
				BW	Body Weight	kg	70	EPA 2002	70	EPA 2002	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA 1989	25,550	EPA 1989	
				AT-N	Averaging Time (Noncancer)	days	9,125	EPA 1989	3,285	EPA 1989	
	Trespasser	Adolescent (7-16 yrs)	Surface Soil	CS	Chemical Concentration in Soil	mg/kg	See Tables B-3.1 to B-3.4	See Tables B-3.1 to B-3.4	See Tables B-3.1 to B-3.4	See Tables B-3.1 to B-3.4	Chronic Daily Intake (CDI) (mg/kg-day) =
				CF	Conversion Factor	kg/mg	1E-06	--	1E-06	--	CS x CF x SA x AF x ABS x EF x ED x
				SA	Skin Surface Area Available for Contact	cm^2	2,800	EPA 2004a	2,800	EPA 2004a	1/BW x 1/AT
				AF	Adherence Factor	mg/cm^2	0.2	EPA 2004a	0.04	EPA 2004a	
				ABS	Absorption Factor	unitless	See Table 4-2	See Table 4-2	See Table 4-2	See Table 4-2	
				EF	Exposure Frequency	days/year	50	professional judgment	10	professional judgment	
				ED	Exposure Duration	years	10	EPA 2000	10	EPA 2000	
				BW	Body Weight	kg	45	EPA 2000	45	EPA 2000	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA 1989	25,550	EPA 1989	
				AT-N	Averaging Time (Noncancer)	days	3,650	EPA 1989	3,650	EPA 1989	
	O&M Worker	Adult	Surface Soil	CS	Chemical Concentration in Soil	mg/kg	See Tables B-3.1 to B-3.4	See Tables B-3.1 to B-3.4	See Tables B-3.1 to B-3.4	See Tables B-3.1 to B-3.4	Chronic Daily Intake (CDI) (mg/kg-day) =
				CF	Conversion Factor	kg/mg	1E-06	--	1E-06	--	CS x CF x SA x AF x ABS x EF x ED x
				SA	Skin Surface Area Available for Contact	cm^2	3,300	EPA 2004a (1)	3,300	EPA 2004a (1)	1/BW x 1/AT
				AF	Adherence Factor	mg/cm^2	0.9	EPA 2004a	0.2	EPA 2004a	
				ABS	Absorption Factor	unitless	See Table 4-2	See Table 4-2	See Table 4-2	See Table 4-2	
				EF	Exposure Frequency	days/year	24	professional judgment	12	professional judgment	
				ED	Exposure Duration	years	25	EPA 2002	9	EPA 2004a	
				BW	Body Weight	kg	70	EPA 2002	70	EPA 2002	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA 1989	25,550	EPA 1989	
				AT-N	Averaging Time (Noncancer)	days	9,125	EPA 1989	3,285	EPA 1989	

TABLE B-4.1

VALUES USED FOR DAILY INTAKE CALCULATIONS

Anniston PCB Site, Operable Unit 3

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

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Unit	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Dermal	Construction Worker	Adult	Surface/ Subsurface Soil	CS	Chemical Concentration in Soil	mg/kg	See Tables B-3.5	See Tables B-3.5	See Tables B-3.5	See Tables B-3.5	Chronic Daily Intake (CDI) (mg/kg-day) =
				CF	Conversion Factor	kg/mg	1E-06	--	1E-06	--	CS x CF x SA x AF x ABS x EF x ED x
				SA	Skin Surface Area Available for Contact	cm^2	3,300	EPA 2004a (1)	3,300	EPA 2004a (1)	1/BW x 1/AT
				AF	Adherence Factor	mg/cm^2	0.3	EPA 2004a	0.1	EPA 2004a	
				ABS	Absorption Factor	unitless	See Table 4-2	See Table 4-2	See Table 4-2	See Table 4-2	
				EF	Exposure Frequency	days/year	100	professional judgment	40	professional judgment	
				ED	Exposure Duration	years	1	professional judgment	1	professional judgment	
				BW	Body Weight	kg	70	EPA 2002	70	EPA 2002	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA 1989	25,550	EPA 1989	
				AT-N	Averaging Time (Noncancer)	days	365	EPA 1989	365	EPA 1989	

RME = Reasonable Maximum Exposure.

CTE = Central Tendency Exposure.

(1) Based on 50th percentile values for men and women for the following body parts: head, hands, and forearms.

Sources:

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

EPA 1997: Exposure Factors Handbook. Vol. 1: General Factors. ORD. EPA/600/P-95/002Fa.

EPA 2000."Supplemental Guidance to RAGS: Region 4 Bulletins. Human Health Risk Assessment." May.

EPA 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

EPA 2004a: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual, Part E, Supplemental Guidance for Dermal Risk Assessment Final. EPA/540/R/99/005.

Solutia 2002: RFI/CS Report for the Anniston Alabama Facility. October.

TABLE B-4.2
VALUES USED FOR DAILY INTAKE CALCULATIONS
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Unit	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Child to Adult (Lifetime Resident)	Tap Water	CW	Chemical Concentration in Water	µg/L	See Table B-3.6	See Table B-3.6	Not Evaluated		IFw = (EDc x IR-Wc / BWc) + (EDtot - EDc) x (IR-Wa/BWa)
				CF	Conversion Factor	mg/µg	1E-03	--			
				IFw	Age-adjusted Ingestion Factor	L-yr/kg-day	1.09	Calculated			Chronic Daily Intake (CDI) (mg/kg-day) = CW x IFw x CF x EF x 1/AT
				BWc	Body Weight, child	kg	15	EPA 2004a			
				BWa	Body Weight, adult	kg	70	EPA 2004a			
				IR-Wc	Ingestion Rate of Water, child	L/day	1	EPA 2000			
				IR-Wa	ingestion Rate of Water, adult	L/day	2	EPA 2000			
				EDc	Exposure Duration, child	years	6	EPA 2000			
				EDtot	Exposure Duration, total	years	30	EPA 2000			
				EF	Exposure Frequency	days/year	350	EPA 2000			
				AT-C	Averaging Time (Cancer)	days	25,550	EPA 1989			
		Child (0-6 yrs)	Tap Water	CW	Chemical Concentration in Water	µg/L	See Table B-3.6	See Table B-3.6	Not Evaluated		Chronic Daily Intake (CDI) (mg/kg-day) = CW x CF1 x IRw x EF x ED x 1/BW x 1/AT
				CF	Conversion Factor	mg/µg	1E-03	--			
				IRw	Ingestion Rate of Water	L/day	1	EPA 2000			
				EF	Exposure Frequency	days/year	350	EPA 2000			
				ED	Exposure Duration	years	6	EPA 2000			
				BW	Body Weight	kg	15	EPA 2004a			
				AT-N	Averaging Time (Noncancer)	days	2,190	EPA 1989			
	Operations Area Worker	Adult	Tap Water	CW	Chemical Concentration in Water	µg/L	See Table B-3.6	See Table B-3.6	See Table B-3.6	See Table B-3.6	Chronic Daily Intake (CDI) (mg/kg-day) = CW x CF1 x IRw x EF x ED x 1/BW x 1/AT
				CF	Conversion Factor	mg/µg	1E-03	--	1E-03	--	
				IRw	Ingestion Rate of Water	L/day	1	EPA 2000	1	EPA 2000	
				EF	Exposure Frequency	days/year	250	EPA 2000	219	EPA 2004a	
				ED	Exposure Duration	years	25	EPA 2000	9	EPA 2004a	
				BW	Body Weight	kg	70	EPA 2004a	70	EPA 2004a	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA 1989	25,550	EPA 1989	
				AT-N	Averaging Time (Noncancer)	days	9,125	EPA 1989	3,285	EPA 1989	
	O&M Worker	Adult	Tap Water	CW	Chemical Concentration in Water	µg/L	See Table B-3.6	See Table B-3.6	See Table B-3.6	See Table B-3.6	Chronic Daily Intake (CDI) (mg/kg-day) = CW x CF1 x IRw x EF x ED x 1/BW x 1/AT
				CF	Conversion Factor	mg/µg	1E-03	--	1E-03	--	
				IRw	Ingestion Rate of Water	L/day	1	EPA 2000	1	EPA 2000	
				EF	Exposure Frequency	days/year	24	EPA 2000	12	EPA 2004a	
				ED	Exposure Duration	years	25	EPA 2000	9	EPA 2004a	
				BW	Body Weight	kg	70	EPA 2004a	70	EPA 2004a	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA 1989	25,550	EPA 1989	
				AT-N	Averaging Time (Noncancer)	days	9,125	EPA 1989	3,285	EPA 1989	

TABLE B-4.2
VALUES USED FOR DAILY INTAKE CALCULATIONS
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Unit	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Dermal	Resident	Adult	Tap Water	CW	Chemical Concentration in Water	µg/L	See Table B-3.6	See Table B-3.6	Not Evaluated		Chronic Daily Intake (CDI) (mg/kg-day) =
				CF1	Conversion Factor	mg/µg	1E-03	--			CW x CF1 x CF2 x SA x EF x ED x
				SA	Surface Area Available for Contact	cm^2	18,000	EPA 2004a			1/BW x 1/AT
				K_p	Permeability Coefficient	cm/hr	See Table 4-2	See Table 4-2			
				CF2	Conversion Factor	L/cm^3	1E-03	--			
				ET	Exposure Time	hr/day	0.25	EPA 2001b			
				EF	Exposure Frequency	days/year	350	EPA 2004a			
				ED	Exposure Duration	years	24	EPA 2004a			
				BW	Body Weight	kg	70	EPA 2004a			
				AT-C	Averaging Time (Cancer)	days	25,550	EPA 1989			
				AT-N	Averaging Time (Noncancer)	days	8,760	EPA 1989			
		Child (0-6 yrs)	Tap Water	CW	Chemical Concentration in Water	µg/L	See Table B-3.6	See Table B-3.6	Not Evaluated		Chronic Daily Intake (CDI) (mg/kg-day) =
				CF1	Conversion Factor	mg/µg	1E-03	--			CW x CF1 x CF2 x SA x EF x ED x
				SA	Surface Area Available for Contact	cm^2	6,600	EPA 2004a			1/BW x 1/AT
				K_p	Permeability Coefficient	cm/hr	See Table 4-2	See Table 4-2			
				CF2	Conversion Factor	L/cm^3	1E-03	--			
				ET	Exposure Time	hr/day	0.45	EPA 2001b			
				EF	Exposure Frequency	days/year	350	EPA 2004a			
				ED	Exposure Duration	years	6	EPA 2004a			
				BW	Body Weight	kg	15	EPA 2004a			
				AT-C	Averaging Time (Cancer)	days	25,550	EPA 1989			
				AT-N	Averaging Time (Noncancer)	days	2,190	EPA 1989			
Inhalation at Showerhead	Resident	Adult	Air	CA	Chemical Concentration in Air	$µg/m^3$	See Tables D-3	See Tables D-3	Not Evaluated		Chronic Daily Intake (CDI) (mg/kg-day) =
				CF	Conversion factor	mg/µg	1E-03	--			CA x IR-A x ET x EF x ED x CF x
				IR-A	Inhalation Rate of Air	m^3/hr	1	EPA 1999			1/BW x 1/AT
				ET	Exposure Time	hr/day	0.58	EPA 2004a (2)			
				EF	Exposure frequency	days/year	350	EPA 2004a			
				ED	Exposure duration	years	24	EPA 2004a			
				BW	Body weight	kg	70	EPA 2004a			
				AT-C	Averaging Time (Cancer)	days	25,550	EPA 1989			
				AT-N	Averaging Time (Noncancer)	days	8,760	EPA 1989			

TABLE B-4.2
VALUES USED FOR DAILY INTAKE CALCULATIONS
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Unit	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Inhalation at Showerhead	Resident	Child (0-6 yrs)	Air	CA	Chemical Concentration in Air	$\mu g/m^3$	See Tables D-4	See Tables D-4	Not Evaluated		Chronic Daily Intake (CDI) (mg/kg-day) =
				CF	Conversion factor	mg/µg	1E-03	--			CA x IR-A x ET x EF x ED x CF x
				IR-A	Inhalation Rate of Air	m^3/hr	1	EPA 1999			1/BW x 1/AT
				ET	Exposure Time	hr/day	1	EPA 2004a (2)			
				EF	Exposure Frequency	days/year	350	EPA 2004a			
				ED	Exposure Duration	years	6	EPA 2004a			
				BW	Body Weight	kg	15	EPA 2004a			
				AT-C	Averaging Time (Cancer)	days	25,550	EPA 1989			
				AT-N	Averaging Time (Noncancer)	days	2,190	EPA 1989			

RME = Reasonable Maximum Exposure.

CTE = Central Tendency Exposure.

(1) Based on the 50th percentile values for males and females. Since body weight and surface area are dependent variables, all surface areas used 50th percentiles.

(2) Inhalation exposure time is based on time in the shower/bath plus time in the bathroom after shower/bath.

Sources:

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

EPA 1995."Supplemental Guidance to RAGS: Region 4 Bulletins. Human Health Risk Assessment." November.

EPA 1997: Exposure Factors Handbook. Vol. 1: General Factors. ORD. EPA/600/P-95/002Fa.

EPA 2001b: Personal communication with M. Olsen of EPA Region 2, July 13, 2001. Based on EPA Region 2 and the Andelman model as modified by Schaum et al.

EPA 2002: Child-Specific Exposure Factors Handbook. NCEA-W; EPA/600/P-00-002B.

EPA 2004a: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual, Part E, Supplemental Guidance for Dermal Risk Assessment Final. EPA/540/R/99/005.

TABLE B-4.3
VALUES USED FOR DAILY INTAKE CALCULATIONS
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Medium:	Air
Exposure Medium:	Ambient Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Unit	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Inhalation of ambient air	Resident	Adult	Air	CA	Chemical Concentration in Air	ng/m^3	See Tables B-3.7 to B-3.9	See Tables B-3.7 to B-3.9	Not Evaluated		Chronic Daily Intake (CDI) (mg/kg-day) =
				CF	Conversion factor	mg/ng	1E-06	--			CA x IR-A x EF x ED x CF x
				IR-A	Inhalation Rate of Air	m^3/day	13	EPA 1999			1/BW x 1/AT
				EF	Exposure frequency	days/year	350	EPA 1991			
				ED	Exposure duration	years	24	EPA 1991			
				BW	Body weight	kg	70	EPA 1991			
				AT-C	Averaging Time (Cancer)	days	25,550	EPA 1989			
				AT-N	Averaging Time (Noncancer)	days	8,760	EPA 1989			
		Child (0-6 yrs)	Air	CA	Chemical Concentration in Air	ng/m^3	See Tables B-3.7 to B-3.9	See Tables B-3.7 to B-3.9	Not Evaluated		Chronic Daily Intake (CDI) (mg/kg-day) =
				CF	Conversion factor	mg/ng	1E-06	--			CA x IR-A x EF x ED x CF x
				IR-A	Inhalation Rate of Air	m^3/day	7.5	EPA 1999			1/BW x 1/AT
				EF	Exposure Frequency	days/year	350	EPA 1991			
				ED	Exposure Duration	years	6	EPA 1991			
				BW	Body Weight	kg	15	EPA 1991			
				AT-C	Averaging Time (Cancer)	days	25,550	EPA 1989			
				AT-N	Averaging Time (Noncancer)	days	2,190	EPA 1989			
	Operations Area Worker	Adult	Air	CA	Chemical Concentration in Air	ng/m^3	See Tables B-3.7 to B-3.9	See Tables B-3.7 to B-3.9	See Tables B-3.7 to B-3.9	See Tables B-3.7 to B-3.9	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-A	Inhalation Rate of Air	m^3/hr	1.5	EPA 1999	1.5	EPA 1999	CA x IR-A x ET x EF x ED x CF x
				ET	Exposure Time	hr/day	8	EPA 1999	8	EPA 1999	1/BW x 1/AT
				EF	Exposure Frequency	days/year	250	EPA 2002	219	EPA 2004a	
				ED	Exposure Duration	years	25	EPA 2002	9	EPA 2004a	
				CF	Conversion Factor	mg/ng	1E-06	--	1E-06	--	
				BW	Body Weight	kg	70	EPA 2002	70	EPA 2002	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA 1989	25,550	EPA 1989	
				AT-N	Averaging Time (Noncancer)	days	9,125	EPA 1989	3,285	EPA 1989	
	Trespasser	Adolescent (7-16 yrs)	Air	CA	Chemical Concentration in Air	ng/m^3	See Tables B-3.7 to B-3.9	See Tables B-3.7 to B-3.9	See Tables B-3.7 to B-3.9	See Tables B-3.7 to B-3.9	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-A	Inhalation Rate of Air	m^3/hr	1.07	EPA 1999	1.07	EPA 1999	CA x IR-A x ET x EF x ED x CF x
				ET	Exposure Time	hr/day	4	EPA 1999	2	EPA 1999	1/BW x 1/AT
				EF	Exposure Frequency	days/year	50	professional judgment	10	professional judgment	
				ED	Exposure Duration	years	10	EPA 2000	10	EPA 2000	
				CF	Conversion Factor	mg/ng	1E-06	--	1E-06	--	
				BW	Body Weight	kg	45	EPA 2000	45	EPA 2002	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA 1989	25,550	EPA 1989	
				AT-N	Averaging Time (Noncancer)	days	3,650	EPA 1989	3,650	EPA 1989	

TABLE B-4.3
VALUES USED FOR DAILY INTAKE CALCULATIONS
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Medium:	Air
Exposure Medium:	Ambient Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Unit	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Inhalation of ambient air	O&M Worker	Adult	Air	CA	Chemical Concentration in Air	ng/m^3	See Tables B-3.7 to B-3.9	See Tables B-3.7 to B-3.9	See Tables B-3.7 to B-3.9	See Tables B-3.7 to B-3.9	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-A	Inhalation Rate of Air	m^3/hr	1.5	EPA 1999	1.5	EPA 1999	CA x IR-A x ET x EF x ED x CF x
				ET	Exposure Time	hr/day	8	EPA 1999	8	EPA 1999	1/BW x 1/AT
				EF	Exposure Frequency	days/year	24	professional judgment	12	professional judgment	
				ED	Exposure Duration	years	25	EPA 2002	9	EPA 2004a	
				CF	Conversion Factor	mg/ng	1E-06	--	1E-06	--	
				BW	Body Weight	kg	70	EPA 2002	70	EPA 2002	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA 1989	25,550	EPA 1989	
				AT-N	Averaging Time (Noncancer)	days	9,125	EPA 1989	3,285	EPA 1989	
	Construction Worker	Adult	Air	CA	Chemical Concentration in Air	ng/m^3	See Tables B-3.7 to B-3.9	See Tables B-3.7 to B-3.9	See Tables B-3.7 to B-3.9	See Tables B-3.7 to B-3.9	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-A	Inhalation Rate of Air	m^3/hr	2.5	EPA 1999	2.5	EPA 1999	CA x IR-A x ET x EF x ED x CF x
				ET	Exposure Time	hr/day	8	EPA 1999	8	EPA 1999	1/BW x 1/AT
				EF	Exposure Frequency	days/year	100	professional judgment	40	professional judgment	
				ED	Exposure Duration	years	1	professional judgment	1	professional judgment	
				CF	Conversion Factor	mg/ng	1E-06	--	1E-06	--	
				BW	Body Weight	kg	70	EPA 2002	70	EPA 2002	
				AT-C	Averaging Time (Cancer)	days	25,550	EPA 1989	25,550	EPA 1989	
				AT-N	Averaging Time (Noncancer)	days	365	EPA 1989	365	EPA 1989	

RME = Reasonable Maximum Exposure.

CTE = Central Tendency Exposure.

(1) Based on 50th percentile values for men and women for the following body parts: head, hands, and forearms.

Sources:

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, Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1999: Exposure Factors Handbook. ORD. EPA/800/C-99/001.

EPA 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

EPA 2004a: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual, Part E, Supplemental Guidance for Dermal Risk Assessment Final. EPA/540/R/99/005.

TABLE B-4.4

MODIFIED VALUES USED FOR DAILY INTAKE CALCULATIONS

Anniston PCB Site, Operable Unit 3

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

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Modified Value	Unit	Modified Values Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Trespasser	Adolescent (7-16 yrs)	Surface Soil	CS	Chemical Concentration in Soil	See Tables B-3.1 to B-3.4	mg/kg	See Tables B-3.1 to B-3.4	Chronic Daily Intake (CDI) (mg/kg-day) =
				CF	Conversion Factor	1E-06	kg/mg	--	CS x CF x IR-S x IAF x EF x ED x
				IR-S	Ingestion Rate of Soil	100	mg/day	Solutia 2002	1/BW x 1/AT
				IAF	Intestinal Absorption Factor for PCBs and As	0.3	unitless	Solutia 2002	
				EF	Exposure Frequency	60	days/year	Solutia 2002	
				ED	Exposure Duration	10	years	Solutia 2002; EPA 2000	
				BW	Body Weight	45	kg	EPA 2000	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 1989	
				AT-N	Averaging Time (Noncancer)	3,650	days	EPA 1989	
	O&M Worker	Adult	Surface Soil	CS	Chemical Concentration in Soil	See Tables B-3.1 to B-3.4	mg/kg	See Tables B-3.1 to B-3.4	Chronic Daily Intake (CDI) (mg/kg-day) =
				CF	Conversion Factor	1E-06	kg/mg	--	CS x CF x IR-S x IAF x EF x ED x
				IR-S	Ingestion Rate of Soil	50	mg/day	Solutia 2002; EPA 1991	1/BW x 1/AT
				IAF	Intestinal Absorption Factor for PCBs and As	0.3	unitless	Solutia 2002	
				EF	Exposure Frequency	50	days/year	Solutia 2002	
				ED	Exposure Duration	25	years	EPA 2002	
				BW	Body Weight	70	kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 1989	
				AT-N	Averaging Time (Noncancer)	9,125	days	EPA 1989	
	Construction Worker	Adult	Surface/ Subsurface Soil	CS	Chemical Concentration in Soil	See Tables B-3.5	mg/kg	See Tables B-3.5	Chronic Daily Intake (CDI) (mg/kg-day) =
				CF	Conversion Factor	1E-06	kg/mg	--	CS x CF x IR-S x IAF x EF x ED x
				IR-S	Ingestion Rate of Soil	480	mg/day	Solutia 2002; EPA 2002	1/BW x 1/AT
				IAF	Intestinal Absorption Factor for PCBs and As	0.3	unitless	Solutia 2002	
				EF	Exposure Frequency	120	days/year	Solutia 2002	
				ED	Exposure Duration	1	years	Solutia 2002	
				BW	Body Weight	70	kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 1989	
				AT-N	Averaging Time (Noncancer)	365	days	EPA 1989	

TABLE B-4.4

MODIFIED VALUES USED FOR DAILY INTAKE CALCULATIONS

Anniston PCB Site, Operable Unit 3

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

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Modified Value	Unit	Modified Values Rationale/ Reference	Intake Equation/ Model Name
Dermal	Trespasser	Adolescent (7-16 yrs)	Surface Soil	CS	Chemical Concentration in Soil	See Tables B-3.1 to B-3.4	mg/kg	See Tables B-3.1 to B-3.4	Chronic Daily Intake (CDI) (mg/kg-day) =
				CF	Conversion Factor	1E-06	kg/mg	--	CS x CF x SA x AF x ABS x EF x ED x
				SA	Skin Surface Area Available for Contact	5,300	cm^2	Solutia 2002; EPA 2001	1/BW x 1/AT
				AF	Adherence Factor	0.04	mg/cm^2	Solutia 2002; EPA 2001	
				ABS	Absorption Factor	See Table 4-2	unitless	See Table 4-2	
				EF	Exposure Frequency	60	days/year	Solutia 2002	
				ED	Exposure Duration	10	years	EPA 2000	
				BW	Body Weight	45	kg	EPA 2000	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 1989	
				AT-N	Averaging Time (Noncancer)	3,650	days	EPA 1989	
	O&M Worker	Adult	Surface Soil	CS	Chemical Concentration in Soil	See Tables B-3.1 to B-3.4	mg/kg	See Tables B-3.1 to B-3.4	Chronic Daily Intake (CDI) (mg/kg-day) =
				CF	Conversion Factor	1E-06	kg/mg	--	CS x CF x (SA_{hd} x AF_{hd} + SA_{hnd} x AF_{hnd}) x
				SA_{hd}	Exposed Surface Area - Adult Head	1,300	cm^2	Solutia 2002; EPA 2001	ABS x EF x ED x 1/BW x 1/AT
				AF_{hd}	Adherence Factor (head)	0.004	mg/cm^2	Solutia 2002; EPA 2001	
				SA_{hnd}	Exposed Surface Area - Adult Hands	990	cm^2	Solutia 2002; EPA 2001	
				AF_{hnd}	Adherence Factor (hands)	0.046	mg/cm^2	Solutia 2002; EPA 2001	
				ABS	Absorption Factor	See Table 4-2	unitless	See Table 4-2	
				EF	Exposure Frequency	50	days/year	Solutia 2002	
				ED	Exposure Duration	25	years	EPA 2002	
				BW	Body Weight	70	kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 1989	
				AT-N	Averaging Time (Noncancer)	9,125	days	EPA 1989	
	Construction Worker	Adult	Surface/ Subsurface Soil	CS	Chemical Concentration in Soil	See Tables B-3.5	mg/kg	See Tables B-3.5	Chronic Daily Intake (CDI) (mg/kg-day) =
				CF	Conversion Factor	1E-06	kg/mg	--	CS x CF x (SA_{hd} x AF_{hd} + SA_{hnd} x AF_{hnd}) x
				SA_{hd}	Exposed Surface Area - Adult Head	1,300	cm^2	Solutia 2002; EPA 2001	ABS x EF x ED x 1/BW x 1/AT
				AF_{hd}	Adherence Factor (head)	0.029	mg/cm^2	Solutia 2002; EPA 2001	
				SA_{hnd}	Exposed Surface Area - Adult Hands	990	cm^2	Solutia 2002; EPA 2001	
				AF_{hnd}	Adherence Factor (hands)	0.24	mg/cm^2	Solutia 2002; EPA 2001	
				ABS	Absorption Factor	See Table 4-2	unitless	See Table 4-2	
				EF	Exposure Frequency	120	days/year	Solutia 2002	
				ED	Exposure Duration	1	years	Solutia 2002	
				BW	Body Weight	70	kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 1989	
				AT-N	Averaging Time (Noncancer)	365	days	EPA 1989	

Sources:

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, Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

EPA 1997: Exposure Factors Handbook. Vol. 1: General Factors. ORD. EPA/600/P-95/002Fa.

EPA 2000."Supplemental Guidance to RAGS: Region 4 Bulletins. Human Health Risk Assessment." May.

EPA 2001: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual, Supplemental Guidance, Dermal Risk Assessment. Interim Guidance. EPA/540/R/99/005.

EPA 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

Solutia 2002: RFI/CS Report for the Anniston Alabama Facility. October.

TABLE B-4.5

MODIFIED VALUES USED FOR DAILY INTAKE CALCULATIONS

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Medium:	Air
Exposure Medium:	Ambient Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Modified Value	Unit	Modified Values Rationale/ Reference	Intake Equation/ Model Name
Inhalation of Ambient Air	Trespasser	Child	Air	CA	Chemical Concentration in Air	See Tables B-3.7 to B-3.9	ng/m^3	See Tables B-3.7 to B-3.9	Chronic Daily Intake (CDI) (mg/kg-day) =
				CF	Conversion Factor	1E-06	mg/ng	--	CA x CF x IR-A x ET x EF x ED x 1/BW x 1/AT
				IR-A	Inhalation Rate of Air	1.07	m^3/hr	EPA 1999	
				ET	Exposure Time	4	hr/day	professional judgment	
				EF	Exposure Frequency	60	days/year	Solutia 2002	
				ED	Exposure Duration	10	years	EPA 2000	
				BW	Body Weight	45	kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 1989	
				AT-N	Averaging Time (Noncancer)	3,650	days	EPA 1989	
	Construction Worker	Adult	Air	CA	Chemical Concentration in Air	See Tables B-3.7 to B-3.9	ng/m^3	See Tables B-3.7 to B-3.9	Chronic Daily Intake (CDI) (mg/kg-day) =
				CF	Conversion Factor	1E-06	mg/ng	--	CA x CF x IR-A x ET x EF x ED x 1/BW x 1/AT
				IR-A	Inhalation Rate of Air	2.5	m^3/hr	EPA 1997	
				ET	Exposure Time	8	hr/day	EPA 1997	
				EF	Exposure Frequency	120	days/year	Solutia 2002	
				ED	Exposure Duration	1	years	Solutia 2002	
				BW	Body Weight	70	kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 1989	
				AT-N	Averaging Time (Noncancer)	365	days	EPA 1989	

Sources:

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

EPA 1999: Exposure Factors Handbook. ORD. EPA/800/C-99/001.

EPA 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

Solutia 2002: RFI/CS Report for the Anniston Alabama Facility. October.

TABLE B-5.1

NON-CANCER TOXICITY DATA -- ORAL/DERMAL

Anniston PCB Site, Operable Unit 3

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (1)	Absorbed RfD for Dermal (1)		Primary Target Organ(s)	Combined Uncertainty/Modifying Factor	RfD: Target Organ(s)	
		Value	Unit		Value	Unit			Source(s)	Date(s) (2) (MM/DD/YYYY)
VOCs										
1,2,4-Trichlorobenzene	Chronic	1.0E-02	mg/kg-day	–	1.0E-02	mg/kg-day	Adrenals	1,000	IRIS	05/11/2007
1,4-Dichlorobenzene	Chronic	3.0E-02	mg/kg-day	–	3.0E-02	mg/kg-day	NA	NA	NCEA	10/2004
Chlorobenzene	Chronic	2.0E-02	mg/kg-day	–	2.0E-02	mg/kg-day	Liver	1,000	IRIS	05/11/2007
cis-1,2-Dichloroethene	Chronic	1.0E-02	mg/kg-day	–	1.0E-02	mg/kg-day	Blood	3,000	PPRTV	01/17/2007
Pentachlorophenol	Chronic	3.0E-02	mg/kg-day	76%	3.0E-02	mg/kg-day	Liver/Kidney	100	IRIS	05/11/2007
Trichloroethylene	Chronic	3.0E-04	mg/kg-day	–	3.0E-04	mg/kg-day	Liver/Kidney/Fetus	3,000	NCEA	10/25/2004
SVOCs										
2,4,6-Trichlorophenol	Chronic	1.0E-04	mg/kg-day	–	1.0E-04	mg/kg-day	NA	NA	NCEA	10/2004
Benzo(a)anthracene	NA	NA	NA	–	NA	NA	NA	NA	IRIS	05/11/2007
Benzo(a)pyrene	NA	NA	NA	89%	NA	NA	NA	NA	IRIS	05/11/2007
Benzo(b)fluoranthene	NA	NA	NA	–	NA	NA	NA	NA	IRIS	05/11/2007
Dibenz(a,h)anthracene	NA	NA	NA	–	NA	NA	NA	NA	IRIS	05/11/2007
Indeno(1,2,3-cd)pyrene	NA	NA	NA	–	NA	NA	NA	NA	IRIS	05/11/2007
P/PCBs										
PCBs, Total (3)	Chronic	2.0E-05	mg/kg-day	–	2.0E-05	mg/kg-day	Eye/Skin/Nails/Immune System	300	IRIS	05/11/2007
gamma-BHC	Chronic	3.0E-04	mg/kg-day	–	3.0E-04	mg/kg-day	Liver/Kidney	1,000	IRIS	05/11/2007
Heptachlor epoxide	Chronic	1.3E-05	mg/kg-day	–	1.3E-05	mg/kg-day	Liver	1,000	IRIS	05/11/2007
Methyl parathion	Chronic	2.5E-04	mg/kg-day	–	2.5E-04	mg/kg-day	Blood	100	IRIS	05/11/2007
Parathion	Chronic	6.0E-03	mg/kg-day	–	6.0E-03	mg/kg-day	NA	NA	HEAST	07/01/1997
Dioxin										
Dioxin TEQ	NA	NA	NA	–	NA	NA	NA	NA	IRIS	05/11/2007
Inorganics										
Aluminum	Chronic	1.0E+00	mg/kg-day	–	1.0E+00	mg/kg-day	GI Tract/CNS	100	NCEA	11/10/2003
Antimony	Chronic	4.0E-04	mg/kg-day	15%	6.0E-05	mg/kg-day	Whole Body/Blood	1,000	IRIS	05/11/2007
Arsenic	Chronic	3.0E-04	mg/kg-day	–	3.0E-04	mg/kg-day	Skin	3	IRIS	05/11/2007
Barium	Chronic	2.0E-01	mg/kg-day	7%	1.4E-02	mg/kg-day	CNS	300	IRIS	05/11/2007
Cadmium (4)	Chronic	1.0E-03	mg/kg-day	3%	2.5E-05	mg/kg-day	Kidney	10	IRIS	05/11/2007
Chromium (5)	Chronic	3.0E-03	mg/kg-day	2.5%	7.5E-05	mg/kg-day	GI Tract	900	IRIS	05/11/2007
Iron	Chronic	7.0E-01	mg/kg-day	–	7.0E-01	mg/kg-day	GI Tract/Liver	NA	PPRTV	01/17/2007
Lead	NA	NA	NA	–	NA	NA	NA	NA	IRIS	05/11/2007
Manganese	Chronic	1.4E-01	mg/kg-day	4%	5.6E-03	mg/kg/day	CNS	1	IRIS	05/11/2007
Mercury (6)	Chronic	3.0E-04	mg/kg-day	95%	2.9E-04	mg/kg/day	Immune System	1,000	IRIS	05/11/2007
Nickel (7)	Chronic	2.0E-02	mg/kg-day	4%	8.0E-04	mg/kg-day	Body and Organ Weight	300	IRIS	05/11/2007
Vanadium	Chronic	1.0E-03	mg/kg-day	2.6%	2.6E-05	mg/kg/day	Metabolic	100	NCEA	12/14/2005

NCEA = National Center for Environmental Assessment.
IRIS = Integrated Risk Information System.
PPRTV = Provisional Peer Reviewed Toxicity Values.
HEAST = Health Effects Assessment Summary Tables. July 1997.
RfD = Reference dose.
VOC = Volatile organic compound.
SVOC = Semi-volatile organic compound.
P/PCB = Pesticide/polychlorinated biphenyl.
CNS = Central Nervous System.

(1) The dermal RfD was assumed to equal the oral RfD, unless an adjustment factor was found in Exhibit 4.1 of RAGS-E (EPA 2001b).
(2) IRIS values were confirmed against the EPA's online database, May 2007.
NCEA and PPRTV values were provided by EPA.
(3) The RfD for total PCBs based on Aroclor 1254.
(4) The RfD for cadmium (food) is 0.001 mg/kg-day and cadmium (water) is 0.0005 mg/kg-day.
(5) The RfD for hexavalent chromium has been applied to total chromium.
(6) The RfD for methyl mercury has been applied to mercury.
(7) The RfD for nickel (soluble salt) has been applied to nickel.

TABLE B-5.2

NON-CANCER TOXICITY DATA -- INHALATION

Anniston PCB Site, Operable Unit 3

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD (1)		Primary Target Organ(s)	Combined Uncertainty/ Modifying Factors	RfC Target Organ(s)	
		Value	Unit	Value	Unit			Source(s)	Date(s) (2) (MM/DD/YYYY)
VOCs									
1,2,4-Trichlorobenzene	NA	NA	NA	1.0E-03	mg/kg-day	NA	NA	PPRTV	10/2004
1,4-Dichlorobenzene	Chronic	8.0E-01	mg/m^3	2.3E-01	mg/kg-day	Liver	100	IRIS	05/11/2007
Chlorobenzene	Chronic	NA	NA	1.7E-02	mg/kg-day	NA	NA	NCEA	10/2004
cis-1,2-Dichloroethene	Chronic	NA	NA	1.0E-02	mg/kg-day	NA	NA	PPRTV (3)	10/2004
Pentachlorophenol	Chronic	NA	NA	3.0E-02	mg/kg-day	NA	NA	IRIS (3)	10/2004
Trichloroethylene	Chronic	4.0E-02	mg/m^3	1.1E-02	mg/kg/day	CNS	1,000	NCEA	04/15/2003
SVOCs									
2,4,6-Trichlorophenol	Chronic	NA	NA	1.0E-04	mg/kg-day	NA	NA	NCEA (3)	10/2004
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	IRIS	05/11/2007
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	IRIS	05/11/2007
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	IRIS	05/11/2007
Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	IRIS	05/11/2007
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	IRIS	05/11/2007
P/PCBs									
PCBs, Total	NA	NA	NA	NA	NA	NA	NA	IRIS	05/11/2007
gamma-BHC	Chronic	NA	NA	3.0E-04	mg/kg-day	NA	NA	HEAST (3)	10/2004
Heptachlor epoxide	Chronic	NA	NA	1.3E-05	mg/kg-day	NA	NA	IRIS (3)	10/2004
Methyl parathion	Chronic	NA	NA	2.5E-04	mg/kg-day	NA	NA	IRIS (3)	10/2004
Parathion	Chronic	NA	NA	6.0E-03	mg/kg-day	NA	NA	HEAST (3)	10/2004
Dioxin									
Dioxin TEQ	NA	NA	NA	NA	NA	NA	NA	IRIS	05/11/2007
Inorganics									
Aluminum	Chronic	5.0E-03	mg/m^3	1.4E-03	mg/kg-day	CNS	300	NCEA	10/25/2004
Antimony	Chronic	4.0E-05	mg/m^3	1.1E-05	mg/kg-day	Lungs	1,000	NCEA	01/22/2003
Arsenic	NA	NA	NA	NA	NA	NA	NA	IRIS	05/11/2007
Barium	Chronic	4.9E-04	mg/m^3	1.4E-04	mg/kg-day	NA	NA	NCEA	01/17/2007
Cadmium	Chronic	2.0E-04	mg/m^3	5.7E-05	mg/kg-day	NA	NA	NCEA	03/10/2003
Chromium (4)	Chronic	8.0E-06	mg/m^3	2.3E-06	mg/kg-day	Nasal septum atrophy	90	IRIS	05/11/2007
Iron	NA	NA	NA	NA	NA	NA	NA	IRIS	05/11/2007
Lead	NA	NA	NA	NA	NA	NA	NA	IRIS	05/11/2007
Manganese	Chronic	5.0E-05	mg/m^3	1.4E-05	mg/kg-day	CNS	1,000	IRIS	05/11/2007
Mercury	Chronic	3.0E-04	mg/m^3	8.6E-05	mg/kg-day	CNS	30	IRIS	05/11/2007
Nickel	NA	NA	NA	NA	NA	NA	NA	IRIS	05/11/2007
Vanadium	NA	NA	NA	NA	NA	NA	NA	IRIS	05/11/2007

NCEA = National Center for Environmental Assessment.

IRIS = Integrated Risk Information System.

HEAST = Health Effects Assessment Summary Tables. July 1997.

RfC = Reference concentration.

RfD = Reference dose.

VOC = Volatile organic compound.

SVOC = Semi-volatile organic compound.

P/PCB = Pesticide/polychlorinated biphenyl.

(1) Inhalation RfDs were calculated from Inhalation RfCs assuming a 70 kg individual has an inhalation rate of 20 m^3/day.(USEPA Risk Assessment Guidance for Superfund, Part A; December 1989).

(2) IRIS values were confirmed against the EPA's online database, May 2007.

NCEA values were provided by EPA.

(3) Route-to-route extrapolation from EPA Region 9 PRG tables updated October 2004, http://www.epa.gov/region09/waste/sfund/prg/index.htm.

(4) The RfC information for hexavalent chromium has been applied to total chromium.

TABLE B-6.1

CANCER TOXICITY DATA -- ORAL/DERMAL

Anniston PCB Site, Operable Unit 3

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal (1)		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Unit		Value	Unit		Source(s)	Date(s) (2)
VOCs								
1,2,4-Trichlorobenzene	NA	NA	–	NA	NA	D	IRIS	05/11/2007
1,4-Dichlorobenzene	2.4E-02	$(mg/kg\text{-}day)^{-1}$	–	2.4E-02	$(mg/kg\text{-}day)^{-1}$	NA	HEAST	07/01/1997
Chlorobenzene	NA	NA	–	NA	NA	D	IRIS	05/11/2007
cis-1,2-Dichloroethene	NA	NA	–	NA	NA	D	IRIS	05/11/2007
Pentachlorophenol	1.2E-01	$(mg/kg\text{-}day)^{-1}$	–	1.2E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
Trichloroethylene	4.0E-01	$(mg/kg\text{-}day)^{-1}$	–	4.0E-01	$(mg/kg\text{-}day)^{-1}$	B2-C	NCEA	01/22/2003
SVOCs								
2,4,6-Trichlorophenol	1.1E-02	$(mg/kg\text{-}day)^{-1}$	–	1.1E-02	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
Benzo(a)anthracene (3)	7.3E-01	$(mg/kg\text{-}day)^{-1}$	58% - 89%	7.3E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
Benzo(a)pyrene (3)	7.3E+00	$(mg/kg\text{-}day)^{-1}$	58% - 89%	7.3E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
Benzo(b)fluoranthene (3)	7.3E-01	$(mg/kg\text{-}day)^{-1}$	58% - 89%	7.3E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
Dibenz(a,h)anthracene (3)	7.3E+00	$(mg/kg\text{-}day)^{-1}$	58% - 89%	7.3E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
Indeno(1,2,3-cd)pyrene (3)	7.3E-01	$(mg/kg\text{-}day)^{-1}$	58% - 89%	7.3E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
P/PCBs								
PCBs, Total (4)	2.0E+00	$(mg/kg\text{-}day)^{-1}$	80% - 96%	2.0E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
gamma-BHC	1.3E+00	$(mg/kg\text{-}day)^{-1}$	–	1.3E+00	$(mg/kg\text{-}day)^{-1}$	NA	HEAST	07/01/1997
Heptachlor epoxide	9.1E+00	$(mg/kg\text{-}day)^{-1}$	–	9.1E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
Methyl parathion	NA	NA	–	NA	NA	NA	IRIS	05/11/2007
Parathion	NA	NA	–	NA	NA	C	IRIS	05/11/2007
Dioxin								
Dioxin TEQ	1.5E+05	$(mg/kg\text{-}day)^{-1}$	–	1.5E+05	$(mg/kg\text{-}day)^{-1}$	NA	HEAST	07/01/1997
Inorganics								
Aluminum	NA	NA	–	NA	NA	D	NCEA	01/22/2003
Antimony	NA	NA	–	NA	NA	D	NCEA	01/22/2003
Arsenic	1.5E+00	$(mg/kg\text{-}day)^{-1}$	95%	1.5E+00	$(mg/kg\text{-}day)^{-1}$	A	IRIS	05/11/2007
Barium	NA	NA	–	NA	NA	D	IRIS	05/11/2007
Cadmium	NA	NA	–	NA	NA	B1	IRIS	05/11/2007
Chromium (5)	NA	NA	–	NA	NA	D	IRIS	05/11/2007
Iron	NA	NA	–	NA	NA	NA	IRIS	05/11/2007
Lead	NA	NA	–	NA	NA	B2	IRIS	05/11/2007
Manganese	NA	NA	–	NA	NA	D	IRIS	05/11/2007
Mercury (6)	NA	NA	–	NA	NA	C	IRIS	05/11/2007
Nickel	NA	NA	–	NA	NA	NA	IRIS	05/11/2007
Vanadium	NA	NA	–	NA	NA	NA	IRIS	05/11/2007

NCEA = National Center for Environmental Assessment.

HEAST = Health Effects Assessment Summary Tables. July 1997.

CSF = Cancer slope factor.

(1) The dermal CSF was assumed to equal the oral CSF, unless an adjustment factor was found in Exhibit 4.1 of RAGS-E (EPA 2001b).

(2) IRIS values were confirmed against the EPA's online database, May 2007. NCEA values were provided by EPA.

(3) The Oral Cancer Slope Factors for PAHs derived using the relative potency approach (USEPA. 1993. Provisional Guidance for Quantitative Assessment of Polycyclic Aromatic Hydrocarbons; EPA/600/R-93/089).

(4) The upper bound CSF [2 $(mg/kg\text{-}day)^{-1}$] was used for Reasonable Maximum Exposure scenario and central estimate CSF [1 $(mg/kg\text{-}day)^{-1}$] was used for Central Tendency Exposure scenario.

(5) The oral CSF for hexavalent chromium has been applied to total chromium.

(6) The oral CSF for methyl mercury has been applied to mercury.

EPA Weight of Evidence (EPA 1986, EPA 1996):

A - Human Carcinogen.

B1 - Probable human carcinogen - indicates that limited human data are available

B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans.

C - Possible human carcinogen.

D - Not classifiable as human carcinogen.

E - Evidence of noncarcinogenicity.

VOC = Volatile organic compound.

SVOC = Semi-volatile organic compound.

P/PCB = Pesticide/polychlorinated biphenyl.

TABLE B-6.2
CANCER TOXICITY DATA -- INHALATION
Anniston PCB Site, Operable Unit 3

Chemical of Potential Concern	Unit Risk		Inhalation Cancer Slope Factor (1)		Weight of Evidence/ Cancer Guideline Description	Unit Risk: Inhalation CSF	
	Value	Unit	Value	Unit		Source(s)	Date(s) (2)
VOCs							
1,2,4-Trichlorobenzene	NA	NA	NA	NA	D	IRIS	05/11/2007
1,4-Dichlorobenzene	NA	NA	2.2E-02	$(mg/kg\text{-}day)^{-1}$	NA	NCEA	10/2004
Chlorobenzene	NA	NA	NA	NA	D	IRIS	05/11/2007
cis-1,2-Dichloroethene	NA	NA	NA	NA	D	IRIS	05/11/2007
Pentachlorophenol	NA	NA	1.2E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
Trichloroethylene	NA	NA	4.0E-01	$(mg/kg\text{-}day)^{-1}$	B2-C	EPA	01/17/2007
SVOCs							
2,4,6-Trichlorophenol	3.1E-06	$(\mu g/m^3)^{-1}$	1.1E-02	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
Benzo(a)anthracene (3)	NA	NA	3.1E-01	$(mg/kg\text{-}day)^{-1}$	B2	NCEA	01/22/2003
Benzo(a)pyrene (3)	8.9E-04	$(\mu g/m^3)^{-1}$	3.1E+00	$(mg/kg\text{-}day)^{-1}$	B2	NCEA	01/22/2003
Benzo(b)fluoranthene (3)	NA	NA	3.1E-01	$(mg/kg\text{-}day)^{-1}$	B2	NCEA	01/22/2003
Dibenz(a,h)anthracene (3)	NA	NA	3.1E+00	$(mg/kg\text{-}day)^{-1}$	B2	NCEA	01/22/2003
Indeno(1,2,3-cd)pyrene (3)	NA	NA	3.1E-01	$(mg/kg\text{-}day)^{-1}$	B2	NCEA	01/22/2003
P/PCBs							
PCBs, Total	1.0E-04	$(\mu g/m^3)^{-1}$	3.5E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
gamma-BHC	NA	NA	1.3E+00	$(mg/kg\text{-}day)^{-1}$	NA	HEAST (4)	10/2004
Heptachlor epoxide	2.6E-03	$(\mu g/m^3)^{-1}$	9.1E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	05/11/2007
Methyl parathion	NA	NA	NA	NA	NA	IRIS	05/11/2007
Parathion	NA	NA	NA	NA	C	IRIS	05/11/2007
Dioxin							
Dioxin TEQ	NA	NA	1.5E+05	$(mg/kg\text{-}day)^{-1}$	NA	HEAST	07/01/1997
Inorganics							
Aluminum	NA	NA	NA	NA	D	NCEA	01/22/2003
Antimony	NA	NA	NA	NA	B1	NCEA	01/22/2003
Arsenic	4.3E-03	$(\mu g/m^3)^{-1}$	1.5E+01	$(mg/kg\text{-}day)^{-1}$	A	IRIS	05/11/2007
Barium	NA	NA	NA	NA	D	IRIS	05/11/2007
Cadmium	1.8E-03	$(\mu g/m^3)^{-1}$	6.3E+00	$(mg/kg\text{-}day)^{-1}$	B1	IRIS	05/11/2007
Chromium (5)	1.2E-02	$(\mu g/m^3)^{-1}$	4.2E+01	$(mg/kg\text{-}day)^{-1}$	A	IRIS	05/11/2007
Iron	NA	NA	NA	NA	NA	IRIS	05/11/2007
Lead	NA	NA	NA	NA	B2	IRIS	05/11/2007
Manganese	NA	NA	NA	NA	D	IRIS	05/11/2007
Mercury (6)	NA	NA	NA	NA	C	IRIS	05/11/2007
Nickel	NA	NA	NA	NA	NA	IRIS	05/11/2007
Vanadium	NA	NA	NA	NA	NA	IRIS	05/11/2007

NCEA = National Center for Environmental Assessment.
IRIS = Integrated Risk Information System.
HEAST = Health Effects Assessment Summary Tables. July 1997.
CSF = Cancer slope factor.
(1) Inhalation CSFs were calculated from unit risks assuming a 70 kg individual has an inhalation rate of 20 m^3/day.
(2) IRIS values were confirmed against the EPA's online database, May 2007.
NCEA values were provided by EPA.
(3) The Inhalation CSF for PAHs derived using the relative potency approach (USEPA 1993).
Provisional Guidance for Quantitative Assessment of Polycyclic Aromatic Hydrocarbons; EPA/600/R-93/089).
(4) Route-to-route extrapolation from EPA Region 9 PRG tables updated October 2004,
http://www.epa.gov/region09/waste/sfund/prg/index.htm.
(5) The unit risk for hexavalent chromium has been applied to total chromium.
(6) The inhalation CSF for methyl mercury has been applied to mercury.

EPA Weight of Evidence (EPA 1986, EPA 1996):
A - Human Carcinogen.
B1 - Probable human carcinogen - indicates that limited human data are available.
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans.
C - Possible human carcinogen.
D - Not classifiable as human carcinogen.
E - Evidence of noncarcinogenicity.

VOC = Volatile organic compound.
SVOC = Semi-volatile organic compound.
P/PCB = Pesticide/polychlorinated biphenyl.

TABLE B-7.1

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	Operations Area Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil Facility Area	Incidental Ingestion	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	1.5E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.1E-07	4.1E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	3.3E-07	mg/kg/day	7.3E+00	(mg/kg-day)-1	2.4E-06	9.3E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	3.7E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	2.7E-07	1.0E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	1.1E-07	mg/kg/day	7.3E+00	(mg/kg-day)-1	7.9E-07	3.0E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	2.3E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.7E-07	6.4E-07	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	3.7E+02	mg/kg	2.0E-05	mg/kg/day	2.0E+00	(mg/kg-day)-1	3.9E-05	5.5E-05	mg/kg/day	2.0E-05	mg/kg-day	2.7E+00
				Heptachlor epoxide	3.8E-01	mg/kg	6.6E-08	mg/kg/day	9.1E+00	(mg/kg-day)-1	6.0E-07	1.9E-07	mg/kg/day	1.3E-05	mg/kg-day	1.4E-02
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	1.3E-10	mg/kg/day	1.5E+05	(mg/kg-day)-1	2.0E-05	3.7E-10	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	3.3E-03	mg/kg/day	NA	NA	NA	9.3E-03	mg/kg/day	1.0E+00	mg/kg-day	9.3E-03
				Antimony	8.7E+00	mg/kg	1.5E-06	mg/kg/day	NA	NA	NA	4.3E-06	mg/kg/day	4.0E-04	mg/kg-day	1.1E-02
				Arsenic	3.9E+02	mg/kg	2.0E-05	mg/kg/day	1.5E+00	(mg/kg-day)-1	3.1E-05	5.7E-05	mg/kg/day	3.0E-04	mg/kg-day	1.9E-01
				Cadmium	4.7E+00	mg/kg	8.2E-07	mg/kg/day	NA	NA	NA	2.3E-06	mg/kg/day	1.0E-03	mg/kg-day	2.3E-03
				Chromium	2.3E+01	mg/kg	4.0E-06	mg/kg/day	NA	NA	NA	1.1E-05	mg/kg/day	3.0E-03	mg/kg-day	3.8E-03
				Iron	2.6E+04	mg/kg	4.5E-03	mg/kg/day	NA	NA	NA	1.3E-02	mg/kg/day	7.0E-01	mg/kg-day	1.8E-02
				Lead	4.7E+03	mg/kg	8.2E-04	mg/kg/day	NA	NA	NA	2.3E-03	mg/kg/day	NA	NA	NA
				Manganese	8.3E+02	mg/kg	1.5E-04	mg/kg/day	NA	NA	NA	4.1E-04	mg/kg/day	1.4E-01	mg/kg-day	2.9E-03
				Mercury	2.6E+00	mg/kg	4.5E-07	mg/kg/day	NA	NA	NA	1.3E-06	mg/kg/day	3.0E-04	mg/kg-day	4.2E-03
				Vanadium	4.0E+01	mg/kg	7.0E-06	mg/kg/day	NA	NA	NA	2.0E-05	mg/kg/day	1.0E-03	mg/kg-day	2.0E-02
			Exp. Route Total								9.4E-05					3.0E+00
Surface Soil	Surface Soil	Surface Soil Facility Area	Dermal Contact	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	1.7E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.3E-07	4.8E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	4.0E-07	mg/kg/day	7.3E+00	(mg/kg-day)-1	2.9E-06	1.1E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	4.4E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	3.2E-07	1.2E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	1.3E-07	mg/kg/day	7.3E+00	(mg/kg-day)-1	9.4E-07	3.6E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	2.7E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	2.0E-07	7.6E-07	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	3.7E+02	mg/kg	3.6E-05	mg/kg/day	2.0E+00	(mg/kg-day)-1	7.2E-05	1.0E-04	mg/kg/day	2.0E-05	mg/kg-day	5.0E+00
				Heptachlor epoxide	3.8E-01	mg/kg	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	3.6E-11	mg/kg/day	1.5E+05	(mg/kg-day)-1	5.4E-06	1.0E-10	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	8.7E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	3.9E+02	mg/kg	1.9E-05	mg/kg/day	1.5E+00	(mg/kg-day)-1	2.8E-05	5.2E-05	mg/kg/day	3.0E-04	mg/kg-day	1.7E-01
				Cadmium	4.7E+00	mg/kg	7.5E-09	mg/kg/day	NA	NA	NA	2.1E-08	mg/kg/day	2.5E-05	mg/kg-day	8.4E-04
				Chromium	2.3E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	2.6E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	4.7E+03	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	8.3E+02	mg/kg	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	2.6E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	4.0E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								1.1E-04					5.2E+00
Air	Ambient Air	Ambient Air Facility Area	Inhalation	**P/PCBs**												
				PCBs, Total	7.3E+01	ng/m3	3.0E-06	mg/kg/day	3.5E-01	(mg/kg-day)-1	1.1E-06	8.5E-06	mg/kg/day	NA	NA	NA
			Exp. Route Total								1.1E-06					NA
		Exposure Point Total									2E-04					8E+00

TABLE B-7.2

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Operations Area Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil Facility Area	Incidental Ingestion	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	2.9E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	2.1E-07	8.1E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	6.6E-07	mg/kg/day	7.3E+00	(mg/kg-day)-1	4.8E-06	1.9E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	7.3E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	5.4E-07	2.1E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	2.2E-07	mg/kg/day	7.3E+00	(mg/kg-day)-1	1.6E-06	6.1E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	4.5E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	3.3E-07	1.3E-06	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	6.1E+03	mg/kg	2.1E-03	mg/kg/day	2.0E+00	(mg/kg-day)-1	4.2E-03	5.9E-03	mg/kg/day	2.0E-05	mg/kg-day	3.0E+02
				Heptachlor epoxide	3.8E-01	mg/kg	1.3E-07	mg/kg/day	9.1E+00	(mg/kg-day)-1	1.2E-06	3.7E-07	mg/kg/day	1.3E-05	mg/kg-day	2.9E-02
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	2.6E-10	mg/kg/day	1.5E+05	(mg/kg-day)-1	4.0E-05	7.4E-10	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	6.6E-03	mg/kg/day	NA	NA	NA	1.9E-02	mg/kg/day	1.0E+00	mg/kg-day	1.9E-02
				Antimony	8.7E+00	mg/kg	3.0E-06	mg/kg/day	NA	NA	NA	8.5E-06	mg/kg/day	4.0E-04	mg/kg-day	2.1E-02
				Arsenic	3.9E+02	mg/kg	1.4E-04	mg/kg/day	1.5E+00	(mg/kg-day)-1	2.0E-04	3.8E-04	mg/kg/day	3.0E-04	mg/kg-day	1.3E+00
				Cadmium	4.7E+00	mg/kg	1.6E-06	mg/kg/day	NA	NA	NA	4.6E-06	mg/kg/day	1.0E-03	mg/kg-day	4.6E-03
				Chromium	2.3E+01	mg/kg	8.0E-06	mg/kg/day	NA	NA	NA	2.3E-05	mg/kg/day	3.0E-03	mg/kg-day	7.5E-03
				Iron	2.6E+04	mg/kg	9.1E-03	mg/kg/day	NA	NA	NA	2.5E-02	mg/kg/day	7.0E-01	mg/kg-day	3.6E-02
				Lead	4.7E+03	mg/kg	1.6E-03	mg/kg/day	NA	NA	NA	4.6E-03	mg/kg/day	NA	NA	NA
				Manganese	8.3E+02	mg/kg	2.9E-04	mg/kg/day	NA	NA	NA	8.1E-04	mg/kg/day	1.4E-01	mg/kg-day	5.8E-03
				Mercury	2.6E+00	mg/kg	9.1E-07	mg/kg/day	NA	NA	NA	2.5E-06	mg/kg/day	3.0E-04	mg/kg-day	8.5E-03
				Vanadium	4.0E+01	mg/kg	1.4E-05	mg/kg/day	NA	NA	NA	3.9E-05	mg/kg/day	1.0E-03	mg/kg-day	3.9E-02
			Exp. Route Total								4.5E-03					3.0E+02
Surface Soil	Surface Soil	Surface Soil Facility Area	Dermal Contact	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	2.5E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.8E-07	7.0E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	5.7E-07	mg/kg/day	7.3E+00	(mg/kg-day)-1	4.2E-06	1.6E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	6.3E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	4.6E-07	1.8E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	1.9E-07	mg/kg/day	7.3E+00	(mg/kg-day)-1	1.4E-06	5.2E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	3.9E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	2.8E-07	1.1E-06	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	6.1E+03	mg/kg	8.4E-04	mg/kg/day	2.0E+00	(mg/kg-day)-1	1.7E-03	2.3E-03	mg/kg/day	2.0E-05	mg/kg-day	1.2E+02
				Heptachlor epoxide	3.8E-01	mg/kg	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	5.2E-11	mg/kg/day	1.5E+05	(mg/kg-day)-1	7.8E-06	1.5E-10	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	8.7E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	3.9E+02	mg/kg	2.7E-05	mg/kg/day	1.5E+00	(mg/kg-day)-1	4.0E-05	7.6E-05	mg/kg/day	3.0E-04	mg/kg-day	2.5E-01
				Cadmium	4.7E+00	mg/kg	1.1E-08	mg/kg/day	NA	NA	NA	3.0E-08	mg/kg/day	2.5E-05	mg/kg-day	1.2E-03
				Chromium	2.3E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	2.6E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	4.7E+03	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	8.3E+02	mg/kg	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	2.6E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	4.0E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								1.7E-03					1.2E+02
Air	Ambient Air	Ambient Air Facility Area	Inhalation	**P/PCBs**												
				PCBs, Total	7.3E+01	ng/m3	3.0E-06	mg/kg/day	3.5E-01	(mg/kg-day)-1	1.1E-06	8.5E-06	mg/kg/day	NA	NA	NA
			Exp. Route Total								1.1E-06					NA
		Exposure Point Total									6E-03					4E+02

TABLE B-7.3

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	O&M Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil Facility Area	Incidental Ingestion	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	2.8E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	2.0E-08	7.8E-08	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	6.4E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	4.7E-07	1.8E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	7.0E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	5.1E-08	2.0E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	2.1E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	1.5E-07	5.8E-08	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	4.4E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	3.2E-08	1.2E-07	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	3.7E+02	mg/kg	1.3E-05	mg/kg/day	2.0E+00	(mg/kg-day)-1	2.5E-05	3.5E-05	mg/kg/day	2.0E-05	mg/kg-day	1.8E+00
				Heptachlor epoxide	3.8E-01	mg/kg	1.3E-08	mg/kg/day	9.1E+00	(mg/kg-day)-1	1.2E-07	3.6E-08	mg/kg/day	1.3E-05	mg/kg-day	2.7E-03
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	2.5E-11	mg/kg/day	1.5E+05	(mg/kg-day)-1	3.8E-06	7.1E-11	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	6.4E-04	mg/kg/day	NA	NA	NA	1.8E-03	mg/kg/day	1.0E+00	mg/kg-day	1.8E-03
				Antimony	8.7E+00	mg/kg	2.9E-07	mg/kg/day	NA	NA	NA	8.2E-07	mg/kg/day	4.0E-04	mg/kg-day	2.0E-03
				Arsenic	3.9E+02	mg/kg	1.3E-05	mg/kg/day	1.5E+00	(mg/kg-day)-1	2.0E-05	3.7E-05	mg/kg/day	3.0E-04	mg/kg-day	1.2E-01
				Cadmium	4.7E+00	mg/kg	1.6E-07	mg/kg/day	NA	NA	NA	4.4E-07	mg/kg/day	1.0E-03	mg/kg-day	4.4E-04
				Chromium	2.3E+01	mg/kg	7.7E-07	mg/kg/day	NA	NA	NA	2.2E-06	mg/kg/day	3.0E-03	mg/kg-day	7.2E-04
				Iron	2.6E+04	mg/kg	8.7E-04	mg/kg/day	NA	NA	NA	2.4E-03	mg/kg/day	7.0E-01	mg/kg-day	3.5E-03
				Lead	4.7E+03	mg/kg	1.6E-04	mg/kg/day	NA	NA	NA	4.4E-04	mg/kg/day	NA	NA	NA
				Manganese	8.3E+02	mg/kg	2.8E-05	mg/kg/day	NA	NA	NA	7.8E-05	mg/kg/day	1.4E-01	mg/kg-day	5.6E-04
				Mercury	2.6E+00	mg/kg	8.7E-08	mg/kg/day	NA	NA	NA	2.4E-07	mg/kg/day	3.0E-04	mg/kg-day	8.1E-04
				Vanadium	4.0E+01	mg/kg	1.3E-06	mg/kg/day	NA	NA	NA	3.8E-06	mg/kg/day	1.0E-03	mg/kg-day	3.8E-03
			Exp. Route Total								4.9E-05					1.9E+00
Surface Soil	Surface Soil	Surface Soil Facility Area	Dermal Contact	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	1.1E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	7.8E-08	3.0E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	2.5E-07	mg/kg/day	7.3E+00	(mg/kg-day)-1	1.8E-06	6.9E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	2.7E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	2.0E-07	7.6E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	8.0E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	5.9E-07	2.2E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	1.7E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.2E-07	4.7E-07	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	3.7E+02	mg/kg	2.2E-05	mg/kg/day	2.0E+00	(mg/kg-day)-1	4.5E-05	6.3E-05	mg/kg/day	2.0E-05	mg/kg-day	3.1E+00
				Heptachlor epoxide	3.8E-01	mg/kg	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	2.3E-11	mg/kg/day	1.5E+05	(mg/kg-day)-1	3.4E-06	6.3E-11	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	8.7E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	3.9E+02	mg/kg	1.2E-05	mg/kg/day	1.5E+00	(mg/kg-day)-1	1.7E-05	3.3E-05	mg/kg/day	3.0E-04	mg/kg-day	1.1E-01
				Cadmium	4.7E+00	mg/kg	4.7E-09	mg/kg/day	NA	NA	NA	1.3E-08	mg/kg/day	2.5E-05	mg/kg-day	5.2E-04
				Chromium	2.3E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	2.6E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	4.7E+03	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	8.3E+02	mg/kg	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	2.6E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	4.0E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								6.8E-05					3.2E+00
Air	Ambient Air	Ambient Air Facility Area	Inhalation	**P/PCBs**												
				PCBs, Total	7.3E+01	ng/m3	2.9E-07	mg/kg/day	3.5E-01	(mg/kg-day)-1	1.0E-07	8.2E-07	mg/kg/day	NA	NA	NA
			Exp. Route Total								1.0E-07					NA
		Exposure Point Total									1E-04					5E+00

TABLE B-7.4

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	O&M Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil Facility Area	Incidental Ingestion	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	2.8E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	2.0E-08	7.8E-08	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	6.4E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	4.7E-07	1.8E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	7.0E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	5.1E-08	2.0E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	2.1E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	1.5E-07	5.8E-08	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	4.4E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	3.2E-08	1.2E-07	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	6.1E+03	mg/kg	2.0E-04	mg/kg/day	2.0E+00	(mg/kg-day)-1	4.1E-04	5.7E-04	mg/kg/day	2.0E-05	mg/kg-day	2.8E+01
				Heptachlor epoxide	3.8E-01	mg/kg	1.3E-08	mg/kg/day	9.1E+00	(mg/kg-day)-1	1.2E-07	3.6E-08	mg/kg/day	1.3E-05	mg/kg-day	2.7E-03
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	2.5E-11	mg/kg/day	1.5E+05	(mg/kg-day)-1	3.8E-06	7.1E-11	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	6.4E-04	mg/kg/day	NA	NA	NA	1.8E-03	mg/kg/day	1.0E+00	mg/kg-day	1.8E-03
				Antimony	8.7E+00	mg/kg	2.9E-07	mg/kg/day	NA	NA	NA	8.2E-07	mg/kg/day	4.0E-04	mg/kg-day	2.0E-03
				Arsenic	3.9E+02	mg/kg	1.3E-05	mg/kg/day	1.5E+00	(mg/kg-day)-1	2.0E-05	3.7E-05	mg/kg/day	3.0E-04	mg/kg-day	1.2E-01
				Cadmium	4.7E+00	mg/kg	1.6E-07	mg/kg/day	NA	NA	NA	4.4E-07	mg/kg/day	1.0E-03	mg/kg-day	4.4E-04
				Chromium	2.3E+01	mg/kg	7.7E-07	mg/kg/day	NA	NA	NA	2.2E-06	mg/kg/day	3.0E-03	mg/kg-day	7.2E-04
				Iron	2.6E+04	mg/kg	8.7E-04	mg/kg/day	NA	NA	NA	2.4E-03	mg/kg/day	7.0E-01	mg/kg-day	3.5E-03
				Lead	4.7E+03	mg/kg	1.6E-04	mg/kg/day	NA	NA	NA	4.4E-04	mg/kg/day	NA	NA	NA
				Manganese	8.3E+02	mg/kg	2.8E-05	mg/kg/day	NA	NA	NA	7.8E-05	mg/kg/day	1.4E-01	mg/kg-day	5.6E-04
				Mercury	2.6E+00	mg/kg	8.7E-08	mg/kg/day	NA	NA	NA	2.4E-07	mg/kg/day	3.0E-04	mg/kg-day	8.1E-04
				Vanadium	4.0E+01	mg/kg	1.3E-06	mg/kg/day	NA	NA	NA	3.8E-06	mg/kg/day	1.0E-03	mg/kg-day	3.8E-03
			Exp. Route Total								4.3E-04					2.9E+01
Surface Soil	Surface Soil	Surface Soil Facility Area	Dermal Contact	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	1.1E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	7.8E-08	3.0E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	2.5E-07	mg/kg/day	7.3E+00	(mg/kg-day)-1	1.8E-06	6.9E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	2.7E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	2.0E-07	7.6E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	8.0E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	5.9E-07	2.2E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	1.7E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.2E-07	4.7E-07	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	6.1E+03	mg/kg	3.6E-04	mg/kg/day	2.0E+00	(mg/kg-day)-1	7.2E-04	1.0E-03	mg/kg/day	2.0E-05	mg/kg-day	5.1E+01
				Heptachlor epoxide	3.8E-01	mg/kg	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	2.3E-11	mg/kg/day	1.5E+05	(mg/kg-day)-1	3.4E-06	6.3E-11	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	8.7E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	3.9E+02	mg/kg	1.2E-05	mg/kg/day	1.5E+00	(mg/kg-day)-1	1.7E-05	3.3E-05	mg/kg/day	3.0E-04	mg/kg-day	1.1E-01
				Cadmium	4.7E+00	mg/kg	4.7E-09	mg/kg/day	NA	NA	NA	1.3E-08	mg/kg/day	2.5E-05	mg/kg-day	5.2E-04
				Chromium	2.3E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	2.6E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	4.7E+03	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	8.3E+02	mg/kg	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	2.6E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	4.0E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								7.5E-04					5.1E+01
Air	Ambient Air	Ambient Air Facility Area	Inhalation	**P/PCBs**												
				PCBs, Total	7.3E+01	ng/m3	2.9E-07	mg/kg/day	3.5E-01	(mg/kg-day)-1	1.0E-07	8.2E-07	mg/kg/day	NA	NA	NA
			Exp. Route Total								1.0E-07					NA
		Exposure Point Total									1E-03					8E+01

TABLE B-7.5

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	Trespasser
Receptor Age:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil Facility Area	Incidental Ingestion	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	3.6E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	2.6E-08	2.5E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	8.3E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	6.0E-07	5.8E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	9.1E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	6.7E-08	6.4E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	2.7E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	2.0E-07	1.9E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	5.7E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	4.1E-08	4.0E-07	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	3.7E+02	mg/kg	1.6E-05	mg/kg/day	2.0E+00	(mg/kg-day)-1	3.3E-05	1.1E-04	mg/kg/day	2.0E-05	mg/kg-day	5.7E+00
				Heptachlor epoxide	3.8E-01	mg/kg	1.7E-08	mg/kg/day	9.1E+00	(mg/kg-day)-1	1.5E-07	1.2E-07	mg/kg/day	1.3E-05	mg/kg-day	8.9E-03
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	3.3E-11	mg/kg/day	1.5E+05	(mg/kg-day)-1	4.9E-06	2.3E-10	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	8.3E-04	mg/kg/day	NA	NA	NA	5.8E-03	mg/kg/day	1.0E+00	mg/kg-day	5.8E-03
				Antimony	8.7E+00	mg/kg	3.8E-07	mg/kg/day	NA	NA	NA	2.6E-06	mg/kg/day	4.0E-04	mg/kg-day	6.6E-03
				Arsenic	3.9E+02	mg/kg	1.7E-05	mg/kg/day	1.5E+00	(mg/kg-day)-1	2.5E-05	1.2E-04	mg/kg/day	3.0E-04	mg/kg-day	4.0E-01
				Cadmium	4.7E+00	mg/kg	2.0E-07	mg/kg/day	NA	NA	NA	1.4E-06	mg/kg/day	1.0E-03	mg/kg-day	1.4E-03
				Chromium	2.3E+01	mg/kg	1.0E-06	mg/kg/day	NA	NA	NA	7.0E-06	mg/kg/day	3.0E-03	mg/kg-day	2.3E-03
				Iron	2.6E+04	mg/kg	1.1E-03	mg/kg/day	NA	NA	NA	7.9E-03	mg/kg/day	7.0E-01	mg/kg-day	1.1E-02
				Lead	4.7E+03	mg/kg	2.0E-04	mg/kg/day	NA	NA	NA	1.4E-03	mg/kg/day	NA	NA	NA
				Manganese	8.3E+02	mg/kg	3.6E-05	mg/kg/day	NA	NA	NA	2.5E-04	mg/kg/day	1.4E-01	mg/kg-day	1.8E-03
				Mercury	2.6E+00	mg/kg	1.1E-07	mg/kg/day	NA	NA	NA	7.9E-07	mg/kg/day	3.0E-04	mg/kg-day	2.6E-03
				Vanadium	4.0E+01	mg/kg	1.7E-06	mg/kg/day	NA	NA	NA	1.2E-05	mg/kg/day	1.0E-03	mg/kg-day	1.2E-02
			Exp. Route Total								6.4E-05					6.1E+00
Surface Soil	Surface Soil	Surface Soil Facility Area	Dermal Contact	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	2.6E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.9E-08	1.8E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	6.0E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	4.4E-07	4.2E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	6.6E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	4.9E-08	4.7E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	2.0E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	1.4E-07	1.4E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	4.1E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	3.0E-08	2.9E-07	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	3.7E+02	mg/kg	5.5E-06	mg/kg/day	2.0E+00	(mg/kg-day)-1	1.1E-05	3.8E-05	mg/kg/day	2.0E-05	mg/kg-day	1.9E+00
				Heptachlor epoxide	3.8E-01	mg/kg	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	5.5E-12	mg/kg/day	1.5E+05	(mg/kg-day)-1	8.3E-07	3.9E-11	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	8.7E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	3.9E+02	mg/kg	2.8E-06	mg/kg/day	1.5E+00	(mg/kg-day)-1	4.3E-06	2.0E-05	mg/kg/day	3.0E-04	mg/kg-day	6.6E-02
				Cadmium	4.7E+00	mg/kg	1.1E-09	mg/kg/day	NA	NA	NA	8.0E-09	mg/kg/day	2.5E-05	mg/kg-day	3.2E-04
				Chromium	2.3E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	2.6E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	4.7E+03	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	8.3E+02	mg/kg	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	2.6E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	4.0E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								1.7E-05					2.0E+00
Air	Ambient Air	Ambient Air Facility Area	Inhalation	**P/PCBs**												
				PCBs, Total	7.3E+01	ng/m3	1.4E-07	mg/kg/day	3.5E-01	(mg/kg-day)-1	4.7E-08	9.5E-07	mg/kg/day	NA	NA	NA
			Exp. Route Total								4.7E-08					NA
		Exposure Point Total									8E-05					8E+00

TABLE B-7.6

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Trespasser
Receptor Age:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil Facility Area	Incidental Ingestion	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	3.6E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	2.6E-08	2.5E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	8.3E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	6.0E-07	5.8E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	9.1E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	6.7E-08	6.4E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	2.7E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	2.0E-07	1.9E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	5.7E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	4.1E-08	4.0E-07	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	6.1E+03	mg/kg	2.6E-04	mg/kg/day	2.0E+00	(mg/kg-day)-1	5.3E-04	1.8E-03	mg/kg/day	2.0E-05	mg/kg-day	9.2E+01
				Heptachlor epoxide	3.8E-01	mg/kg	1.7E-08	mg/kg/day	9.1E+00	(mg/kg-day)-1	1.5E-07	1.2E-07	mg/kg/day	1.3E-05	mg/kg-day	8.9E-03
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	3.3E-11	mg/kg/day	1.5E+05	(mg/kg-day)-1	4.9E-06	2.3E-10	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	8.3E-04	mg/kg/day	NA	NA	NA	5.8E-03	mg/kg/day	1.0E+00	mg/kg-day	5.8E-03
				Antimony	8.7E+00	mg/kg	3.8E-07	mg/kg/day	NA	NA	NA	2.6E-06	mg/kg/day	4.0E-04	mg/kg-day	6.6E-03
				Arsenic	3.9E+02	mg/kg	1.7E-05	mg/kg/day	1.5E+00	(mg/kg-day)-1	2.5E-05	1.2E-04	mg/kg/day	3.0E-04	mg/kg-day	4.0E-01
				Cadmium	4.7E+00	mg/kg	2.0E-07	mg/kg/day	NA	NA	NA	1.4E-06	mg/kg/day	1.0E-03	mg/kg-day	1.4E-03
				Chromium	2.3E+01	mg/kg	1.0E-06	mg/kg/day	NA	NA	NA	7.0E-06	mg/kg/day	3.0E-03	mg/kg-day	2.3E-03
				Iron	2.6E+04	mg/kg	1.1E-03	mg/kg/day	NA	NA	NA	7.9E-03	mg/kg/day	7.0E-01	mg/kg-day	1.1E-02
				Lead	4.7E+03	mg/kg	2.0E-04	mg/kg/day	NA	NA	NA	1.4E-03	mg/kg/day	NA	NA	NA
				Manganese	8.3E+02	mg/kg	3.6E-05	mg/kg/day	NA	NA	NA	2.5E-04	mg/kg/day	1.4E-01	mg/kg-day	1.8E-03
				Mercury	2.6E+00	mg/kg	1.1E-07	mg/kg/day	NA	NA	NA	7.9E-07	mg/kg/day	3.0E-04	mg/kg-day	2.6E-03
				Vanadium	4.0E+01	mg/kg	1.7E-06	mg/kg/day	NA	NA	NA	1.2E-05	mg/kg/day	1.0E-03	mg/kg-day	1.2E-02
			Exp. Route Total								5.6E-04					9.3E+01
Surface Soil	Surface Soil	Surface Soil Facility Area	Dermal Contact	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	2.6E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.9E-08	1.8E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	6.0E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	4.4E-07	4.2E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	6.6E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	4.9E-08	4.7E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	2.0E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	1.4E-07	1.4E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	4.1E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	3.0E-08	2.9E-07	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	6.1E+03	mg/kg	8.9E-05	mg/kg/day	2.0E+00	(mg/kg-day)-1	1.8E-04	6.2E-04	mg/kg/day	2.0E-05	mg/kg-day	3.1E+01
				Heptachlor epoxide	3.8E-01	mg/kg	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	5.5E-12	mg/kg/day	1.5E+05	(mg/kg-day)-1	8.3E-07	3.9E-11	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	8.7E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	3.9E+02	mg/kg	2.8E-06	mg/kg/day	1.5E+00	(mg/kg-day)-1	4.3E-06	2.0E-05	mg/kg/day	3.0E-04	mg/kg-day	6.6E-02
				Cadmium	4.7E+00	mg/kg	1.1E-09	mg/kg/day	NA	NA	NA	8.0E-09	mg/kg/day	2.5E-05	mg/kg-day	3.2E-04
				Chromium	2.3E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	2.6E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	4.7E+03	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	8.3E+02	mg/kg	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	2.6E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	4.0E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								1.8E-04					3.1E+01
Air	Ambient Air	Ambient Air Facility Area	Inhalation	**P/PCBs**												
				PCBs, Total	7.3E+01	ng/m3	1.4E-07	mg/kg/day	3.5E-01	(mg/kg-day)-1	4.7E-08	9.5E-07	mg/kg/day	NA	NA	NA
			Exp. Route Total								4.7E-08					NA
		Exposure Point Total									7E-04					1E+02

TABLE B-7.7

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/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				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface/ Subsurface Soil	Surface/ Subsurface Soil	Surface/ Subsurface Soil Facility Area	Incidental Ingestion	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	1.5E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.1E-08	1.1E-06	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	3.5E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	2.6E-07	2.5E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	3.9E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	2.8E-08	2.7E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	1.1E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	8.4E-08	8.0E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	2.4E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.8E-08	1.7E-06	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	3.3E+03	mg/kg	6.0E-05	mg/kg/day	2.0E+00	(mg/kg-day)-1	1.2E-04	4.2E-03	mg/kg/day	2.0E-05	mg/kg-day	2.1E+02
				Heptachlor epoxide	3.8E-01	mg/kg	7.0E-09	mg/kg/day	9.1E+00	(mg/kg-day)-1	6.4E-08	4.9E-07	mg/kg/day	1.3E-05	mg/kg-day	3.8E-02
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	1.4E-11	mg/kg/day	1.5E+05	(mg/kg-day)-1	2.1E-06	9.8E-10	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	3.5E-04	mg/kg/day	NA	NA	NA	2.5E-02	mg/kg/day	1.0E+00	mg/kg-day	2.5E-02
				Antimony	8.7E+00	mg/kg	1.6E-07	mg/kg/day	NA	NA	NA	1.1E-05	mg/kg/day	4.0E-04	mg/kg-day	2.8E-02
				Arsenic	1.5E+02	mg/kg	2.7E-06	mg/kg/day	1.5E+00	(mg/kg-day)-1	4.1E-06	1.9E-04	mg/kg/day	3.0E-04	mg/kg-day	6.4E-01
				Barium	1.9E+02	mg/kg	3.5E-06	mg/kg/day	NA	NA	NA	2.5E-04	mg/kg/day	2.0E-01	mg/kg-day	1.2E-03
				Cadmium	1.3E+00	mg/kg	2.4E-08	mg/kg/day	NA	NA	NA	1.7E-06	mg/kg/day	1.0E-03	mg/kg-day	1.7E-03
				Chromium	4.7E+01	mg/kg	8.7E-07	mg/kg/day	NA	NA	NA	6.1E-05	mg/kg/day	3.0E-03	mg/kg-day	2.0E-02
				Iron	2.6E+04	mg/kg	4.8E-04	mg/kg/day	NA	NA	NA	3.4E-02	mg/kg/day	7.0E-01	mg/kg-day	4.8E-02
				Lead	2.6E+03	mg/kg	4.8E-05	mg/kg/day	NA	NA	NA	3.4E-03	mg/kg/day	NA	NA	NA
				Manganese	2.8E+03	mg/kg	5.1E-05	mg/kg/day	NA	NA	NA	3.6E-03	mg/kg/day	1.4E-01	mg/kg-day	2.6E-02
				Mercury	1.5E+00	mg/kg	2.8E-08	mg/kg/day	NA	NA	NA	1.9E-06	mg/kg/day	3.0E-04	mg/kg-day	6.5E-03
				Nickel	8.9E+02	mg/kg	1.6E-05	mg/kg/day	NA	NA	NA	1.1E-03	mg/kg/day	2.0E-02	mg/kg-day	5.7E-02
				Vanadium	4.7E+01	mg/kg	8.7E-07	mg/kg/day	NA	NA	NA	6.1E-05	mg/kg/day	1.0E-03	mg/kg-day	6.1E-02
			Exp. Route Total								1.3E-04					2.1E+02
Surface/ Subsurface Soil	Surface/ Subsurface Soil	Surface/ Subsurface Soil Facility Area	Dermal Contact	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	6.0E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	4.4E-09	4.2E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	1.4E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	1.0E-07	9.6E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	1.5E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.1E-08	1.1E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	4.5E-09	mg/kg/day	7.3E+00	(mg/kg-day)-1	3.3E-08	3.1E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	9.4E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	6.8E-09	6.5E-07	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	3.3E+03	mg/kg	1.1E-05	mg/kg/day	2.0E+00	(mg/kg-day)-1	2.2E-05	7.6E-04	mg/kg/day	2.0E-05	mg/kg-day	3.8E+01
				Heptachlor epoxide	3.8E-01	mg/kg	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	1.3E-12	mg/kg/day	1.5E+05	(mg/kg-day)-1	1.9E-07	8.8E-11	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	8.7E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	1.5E+02	mg/kg	2.5E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	3.7E-07	1.7E-05	mg/kg/day	3.0E-04	mg/kg-day	5.7E-02
				Barium	1.9E+02	mg/kg	NA	NA	NA	NA	NA	NA	NA	1.4E-02	mg/kg-day	NA
				Cadmium	1.3E+00	mg/kg	7.3E-11	mg/kg/day	NA	NA	NA	5.1E-09	mg/kg/day	2.5E-05	mg/kg-day	2.0E-04
				Chromium	4.7E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	2.6E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	2.6E+03	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	2.8E+03	mg/kg	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	1.5E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Nickel	8.9E+02	mg/kg	NA	NA	NA	NA	NA	NA	NA	8.0E-04	mg/kg-day	NA
				Vanadium	4.7E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								2.2E-05					3.8E+01
Air	Ambient Air	Ambient Air Facility Area	Inhalation	**P/PCBs**												
				PCBs, Total	7.3E+01	ng/m3	8.1E-08	mg/kg/day	3.5E-01	(mg/kg-day)-1	2.8E-08	5.7E-06	mg/kg/day	NA	NA	NA
			Exp. Route Total								2.8E-08					NA
		Exposure Point Total									1E-04					3E+02

TABLE B-7.8

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	O&M Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil	Incidental Ingestion	**SVOCs**												
		South Landfill		Benzo(a)anthracene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(a)pyrene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				P/PCBs												
				PCBs, Total	1.4E+01	mg/kg	4.6E-07	mg/kg/day	2.0E+00	(mg/kg-day)-1	9.2E-07	1.3E-06	mg/kg/day	2.0E-05	mg/kg-day	6.4E-02
				Heptachlor epoxide	NA	NA	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.0E-04	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+00	(mg/kg-day)-1	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E-03	mg/kg-day	NA
				Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-03	mg/kg-day	NA
				Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.4E-01	mg/kg-day	NA
				Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E-03	mg/kg-day	NA
			Exp. Route Total								9.2E-07					6.4E-02
Surface Soil	Surface Soil	Surface Soil	Dermal Contact	**SVOCs**												
		South Landfill		Benzo(a)anthracene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(a)pyrene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				P/PCBs												
				PCBs, Total	1.4E+01	mg/kg	8.2E-07	mg/kg/day	2.0E+00	(mg/kg-day)-1	1.6E-06	2.3E-06	mg/kg/day	2.0E-05	mg/kg-day	1.1E-01
				Heptachlor epoxide	NA	NA	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+00	(mg/kg-day)-1	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5E-05	mg/kg-day	NA
				Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								1.6E-06					1.1E-01
Air	Ambien Air	Ambient Air	Inhalation	**P/PCBs**												
		South Landfill		PCBs, Total	7.0E+00	ng/m3	2.8E-08	mg/kg/day	3.5E-01	(mg/kg-day)-1	9.8E-09	7.9E-08	mg/kg/day	NA	NA	NA
			Exp. Route Total								9.8E-09					NA
		Exposure Point Total									3E-06					2E-01

TABLE B-7.9

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor Age:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil	Incidental Ingestion	**SVOCs**												
		South Landfill		Benzo(a)anthracene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(a)pyrene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				P/PCBs												
				PCBs, Total	1.4E+01	mg/kg	5.9E-07	mg/kg/day	2.0E+00	(mg/kg-day)-1	1.2E-06	4.2E-06	mg/kg/day	2.0E-05	mg/kg-day	2.1E-01
				Heptachlor epoxide	NA	NA	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.0E-04	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+00	(mg/kg-day)-1	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E-03	mg/kg-day	NA
				Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-03	mg/kg-day	NA
				Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.4E-01	mg/kg-day	NA
				Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E-03	mg/kg-day	NA
			Exp. Route Total								1.2E-06					2.1E-01
Surface Soil	Surface Soil	Surface Soil	Dermal Contact	**SVOCs**												
		South Landfill		Benzo(a)anthracene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(a)pyrene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				P/PCBs												
				PCBs, Total	1.4E+01	mg/kg	2.0E-07	mg/kg/day	2.0E+00	(mg/kg-day)-1	4.0E-07	1.4E-06	mg/kg/day	2.0E-05	mg/kg-day	7.0E-02
				Heptachlor epoxide	NA	NA	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+00	(mg/kg-day)-1	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5E-05	mg/kg-day	NA
				Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								4.0E-07					7.0E-02
Air	Ambient Air	Ambient Air	Inhalation	**P/PCBs**												
		South Landfill		PCBs, Total	7.0E+00	ng/m3	1.3E-08	mg/kg/day	3.5E-01	(mg/kg-day)-1	4.5E-09	9.1E-08	mg/kg/day	NA	NA	NA
			Exp. Route Total								4.5E-09					NA
		Exposure Point Total									2E-06					3E-01

TABLE B-7.10

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	O&M Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil	Incidental Ingestion	**SVOCs**												
		West End Landfill		Benzo(a)anthracene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(a)pyrene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				P/PCBs												
				PCBs, Total	NA	NA	NA	NA	2.0E+00	(mg/kg-day)-1	NA	NA	NA	2.0E-05	mg/kg-day	NA
				Heptachlor epoxide	NA	NA	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.0E-04	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+00	(mg/kg-day)-1	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E-03	mg/kg-day	NA
				Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-03	mg/kg-day	NA
				Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.4E-01	mg/kg-day	NA
				Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E-03	mg/kg-day	NA
			Exp. Route Total								0.0E+00					0.0E+00
Surface Soil	Surface Soil	Surface Soil	Dermal Contact	**SVOCs**												
		West End Landfill		Benzo(a)anthracene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(a)pyrene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				P/PCBs												
				PCBs, Total	NA	NA	NA	NA	2.0E+00	(mg/kg-day)-1	NA	NA	NA	2.0E-05	mg/kg-day	NA
				Heptachlor epoxide	NA	NA	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+00	(mg/kg-day)-1	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5E-05	mg/kg-day	NA
				Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								0.0E+00					0.0E+00
Air	Ambient Air	Ambient Air West Landfill	Inhalation	**P/PCBs** PCBs, Total	1.0E+01	ng/m3	4.1E-08	mg/kg/day	3.5E-01	(mg/kg-day)-1	1.4E-08	1.1E-07	mg/kg/day	NA	NA	NA
			Exp. Route Total								1.4E-08					0.0E+00
		Exposure Point Total									1E-08					0E+00

TABLE B-7.11

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor Age:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil	Incidental Ingestion	**SVOCs**												
		West End Landfill		Benzo(a)anthracene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(a)pyrene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				P/PCBs												
				PCBs, Total	NA	NA	NA	NA	2.0E+00	(mg/kg-day)-1	NA	NA	NA	2.0E-05	mg/kg-day	NA
				Heptachlor epoxide	NA	NA	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.0E-04	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+00	(mg/kg-day)-1	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E-03	mg/kg-day	NA
				Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-03	mg/kg-day	NA
				Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.4E-01	mg/kg-day	NA
				Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E-03	mg/kg-day	NA
			Exp. Route Total								0.0E+00					0.0E+00
Surface Soil	Surface Soil	Surface Soil	Dermal Contact	**SVOCs**												
		West End Landfill		Benzo(a)anthracene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(a)pyrene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				P/PCBs												
				PCBs, Total	NA	NA	NA	NA	2.0E+00	(mg/kg-day)-1	NA	NA	NA	2.0E-05	mg/kg-day	NA
				Heptachlor epoxide	NA	NA	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+00	(mg/kg-day)-1	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5E-05	mg/kg-day	NA
				Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								0.0E+00					0.0E+00
Air	Ambient Air	Ambient Air	Inhalation	**P/PCBs**												
		West Landfill		PCBs, Total	1.0E+01	ng/m3	1.9E-08	mg/kg/day	3.5E-01	(mg/kg-day)-1	6.6E-09	1.3E-07	mg/kg/day	NA	NA	NA
			Exp. Route Total								6.6E-09					0.0E+00
		Exposure Point Total									7E-09					0E+00

TABLE B-7.12

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	Off-site Residents
Receptor Age:	Child to Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Air	Ambient Air	Ambient Air	Inhalation	**P/PCBs** PCBs, Total	7.3E+01	ng/m3	4.4E-06	mg/kg/day	3.5E-01	(mg/kg-day)-1	1.6E-06	1.3E-05	mg/kg/day	NA	NA	NA
			Exp. Route Total								1.6E-06					0.0E+00
		Exposure Point Total									2E-06					0E+00

TABLE B-7.13

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	Off-site Residents
Receptor Age:	Child (0-6 yrs)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Air	Ambient Air	Ambient Air	Inhalation	**P/PCBs** PCBs, Total	7.3E+01	ng/m3	3.0E-06	mg/kg/day	3.5E-01	(mg/kg-day)-1	1.0E-06	3.5E-05	mg/kg/day	NA	NA	NA
			Exp. Route Total								1.0E-06					0.0E+00
		Exposure Point Total									1E-06					0E+00

TABLE B-7.14

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Off-site Residents
Receptor Age:	Child to Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Groundwater	Groundwater	Tap Water	Ingestion	**VOCs**												
				1,2,4-Trichlorobenzene	1.1E+01	µg/L	1.6E-04	mg/kg/day	NA	NA	NA	7.0E-04	mg/kg/day	1.0E-02	mg/kg-day	7.0E-02
				1,4-Dichlorobenzene	2.4E+00	µg/L	3.6E-05	mg/kg/day	2.4E-02	(mg/kg-day)-1	8.7E-07	1.6E-04	mg/kg/day	3.0E-02	mg/kg-day	5.2E-03
				Chlorobenzene	5.1E+00	µg/L	7.6E-05	mg/kg/day	NA	NA	NA	3.3E-04	mg/kg/day	2.0E-02	mg/kg-day	1.6E-02
				cis-1,2-Dichloroethene	1.0E+01	µg/L	1.5E-04	mg/kg/day	NA	NA	NA	6.4E-04	mg/kg/day	1.0E-02	mg/kg-day	6.4E-02
				Pentachlorophenol	2.0E+01	µg/L	2.9E-04	mg/kg/day	1.2E-01	(mg/kg-day)-1	3.5E-05	1.3E-03	mg/kg/day	3.0E-02	mg/kg-day	4.2E-02
				Trichloroethylene	3.4E+00	µg/L	5.1E-05	mg/kg/day	4.0E-01	(mg/kg-day)-1	2.0E-05	2.2E-04	mg/kg/day	3.0E-04	mg/kg-day	7.2E-01
				SVOCs												
				2,4,6-Trichlorophenol	1.5E+01	µg/L	2.2E-04	mg/kg/day	1.1E-02	(mg/kg-day)-1	2.5E-06	9.6E-04	mg/kg/day	1.0E-04	mg/kg-day	9.6E+00
				Indeno(1,2,3-cd)pyrene	7.3E-01	µg/L	1.1E-05	mg/kg/day	7.3E-01	(mg/kg-day)-1	8.0E-06	4.7E-05	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	2.4E+03	µg/L	3.6E-02	mg/kg/day	2.0E+00	(mg/kg-day)-1	7.3E-02	1.6E-01	mg/kg/day	2.0E-05	mg/kg-day	7.8E+03
				gamma-BHC	5.5E-01	µg/L	8.2E-06	mg/kg/day	1.3E+00	(mg/kg-day)-1	1.1E-05	3.5E-05	mg/kg/day	3.0E-04	mg/kg-day	1.2E-01
				Methyl parathion	7.4E+01	µg/L	1.1E-03	mg/kg/day	NA	NA	NA	4.7E-03	mg/kg/day	2.5E-04	mg/kg-day	1.9E+01
				Parathion	9.4E+03	µg/L	1.4E-01	mg/kg/day	NA	NA	NA	6.0E-01	mg/kg/day	6.0E-03	mg/kg-day	1.0E+02
				Dioxin												
				Dioxin TEQ	3.6E-06	µg/L	5.4E-11	mg/kg/day	1.5E+05	(mg/kg-day)-1	8.1E-06	2.3E-10	mg/kg/day	NA	NA	NA
				Inorganics												
				Antimony	5.1E+00	µg/L	7.6E-05	mg/kg/day	NA	NA	NA	3.3E-04	mg/kg/day	4.0E-04	mg/kg-day	8.2E-01
				Arsenic	6.1E+00	µg/L	9.1E-05	mg/kg/day	1.5E+00	(mg/kg-day)-1	1.4E-04	3.9E-04	mg/kg/day	3.0E-04	mg/kg-day	1.3E+00
				Manganese	1.3E+03	µg/L	1.9E-02	mg/kg/day	NA	NA	NA	8.3E-02	mg/kg/day	1.4E-01	mg/kg-day	5.9E-01
				Mercury	1.8E+00	µg/L	2.7E-05	mg/kg/day	NA	NA	NA	1.1E-04	mg/kg/day	3.0E-04	mg/kg-day	3.8E-01
			Exp. Route Total								7.3E-02					7.9E+03
Groundwater	Groundwater	Tap Water	Dermal Contact	**VOCs**												
				1,2,4-Trichlorobenzene	1.1E+01	µg/L	6.1E-05	mg/kg/day	NA	NA	NA	1.8E-04	mg/kg/day	1.0E-02	mg/kg-day	1.8E-02
				1,4-Dichlorobenzene	2.4E+00	µg/L	8.7E-06	mg/kg/day	2.4E-02	(mg/kg-day)-1	2.1E-07	2.5E-05	mg/kg/day	3.0E-02	mg/kg-day	8.4E-04
				Chlorobenzene	5.1E+00	µg/L	1.2E-05	mg/kg/day	NA	NA	NA	3.5E-05	mg/kg/day	2.0E-02	mg/kg-day	1.8E-03
				cis-1,2-Dichloroethene	1.0E+01	µg/L	NA	NA	NA	NA	NA	NA	NA	1.0E-02	mg/kg-day	NA
				Pentachlorophenol	2.0E+01	µg/L	6.5E-04	mg/kg/day	1.2E-01	(mg/kg-day)-1	7.8E-05	1.9E-03	mg/kg/day	3.0E-02	mg/kg-day	6.3E-02
				Trichloroethylene	3.4E+00	µg/L	3.4E-06	mg/kg/day	4.0E-01	(mg/kg-day)-1	1.4E-06	1.0E-05	mg/kg/day	3.0E-04	mg/kg-day	3.4E-02
				SVOCs												
				2,4,6-Trichlorophenol	1.5E+01	µg/L	4.4E-05	mg/kg/day	1.1E-02	(mg/kg-day)-1	4.9E-07	1.3E-04	mg/kg/day	1.0E-04	mg/kg-day	1.3E+00
				Indeno(1,2,3-cd)pyrene	7.3E-01	µg/L	6.2E-05	mg/kg/day	7.3E-01	(mg/kg-day)-1	4.5E-05	1.8E-04	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	2.4E+03	µg/L	1.5E-01	mg/kg/day	2.0E+00	(mg/kg-day)-1	3.1E-01	4.5E-01	mg/kg/day	2.0E-05	mg/kg-day	2.3E+04
				gamma-BHC	5.5E-01	µg/L	5.1E-07	mg/kg/day	1.3E+00	(mg/kg-day)-1	6.6E-07	1.5E-06	mg/kg/day	3.0E-04	mg/kg-day	5.0E-03
				Methyl parathion	7.4E+01	µg/L	NA	NA	NA	NA	NA	NA	NA	2.5E-04	mg/kg-day	NA
				Parathion	9.4E+03	µg/L	1.0E-02	mg/kg/day	NA	NA	NA	3.0E-02	mg/kg/day	6.0E-03	mg/kg-day	5.0E+00
				Dioxin												
				Dioxin TEQ	3.6E-06	µg/L	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Antimony	5.1E+00	µg/L	4.3E-07	mg/kg/day	NA	NA	NA	1.3E-06	mg/kg/day	6.0E-05	mg/kg-day	2.1E-02
				Arsenic	6.1E+00	µg/L	5.2E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	7.7E-07	1.5E-06	mg/kg/day	3.0E-04	mg/kg-day	5.0E-03
				Manganese	1.3E+03	µg/L	1.1E-04	mg/kg/day	NA	NA	NA	3.2E-04	mg/kg/day	5.6E-03	mg/kg-day	5.7E-02
				Mercury	1.8E+00	µg/L	1.5E-07	mg/kg/day	NA	NA	NA	4.4E-07	mg/kg/day	2.9E-04	mg/kg-day	1.5E-03
			Exp. Route Total								3.1E-01					2.3E+04

TABLE B-7.14

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Off-site Residents
Receptor Age:	Child to Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Groundwater	Air	Vapors in Bath	Inhalation	**VOCs**												
				1,2,4-Trichlorobenzene	6.1E+01	µg/m3	1.7E-04	mg/kg/day	NA	NA	NA	4.9E-04	mg/kg/day	1.0E-03	mg/kg-day	4.9E-01
				1,4-Dichlorobenzene	1.3E+01	µg/m3	3.6E-05	mg/kg/day	2.2E-02	(mg/kg-day)-1	7.9E-07	1.1E-04	mg/kg/day	2.3E-01	mg/kg-day	4.6E-04
				Chlorobenzene	3.0E+01	µg/m3	8.1E-05	mg/kg/day	NA	NA	NA	2.4E-04	mg/kg/day	1.7E-02	mg/kg-day	1.4E-02
				cis-1,2-Dichloroethene	6.9E+01	µg/m3	1.9E-04	mg/kg/day	NA	NA	NA	5.5E-04	mg/kg/day	1.0E-02	mg/kg-day	5.5E-02
				Pentachlorophenol	9.0E+01	µg/m3	2.5E-04	mg/kg/day	1.2E-01	(mg/kg-day)-1	2.9E-05	7.1E-04	mg/kg/day	3.0E-02	mg/kg-day	2.4E-02
				Trichloroethylene	2.0E+01	µg/m3	5.5E-05	mg/kg/day	4.0E-01	(mg/kg-day)-1	2.2E-05	1.6E-04	mg/kg/day	1.1E-02	mg/kg/day	1.4E-02
				SVOCs												
				2,4,6-Trichlorophenol	7.0E+01	µg/m3	1.9E-04	mg/kg/day	1.1E-02	(mg/kg-day)-1	2.1E-06	5.5E-04	mg/kg/day	1.0E-04	mg/kg-day	5.5E+00
				Indeno(1,2,3-cd)pyrene	3.2E+00	µg/m3	8.7E-06	mg/kg/day	3.1E-01	(mg/kg-day)-1	2.7E-06	2.5E-05	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	NA	NA	NA	NA	3.5E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				gamma-BHC	2.8E+00	µg/m3	7.7E-06	mg/kg/day	1.3E+00	(mg/kg-day)-1	1.0E-05	2.3E-05	mg/kg/day	3.0E-04	mg/kg-day	7.5E-02
				Methyl parathion	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5E-04	mg/kg-day	NA
				Parathion	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.0E-03	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1E-05	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.4E-05	mg/kg-day	NA
				Mercury	8.3E+00	µg/m3	2.3E-05	mg/kg/day	NA	NA	NA	6.6E-05	mg/kg/day	8.6E-05	mg/kg-day	7.7E-01
			Exp. Route Total								6.7E-05					7.0E+00
Air	Ambient Air	Ambient Air	Inhalation	**P/PCBs**												
				PCBs, Total	7.3E+01	ng/m3	4.4E-06	mg/kg/day	3.5E-01	(mg/kg-day)-1	1.6E-06	1.3E-05	mg/kg/day	NA	NA	NA
			Exp. Route Total								1.6E-06					0.0E+00
		Exposure Point Total									4E-01					3E+04

TABLE B-7.15

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Off-site Residents
Receptor Age:	Child (0-6 yrs)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Groundwater	Groundwater	Tap Water	Ingestion	**VOCs**												
				1,2,4-Trichlorobenzene	1.1E+01	µg/L	6.0E-05	mg/kg/day	NA	NA	NA	7.0E-04	mg/kg/day	1.0E-02	mg/kg-day	7.0E-02
				1,4-Dichlorobenzene	2.4E+00	µg/L	1.3E-05	mg/kg/day	2.4E-02	(mg/kg-day)-1	3.2E-07	1.6E-04	mg/kg/day	3.0E-02	mg/kg-day	5.2E-03
				Chlorobenzene	5.1E+00	µg/L	2.8E-05	mg/kg/day	NA	NA	NA	3.3E-04	mg/kg/day	2.0E-02	mg/kg-day	1.6E-02
				cis-1,2-Dichloroethene	1.0E+01	µg/L	5.5E-05	mg/kg/day	NA	NA	NA	6.4E-04	mg/kg/day	1.0E-02	mg/kg-day	6.4E-02
				Pentachlorophenol	2.0E+01	µg/L	1.1E-04	mg/kg/day	1.2E-01	(mg/kg-day)-1	1.3E-05	1.3E-03	mg/kg/day	3.0E-02	mg/kg-day	4.2E-02
				Trichloroethylene	3.4E+00	µg/L	1.9E-05	mg/kg/day	4.0E-01	(mg/kg-day)-1	7.5E-06	2.2E-04	mg/kg/day	3.0E-04	mg/kg-day	7.2E-01
				SVOCs												
				2,4,6-Trichlorophenol	1.5E+01	µg/L	8.2E-05	mg/kg/day	1.1E-02	(mg/kg-day)-1	9.0E-07	9.6E-04	mg/kg/day	1.0E-04	mg/kg-day	9.6E+00
				Indeno(1,2,3-cd)pyrene	7.3E-01	µg/L	4.0E-06	mg/kg/day	7.3E-01	(mg/kg-day)-1	2.9E-06	4.7E-05	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	2.4E+03	µg/L	1.3E-02	mg/kg/day	2.0E+00	(mg/kg-day)-1	2.7E-02	1.6E-01	mg/kg/day	2.0E-05	mg/kg-day	7.8E+03
				gamma-BHC	5.5E-01	µg/L	3.0E-06	mg/kg/day	1.3E+00	(mg/kg-day)-1	3.9E-06	3.5E-05	mg/kg/day	3.0E-04	mg/kg-day	1.2E-01
				Methyl parathion	7.4E+01	µg/L	4.1E-04	mg/kg/day	NA	NA	NA	4.7E-03	mg/kg/day	2.5E-04	mg/kg-day	1.9E+01
				Parathion	9.4E+03	µg/L	5.1E-02	mg/kg/day	NA	NA	NA	6.0E-01	mg/kg/day	6.0E-03	mg/kg-day	1.0E+02
				Dioxin												
				Dioxin TEQ	3.6E-06	µg/L	2.0E-11	mg/kg/day	1.5E+05	(mg/kg-day)-1	3.0E-06	2.3E-10	mg/kg/day	NA	NA	NA
				Inorganics												
				Antimony	5.1E+00	µg/L	2.8E-05	mg/kg/day	NA	NA	NA	3.3E-04	mg/kg/day	4.0E-04	mg/kg-day	8.2E-01
				Arsenic	6.1E+00	µg/L	3.3E-05	mg/kg/day	1.5E+00	(mg/kg-day)-1	5.0E-05	3.9E-04	mg/kg/day	3.0E-04	mg/kg-day	1.3E+00
				Manganese	1.3E+03	µg/L	7.1E-03	mg/kg/day	NA	NA	NA	8.3E-02	mg/kg/day	1.4E-01	mg/kg-day	5.9E-01
				Mercury	1.8E+00	µg/L	9.8E-06	mg/kg/day	NA	NA	NA	1.1E-04	mg/kg/day	3.0E-04	mg/kg-day	3.8E-01
			Exp. Route Total								2.7E-02					7.9E+03
Groundwater	Groundwater	Tap Water	Dermal Contact	**VOCs**												
				1,2,4-Trichlorobenzene	1.1E+01	µg/L	2.6E-05	mg/kg/day	NA	NA	NA	3.1E-04	mg/kg/day	1.0E-02	mg/kg-day	3.1E-02
				1,4-Dichlorobenzene	2.4E+00	µg/L	3.7E-06	mg/kg/day	2.4E-02	(mg/kg-day)-1	8.9E-08	4.3E-05	mg/kg/day	3.0E-02	mg/kg-day	1.4E-03
				Chlorobenzene	5.1E+00	µg/L	5.2E-06	mg/kg/day	NA	NA	NA	6.0E-05	mg/kg/day	2.0E-02	mg/kg-day	3.0E-03
				cis-1,2-Dichloroethene	1.0E+01	µg/L	NA	NA	NA	NA	NA	NA	NA	1.0E-02	mg/kg-day	NA
				Pentachlorophenol	2.0E+01	µg/L	2.8E-04	mg/kg/day	1.2E-01	(mg/kg-day)-1	3.3E-05	3.2E-03	mg/kg/day	3.0E-02	mg/kg-day	1.1E-01
				Trichloroethylene	3.4E+00	µg/L	1.5E-06	mg/kg/day	4.0E-01	(mg/kg-day)-1	5.9E-07	1.7E-05	mg/kg/day	3.0E-04	mg/kg-day	5.7E-02
				SVOCs												
				2,4,6-Trichlorophenol	1.5E+01	µg/L	1.9E-05	mg/kg/day	1.1E-02	(mg/kg-day)-1	2.1E-07	2.2E-04	mg/kg/day	1.0E-04	mg/kg-day	2.2E+00
				Indeno(1,2,3-cd)pyrene	7.3E-01	µg/L	2.6E-05	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.9E-05	3.1E-04	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	2.4E+03	µg/L	6.6E-02	mg/kg/day	2.0E+00	(mg/kg-day)-1	1.3E-01	7.7E-01	mg/kg/day	2.0E-05	mg/kg-day	3.9E+04
				gamma-BHC	5.5E-01	µg/L	2.2E-07	mg/kg/day	1.3E+00	(mg/kg-day)-1	2.8E-07	2.6E-06	mg/kg/day	3.0E-04	mg/kg-day	8.5E-03
				Methyl parathion	7.4E+01	µg/L	NA	NA	NA	NA	NA	NA	NA	2.5E-04	mg/kg-day	NA
				Parathion	9.4E+03	µg/L	4.4E-03	mg/kg/day	NA	NA	NA	5.1E-02	mg/kg/day	6.0E-03	mg/kg-day	8.6E+00
				Dioxin												
				Dioxin TEQ	3.6E-06	µg/L	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Antimony	5.1E+00	µg/L	1.8E-07	mg/kg/day	NA	NA	NA	2.2E-06	mg/kg/day	6.0E-05	mg/kg-day	3.6E-02
				Arsenic	6.1E+00	µg/L	2.2E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	3.3E-07	2.6E-06	mg/kg/day	3.0E-04	mg/kg-day	8.6E-03
				Manganese	1.3E+03	µg/L	4.7E-05	mg/kg/day	NA	NA	NA	5.5E-04	mg/kg/day	5.6E-03	mg/kg-day	9.8E-02
				Mercury	1.8E+00	µg/L	6.5E-08	mg/kg/day	NA	NA	NA	7.5E-07	mg/kg/day	2.9E-04	mg/kg-day	2.6E-03
			Exp. Route Total								1.3E-01					3.9E+04

TABLE B-7.15

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Off-site Residents
Receptor Age:	Child (0-6 yrs)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Groundwater	Air	Vapors in Bath	Inhalation	**VOCs**												
				1,2,4-Trichlorobenzene	1.1E+02	µg/m3	6.0E-04	mg/kg/day	NA	NA	NA	7.0E-03	mg/kg/day	1.0E-03	mg/kg-day	7.0E+00
				1,4-Dichlorobenzene	2.4E+01	µg/m3	1.3E-04	mg/kg/day	2.2E-02	(mg/kg-day)-1	2.8E-06	1.5E-03	mg/kg/day	2.3E-01	mg/kg-day	6.6E-03
				Chlorobenzene	5.3E+01	µg/m3	2.9E-04	mg/kg/day	NA	NA	NA	3.4E-03	mg/kg/day	1.7E-02	mg/kg-day	2.0E-01
				cis-1,2-Dichloroethene	1.2E+02	µg/m3	6.7E-04	mg/kg/day	NA	NA	NA	7.8E-03	mg/kg/day	1.0E-02	mg/kg-day	7.8E-01
				Pentachlorophenol	1.6E+02	µg/m3	8.8E-04	mg/kg/day	1.2E-01	(mg/kg-day)-1	1.1E-04	1.0E-02	mg/kg/day	3.0E-02	mg/kg-day	3.4E-01
				Trichloroethylene	3.6E+01	µg/m3	2.0E-04	mg/kg/day	4.0E-01	(mg/kg-day)-1	7.9E-05	2.3E-03	mg/kg/day	1.1E-02	mg/kg/day	2.0E-01
				SVOCs												
				2,4,6-Trichlorophenol	1.2E+02	µg/m3	6.8E-04	mg/kg/day	1.1E-02	(mg/kg-day)-1	7.4E-06	7.9E-03	mg/kg/day	1.0E-04	mg/kg-day	7.9E+01
				Indeno(1,2,3-cd)pyrene	5.7E+00	µg/m3	3.1E-05	mg/kg/day	3.1E-01	(mg/kg-day)-1	9.7E-06	3.6E-04	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	NA	NA	NA	NA	3.5E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				gamma-BHC	5.1E+00	µg/m3	2.8E-05	mg/kg/day	1.3E+00	(mg/kg-day)-1	3.6E-05	3.2E-04	mg/kg/day	3.0E-04	mg/kg-day	1.1E+00
				Methyl parathion	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5E-04	mg/kg-day	NA
				Parathion	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.0E-03	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1E-05	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.4E-05	mg/kg-day	NA
				Mercury	1.5E+01	µg/m3	8.1E-05	mg/kg/day	NA	NA	NA	9.5E-04	mg/kg/day	8.6E-05	mg/kg-day	1.1E+01
			Exp. Route Total								2.4E-04					1.0E+02
Air	Ambient Air	Ambient Air	Inhalation	**P/PCBs**												
				PCBs, Total	7.3E+01	ng/m3	3.0E-06	mg/kg/day	3.5E-01	(mg/kg-day)-1	1.0E-06	3.5E-05	mg/kg/day	NA	NA	NA
			Exp. Route Total								1.0E-06					0.0E+00
		Exposure Point Total									2E-01					5E+04

TABLE B-7.16

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Operations Area Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Groundwater	Groundwater	Tap Water	Ingestion	**VOCs**												
				1,2,4-Trichlorobenzene	1.1E+01	µg/L	3.8E-05	mg/kg/day	NA	NA	NA	1.1E-04	mg/kg/day	1.0E-02	mg/kg-day	1.1E-02
				1,4-Dichlorobenzene	2.4E+00	µg/L	8.5E-06	mg/kg/day	2.4E-02	(mg/kg-day)-1	2.0E-07	2.4E-05	mg/kg/day	3.0E-02	mg/kg-day	8.0E-04
				Chlorobenzene	5.1E+00	µg/L	1.8E-05	mg/kg/day	NA	NA	NA	5.0E-05	mg/kg/day	2.0E-02	mg/kg-day	2.5E-03
				cis-1,2-Dichloroethene	1.0E+01	µg/L	3.5E-05	mg/kg/day	NA	NA	NA	9.8E-05	mg/kg/day	1.0E-02	mg/kg-day	9.8E-03
				Pentachlorophenol	2.0E+01	µg/L	6.9E-05	mg/kg/day	1.2E-01	(mg/kg-day)-1	8.3E-06	1.9E-04	mg/kg/day	3.0E-02	mg/kg-day	6.4E-03
				Trichloroethylene	3.4E+00	µg/L	1.2E-05	mg/kg/day	4.0E-01	(mg/kg-day)-1	4.8E-06	3.3E-05	mg/kg/day	3.0E-04	mg/kg-day	1.1E-01
				SVOCs												
				2,4,6-Trichlorophenol	1.5E+01	µg/L	5.2E-05	mg/kg/day	1.1E-02	(mg/kg-day)-1	5.8E-07	1.5E-04	mg/kg/day	1.0E-04	mg/kg-day	1.5E+00
				Indeno(1,2,3-cd)pyrene	7.3E-01	µg/L	2.6E-06	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.9E-06	7.1E-06	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	2.4E+03	µg/L	8.5E-03	mg/kg/day	2.0E+00	(mg/kg-day)-1	1.7E-02	2.4E-02	mg/kg/day	2.0E-05	mg/kg-day	1.2E+03
				gamma-BHC	5.5E-01	µg/L	1.9E-06	mg/kg/day	1.3E+00	(mg/kg-day)-1	2.5E-06	5.4E-06	mg/kg/day	3.0E-04	mg/kg-day	1.8E-02
				Methyl parathion	7.4E+01	µg/L	2.6E-04	mg/kg/day	NA	NA	NA	7.2E-04	mg/kg/day	2.5E-04	mg/kg-day	2.9E+00
				Parathion	9.4E+03	µg/L	3.3E-02	mg/kg/day	NA	NA	NA	9.2E-02	mg/kg/day	6.0E-03	mg/kg-day	1.5E+01
				Dioxin												
				Dioxin TEQ	3.6E-06	µg/L	1.3E-11	mg/kg/day	1.5E+05	(mg/kg-day)-1	1.9E-06	3.5E-11	mg/kg/day	NA	NA	NA
				Inorganics												
				Antimony	5.1E+00	µg/L	1.8E-05	mg/kg/day	NA	NA	NA	5.0E-05	mg/kg/day	4.0E-04	mg/kg-day	1.2E-01
				Arsenic	6.1E+00	µg/L	2.1E-05	mg/kg/day	1.5E+00	(mg/kg-day)-1	3.2E-05	6.0E-05	mg/kg/day	3.0E-04	mg/kg-day	2.0E-01
				Manganese	1.3E+03	µg/L	4.5E-03	mg/kg/day	NA	NA	NA	1.3E-02	mg/kg/day	1.4E-01	mg/kg-day	9.1E-02
				Mercury	1.8E+00	µg/L	6.2E-06	mg/kg/day	NA	NA	NA	1.7E-05	mg/kg/day	3.0E-04	mg/kg-day	5.8E-02
			Exp. Route Total								1.7E-02					1.2E+03
		Exposure Point Total									2E-02					1E+03

TABLE B-7.17

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	O&M Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Groundwater	Groundwater	Tap Water	Ingestion	**VOCs**												
				1,2,4-Trichlorobenzene	1.1E+01	µg/L	3.7E-06	mg/kg/day	NA	NA	NA	1.0E-05	mg/kg/day	1.0E-02	mg/kg-day	1.0E-03
				1,4-Dichlorobenzene	2.4E+00	µg/L	8.2E-07	mg/kg/day	2.4E-02	(mg/kg-day)-1	2.0E-08	2.3E-06	mg/kg/day	3.0E-02	mg/kg-day	7.6E-05
				Chlorobenzene	5.1E+00	µg/L	1.7E-06	mg/kg/day	NA	NA	NA	4.8E-06	mg/kg/day	2.0E-02	mg/kg-day	2.4E-04
				cis-1,2-Dichloroethene	1.0E+01	µg/L	3.4E-06	mg/kg/day	NA	NA	NA	9.4E-06	mg/kg/day	1.0E-02	mg/kg-day	9.4E-04
				Pentachlorophenol	2.0E+01	µg/L	6.6E-06	mg/kg/day	1.2E-01	(mg/kg-day)-1	7.9E-07	1.9E-05	mg/kg/day	3.0E-02	mg/kg-day	6.2E-04
				Trichloroethylene	3.4E+00	µg/L	1.1E-06	mg/kg/day	4.0E-01	(mg/kg-day)-1	4.6E-07	3.2E-06	mg/kg/day	3.0E-04	mg/kg-day	1.1E-02
				SVOCs												
				2,4,6-Trichlorophenol	1.5E+01	µg/L	5.0E-06	mg/kg/day	1.1E-02	(mg/kg-day)-1	5.5E-08	1.4E-05	mg/kg/day	1.0E-04	mg/kg-day	1.4E-01
				Indeno(1,2,3-cd)pyrene	7.3E-01	µg/L	2.4E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.8E-07	6.9E-07	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	2.4E+03	µg/L	8.2E-04	mg/kg/day	2.0E+00	(mg/kg-day)-1	1.6E-03	2.3E-03	mg/kg/day	2.0E-05	mg/kg-day	1.1E+02
				gamma-BHC	5.5E-01	µg/L	1.8E-07	mg/kg/day	1.3E+00	(mg/kg-day)-1	2.4E-07	5.2E-07	mg/kg/day	3.0E-04	mg/kg-day	1.7E-03
				Methyl parathion	7.4E+01	µg/L	2.5E-05	mg/kg/day	NA	NA	NA	7.0E-05	mg/kg/day	2.5E-04	mg/kg-day	2.8E-01
				Parathion	9.4E+03	µg/L	3.1E-03	mg/kg/day	NA	NA	NA	8.8E-03	mg/kg/day	6.0E-03	mg/kg-day	1.5E+00
				Dioxin												
				Dioxin TEQ	3.6E-06	µg/L	1.2E-12	mg/kg/day	1.5E+05	(mg/kg-day)-1	1.8E-07	3.4E-12	mg/kg/day	NA	NA	NA
				Inorganics												
				Antimony	5.1E+00	µg/L	1.7E-06	mg/kg/day	NA	NA	NA	4.8E-06	mg/kg/day	4.0E-04	mg/kg-day	1.2E-02
				Arsenic	6.1E+00	µg/L	2.0E-06	mg/kg/day	1.5E+00	(mg/kg-day)-1	3.1E-06	5.7E-06	mg/kg/day	3.0E-04	mg/kg-day	1.9E-02
				Manganese	1.3E+03	µg/L	4.4E-04	mg/kg/day	NA	NA	NA	1.2E-03	mg/kg/day	1.4E-01	mg/kg-day	8.7E-03
				Mercury	1.8E+00	µg/L	6.0E-07	mg/kg/day	NA	NA	NA	1.7E-06	mg/kg/day	3.0E-04	mg/kg-day	5.6E-03
			Exp. Route Total								1.6E-03					1.2E+02
		Exposure Point Total									2E-03					1E+02

TABLE B-8.1
CALCULATION OF RADIATION CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	NA
Receptor Population:	NA
Receptor Age:	NA

Medium	Exposure Medium	Exposure Point	Exposure Route	Radionuclide of Potential Concern	EPC		Risk Calculation Approach	Cancer Risk Calculations				
								Intake/Activity		CSF		Cancer Risk
					Value	Units		Value	Units	Value	Units	

NOT APPLICABLE TO THIS SITE

			Exp. Route Total									
		Exposure Point Total										
Total of Receptor Risks Across All Media												

TABLE B-9.1
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	Operations Area Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		Facility Area	Benzo(a)anthracene	1.1E-07	NA	1.3E-07	2.3E-07	NA	NA	NA	NA	NA
			Benzo(a)pyrene	2.4E-06	NA	2.9E-06	5.3E-06	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	2.7E-07	NA	3.2E-07	5.9E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	7.9E-07	NA	9.4E-07	1.7E-06	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	1.7E-07	NA	2.0E-07	3.6E-07	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	3.9E-05	NA	7.2E-05	1.1E-04	Eye/Skin/Nails/Immune System	2.7E+00	NA	5.0E+00	7.8E+00
			Heptachlor epoxide	6.0E-07	NA	NA	6.0E-07	Liver	1.4E-02	NA	NA	1.4E-02
			Dioxin									
			Dioxin TEQ	2.0E-05	NA	5.4E-06	2.5E-05	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	9.3E-03	NA	NA	9.3E-03
			Antimony	NA	NA	NA	NA	Whole Body/Blood	1.1E-02	NA	NA	1.1E-02
			Arsenic	3.1E-05	NA	2.8E-05	5.9E-05	Skin	1.9E-01	NA	1.7E-01	3.7E-01
			Cadmium	NA	NA	NA	NA	Kidney	2.3E-03	NA	8.4E-04	3.1E-03
			Chromium	NA	NA	NA	NA	GI Tract	3.8E-03	NA	NA	3.8E-03
			Iron	NA	NA	NA	NA	GI Tract/Liver	1.8E-02	NA	NA	1.8E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	2.9E-03	NA	NA	2.9E-03
			Mercury	NA	NA	NA	NA	Immune System	4.2E-03	NA	NA	4.2E-03
			Vanadium	NA	NA	NA	NA	Metabolic	2.0E-02	NA	NA	2.0E-02
			Chemical Total	9.4E-05	NA	1.1E-04	2.0E-04		3.0E+00	NA	5.2E+00	8.2E+00
		Exposure Point Total					2.0E-04					8.2E+00
	Exposure Medium Total						2.0E-04					8.2E+00
Surface Soil Total							2.0E-04					8.2E+00
Air	Ambient Air	Ambient Air	**P/PCBs**									
		Facility Area	PCBs, Total	NA	1.1E-06	NA	1.1E-06	NA	NA	NA	NA	NA
			Chemical Total	NA	1.1E-06	NA	1.1E-06		NA	NA	NA	NA
		Exposure Point Total					1.1E-06					NA
	Exposure Medium Total						1.1E-06					NA
Air Total							1.1E-06					NA
Receptor Total							2.0E-04					8.2E+00

Total Risk Across All Media =	2E-04
Total Hazard Across All Media =	8
Total Liver HI Across All Media =	0.03
Total Eye HI Across All Media =	8
Total GI Tract HI Across All Media =	0.03
Total Nails HI Across All Media =	8
Total Blood HI Across All Media =	0.01
Total Whole Body HI Across All Media =	0.01
Total Skin HI Across All Media =	8
Total Kidney HI Across All Media =	0.003
Total CNS HI Across All Media =	0.01
Total Immune System HI Across All Media =	8
Total Metabolic HI Across All Media =	0.02

TABLE B-9.2
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Operations Area Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		Facility Area	Benzo(a)anthracene	2.1E-07	NA	1.8E-07	3.9E-07	NA	NA	NA	NA	NA
			Benzo(a)pyrene	4.8E-06	NA	4.2E-06	9.0E-06	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	5.4E-07	NA	4.6E-07	1.0E-06	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	1.6E-06	NA	1.4E-06	2.9E-06	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	3.3E-07	NA	2.8E-07	6.2E-07	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	4.2E-03	NA	1.7E-03	5.9E-03	Eye/Skin/Nails/Immune System	3.0E+02	NA	1.2E+02	4.1E+02
			Heptachlor epoxide	1.2E-06	NA	NA	1.2E-06	Liver	2.9E-02	NA	NA	2.9E-02
			Dioxin									
			Dioxin TEQ	4.0E-05	NA	7.8E-06	4.7E-05	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	1.9E-02	NA	NA	1.9E-02
			Antimony	NA	NA	NA	NA	Whole Body/Blood	2.1E-02	NA	NA	2.1E-02
			Arsenic	2.0E-04	NA	4.0E-05	2.4E-04	Skin	1.3E+00	NA	2.5E-01	1.5E+00
			Cadmium	NA	NA	NA	NA	Kidney	4.6E-03	NA	1.2E-03	5.8E-03
			Chromium	NA	NA	NA	NA	GI Tract	7.5E-03	NA	NA	7.5E-03
			Iron	NA	NA	NA	NA	GI Tract/Liver	3.6E-02	NA	NA	3.6E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	5.8E-03	NA	NA	5.8E-03
			Mercury	NA	NA	NA	NA	Immune System	8.5E-03	NA	NA	8.5E-03
			Vanadium	NA	NA	NA	NA	Metabolic	3.9E-02	NA	NA	3.9E-02
			Chemical Total	4.5E-03	NA	1.7E-03	6.2E-03		3.0E+02	NA	1.2E+02	4.2E+02
		Exposure Point Total					6.2E-03					4.2E+02
	Exposure Medium Total						6.2E-03					4.2E+02
Surface Soil Total							6.2E-03					4.2E+02
Air	Ambient Air	Ambient Air	**P/PCBs**									
		Facility Area	PCBs, Total	NA	1.1E-06	NA	1.1E-06	NA	NA	NA	NA	NA
			Chemical Total	NA	1.1E-06	NA	1.1E-06		NA	NA	NA	NA
		Exposure Point Total					1.1E-06					NA
	Exposure Medium Total						1.1E-06					NA
Air Total							1.1E-06					NA
Receptor Total							6.2E-03					4.2E+02

Total Risk Across All Media = 6E-03

Total Hazard Across All Media = 416

Total Liver HI Across All Media =	0.06
Total Eye HI Across All Media =	414
Total GI Tract HI Across All Media =	0.06
Total Nails HI Across All Media =	414
Total Blood HI Across All Media =	0.02
Total Whole Body HI Across All Media =	0.02
Total Skin HI Across All Media =	415
Total Kidney HI Across All Media =	0.006
Total CNS HI Across All Media =	0.02
Total Immune System HI Across All Media =	414
Total Metabolic HI Across All Media =	0.04

TABLE B-9.3
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		Facility Area	Benzo(a)anthracene	2.0E-08	NA	7.8E-08	9.9E-08	NA	NA	NA	NA	NA
			Benzo(a)pyrene	4.7E-07	NA	1.8E-06	2.3E-06	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	5.1E-08	NA	2.0E-07	2.5E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	1.5E-07	NA	5.9E-07	7.4E-07	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	3.2E-08	NA	1.2E-07	1.5E-07	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	2.5E-05	NA	4.5E-05	7.0E-05	Eye/Skin/Nails/Immune System	1.8E+00	NA	3.1E+00	4.9E+00
			Heptachlor epoxide	1.2E-07	NA	NA	1.2E-07	Liver	2.7E-03	NA	NA	2.7E-03
			Dioxin									
			Dioxin TEQ	3.8E-06	NA	3.4E-06	7.2E-06	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	1.8E-03	NA	NA	1.8E-03
			Antimony	NA	NA	NA	NA	Whole Body/Blood	2.0E-03	NA	NA	2.0E-03
			Arsenic	2.0E-05	NA	1.7E-05	3.7E-05	Skin	1.2E-01	NA	1.1E-01	2.3E-01
			Cadmium	NA	NA	NA	NA	Kidney	4.4E-04	NA	5.2E-04	9.7E-04
			Chromium	NA	NA	NA	NA	GI Tract	7.2E-04	NA	NA	7.2E-04
			Iron	NA	NA	NA	NA	GI Tract/Liver	3.5E-03	NA	NA	3.5E-03
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	5.6E-04	NA	NA	5.6E-04
			Mercury	NA	NA	NA	NA	Immune System	8.1E-04	NA	NA	8.1E-04
			Vanadium	NA	NA	NA	NA	Metabolic	3.8E-03	NA	NA	3.8E-03
			Chemical Total	4.9E-05	NA	6.8E-05	1.2E-04		1.9E+00	NA	3.2E+00	5.1E+00
		Exposure Point Total					1.2E-04					5.1E+00
	Exposure Medium Total						1.2E-04					5.1E+00
Surface Soil Total							1.2E-04					5.1E+00
Air	Ambient Air	Ambient Air	**P/PCBs**									
		Facility Area	PCBs, Total	NA	1.0E-07	NA	1.0E-07	NA	NA	NA	NA	NA
			Chemical Total	NA	1.0E-07	NA	1.0E-07		NA	NA	NA	NA
		Exposure Point Total					1.0E-07					NA
	Exposure Medium Total						1.0E-07					NA
Air Total							1.0E-07					NA
Receptor Total							1.2E-04					5.1E+00

Total Risk Across All Media =	1E-04
Total Hazard Across All Media =	5
Total Liver HI Across All Media =	0.006
Total Eye HI Across All Media =	5
Total GI Tract HI Across All Media =	0.006
Total Nails HI Across All Media =	5
Total Blood HI Across All Media =	0.002
Total Whole Body HI Across All Media =	0.002
Total Skin HI Across All Media =	5
Total Kidney HI Across All Media =	0.001
Total CNS HI Across All Media =	0.002
Total Immune System HI Across All Media =	5
Total Metabolic HI Across All Media =	0.004

TABLE B-9.4
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		Facility Area	Benzo(a)anthracene	2.0E-08	NA	7.8E-08	9.9E-08	NA	NA	NA	NA	NA
			Benzo(a)pyrene	4.7E-07	NA	1.8E-06	2.3E-06	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	5.1E-08	NA	2.0E-07	2.5E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	1.5E-07	NA	5.9E-07	7.4E-07	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	3.2E-08	NA	1.2E-07	1.5E-07	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	4.1E-04	NA	7.2E-04	1.1E-03	Eye/Skin/Nails/Immune System	2.8E+01	NA	5.1E+01	7.9E+01
			Heptachlor epoxide	1.2E-07	NA	NA	1.2E-07	Liver	2.7E-03	NA	NA	2.7E-03
			Dioxin									
			Dioxin TEQ	3.8E-06	NA	3.4E-06	7.2E-06	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	1.8E-03	NA	NA	1.8E-03
			Antimony	NA	NA	NA	NA	Whole Body/Blood	2.0E-03	NA	NA	2.0E-03
			Arsenic	2.0E-05	NA	1.7E-05	3.7E-05	Skin	1.2E-01	NA	1.1E-01	2.3E-01
			Cadmium	NA	NA	NA	NA	Kidney	4.4E-04	NA	5.2E-04	9.7E-04
			Chromium	NA	NA	NA	NA	GI Tract	7.2E-04	NA	NA	7.2E-04
			Iron	NA	NA	NA	NA	GI Tract/Liver	3.5E-03	NA	NA	3.5E-03
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	5.6E-04	NA	NA	5.6E-04
			Mercury	NA	NA	NA	NA	Immune System	8.1E-04	NA	NA	8.1E-04
			Vanadium	NA	NA	NA	NA	Metabolic	3.8E-03	NA	NA	3.8E-03
			Chemical Total	4.3E-04	NA	7.5E-04	1.2E-03		2.9E+01	NA	5.1E+01	7.9E+01
		Exposure Point Total					1.2E-03					7.9E+01
	Exposure Medium Total						1.2E-03					7.9E+01
Surface Soil Total							1.2E-03					7.9E+01
Air	Ambient Air	Ambient Air	**P/PCBs**									
		Facility Area	PCBs, Total	NA	1.0E-07	NA	1.0E-07	NA	NA	NA	NA	NA
			Chemical Total	NA	1.0E-07	NA	1.0E-07		NA	NA	NA	NA
		Exposure Point Total					1.0E-07					NA
	Exposure Medium Total						1.0E-07					NA
Air Total							1.0E-07					NA
Receptor Total							1.2E-03					7.9E+01

Total Risk Across All Media =	1E-03
Total Hazard Across All Media =	79
Total Liver HI Across All Media =	0.006
Total Eye HI Across All Media =	79
Total GI Tract HI Across All Media =	0.006
Total Nails HI Across All Media =	79
Total Blood HI Across All Media =	0.002
Total Whole Body HI Across All Media =	0.002
Total Skin HI Across All Media =	79
Total Kidney HI Across All Media =	0.001
Total CNS HI Across All Media =	0.002
Total Immune System HI Across All Media =	79
Total Metabolic HI Across All Media =	0.004

TABLE B-9.5
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	Trespasser
Receptor:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		Facility Area	Benzo(a)anthracene	2.6E-08	NA	1.9E-08	4.6E-08	NA	NA	NA	NA	NA
			Benzo(a)pyrene	6.0E-07	NA	4.4E-07	1.0E-06	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	6.7E-08	NA	4.9E-08	1.2E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	2.0E-07	NA	1.4E-07	3.4E-07	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	4.1E-08	NA	3.0E-08	7.1E-08	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	3.3E-05	NA	1.1E-05	4.3E-05	Eye/Skin/Nails/Immune System	5.7E+00	NA	1.9E+00	7.6E+00
			Heptachlor epoxide	1.5E-07	NA	NA	1.5E-07	Liver	8.9E-03	NA	NA	8.9E-03
			Dioxin									
			Dioxin TEQ	4.9E-06	NA	8.3E-07	5.8E-06	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	5.8E-03	NA	NA	5.8E-03
			Antimony	NA	NA	NA	NA	Whole Body/Blood	6.6E-03	NA	NA	6.6E-03
			Arsenic	2.5E-05	NA	4.3E-06	3.0E-05	Skin	4.0E-01	NA	6.6E-02	4.6E-01
			Cadmium	NA	NA	NA	NA	Kidney	1.4E-03	NA	3.2E-04	1.8E-03
			Chromium	NA	NA	NA	NA	GI Tract	2.3E-03	NA	NA	2.3E-03
			Iron	NA	NA	NA	NA	GI Tract/Liver	1.1E-02	NA	NA	1.1E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	1.8E-03	NA	NA	1.8E-03
			Mercury	NA	NA	NA	NA	Immune System	2.6E-03	NA	NA	2.6E-03
			Vanadium	NA	NA	NA	NA	Metabolic	1.2E-02	NA	NA	1.2E-02
			Chemical Total	6.4E-05	NA	1.7E-05	8.1E-05		6.1E+00	NA	2.0E+00	8.1E+00
		Exposure Point Total					8.1E-05					8.1E+00
	Exposure Medium Total						8.1E-05					8.1E+00
Surface Soil Total							8.1E-05					8.1E+00
Air	Ambient Air	Ambient Air	**P/PCBs**									
		Facility Area	PCBs, Total	NA	4.7E-08	NA	4.7E-08	NA	NA	NA	NA	NA
			Chemical Total	NA	4.7E-08	NA	4.7E-08		NA	NA	NA	NA
		Exposure Point Total					4.7E-08					NA
	Exposure Medium Total						4.7E-08					NA
Air Total							4.7E-08					NA
Receptor Total							8.1E-05					8.1E+00

Total Risk Across All Media =	8E-05
Total Hazard Across All Media =	8
Total Liver HI Across All Media =	0.02
Total Eye HI Across All Media =	8
Total GI Tract HI Across All Media =	0.02
Total Nails HI Across All Media =	8
Total Blood HI Across All Media =	0.007
Total Whole Body HI Across All Media =	0.007
Total Skin HI Across All Media =	8
Total Kidney HI Across All Media =	0.002
Total CNS HI Across All Media =	0.008
Total Immune System HI Across All Media =	8
Total Metabolic HI Across All Media =	0.01

TABLE B-9.6
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Trespasser
Receptor:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		Facility Area	Benzo(a)anthracene	2.6E-08	NA	1.9E-08	4.6E-08	NA	NA	NA	NA	NA
			Benzo(a)pyrene	6.0E-07	NA	4.4E-07	1.0E-06	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	6.7E-08	NA	4.9E-08	1.2E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	2.0E-07	NA	1.4E-07	3.4E-07	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	4.1E-08	NA	3.0E-08	7.1E-08	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	5.3E-04	NA	1.8E-04	7.0E-04	Eye/Skin/Nails/Immune System	9.2E+01	NA	3.1E+01	1.2E+02
			Heptachlor epoxide	1.5E-07	NA	NA	1.5E-07	Liver	8.9E-03	NA	NA	8.9E-03
			Dioxin									
			Dioxin TEQ	4.9E-06	NA	8.3E-07	5.8E-06	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	5.8E-03	NA	NA	5.8E-03
			Antimony	NA	NA	NA	NA	Whole Body/Blood	6.6E-03	NA	NA	6.6E-03
			Arsenic	2.5E-05	NA	4.3E-06	3.0E-05	Skin	4.0E-01	NA	6.6E-02	4.6E-01
			Cadmium	NA	NA	NA	NA	Kidney	1.4E-03	NA	3.2E-04	1.8E-03
			Chromium	NA	NA	NA	NA	GI Tract	2.3E-03	NA	NA	2.3E-03
			Iron	NA	NA	NA	NA	GI Tract/Liver	1.1E-02	NA	NA	1.1E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	1.8E-03	NA	NA	1.8E-03
			Mercury	NA	NA	NA	NA	Immune System	2.6E-03	NA	NA	2.6E-03
			Vanadium	NA	NA	NA	NA	Metabolic	1.2E-02	NA	NA	1.2E-02
			Chemical Total	5.6E-04	NA	1.8E-04	7.4E-04		9.3E+01	NA	3.1E+01	1.2E+02
		Exposure Point Total					7.4E-04					1.2E+02
	Exposure Medium Total						7.4E-04					1.2E+02
Surface Soil Total							7.4E-04					1.2E+02
Air	Ambient Air	Ambient Air	**P/PCBs**									
		Facility Area	PCBs, Total	NA	4.7E-08	NA	4.7E-08	NA	NA	NA	NA	NA
			Chemical Total	NA	4.7E-08	NA	4.7E-08		NA	NA	NA	NA
		Exposure Point Total					4.7E-08					NA
	Exposure Medium Total						4.7E-08					NA
Air Total							4.7E-08					NA
Receptor Total							7.4E-04					1.2E+02

Total Risk Across All Media =	7E-04
Total Hazard Across All Media =	124
Total Liver HI Across All Media =	0.02
Total Eye HI Across All Media =	123
Total GI Tract HI Across All Media =	0.02
Total Nails HI Across All Media =	123
Total Blood HI Across All Media =	0.007
Total Whole Body HI Across All Media =	0.007
Total Skin HI Across All Media =	124
Total Kidney HI Across All Media =	0.002
Total CNS HI Across All Media =	0.008
Total Immune System HI Across All Media =	123
Total Metabolic HI Across All Media =	0.01

TABLE B-9.7
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	Construction Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface/ Subsurface Soil	Surface Soil Subsurface Soil	Surface Soil Subsurface Soil Facility Area	**SVOCs**									
			Benzo(a)anthracene	1.1E-08	NA	4.4E-09	1.6E-08	NA	NA	NA	NA	NA
			Benzo(a)pyrene	2.6E-07	NA	1.0E-07	3.6E-07	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	2.8E-08	NA	1.1E-08	3.9E-08	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	8.4E-08	NA	3.3E-08	1.2E-07	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	1.8E-08	NA	6.8E-09	2.4E-08	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	1.2E-04	NA	2.2E-05	1.4E-04	Eye/Skin/Nails/Immune System	2.1E+02	NA	3.8E+01	2.5E+02
			Heptachlor epoxide	6.4E-08	NA	NA	6.4E-08	Liver	3.8E-02	NA	NA	3.8E-02
			Dioxin									
			Dioxin TEQ	2.1E-06	NA	1.9E-07	2.3E-06	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	2.5E-02	NA	NA	2.5E-02
			Antimony	NA	NA	NA	NA	Whole Body/Blood	2.8E-02	NA	NA	2.8E-02
			Arsenic	4.1E-06	NA	3.7E-07	4.5E-06	Skin	6.4E-01	NA	5.7E-02	6.9E-01
			Barium	NA	NA	NA	NA	CNS	1.2E-03	NA	NA	1.2E-03
			Cadmium	NA	NA	NA	NA	Kidney	1.7E-03	NA	2.0E-04	1.9E-03
			Chromium	NA	NA	NA	NA	GI Tract	2.0E-02	NA	NA	2.0E-02
			Iron	NA	NA	NA	NA	GI Tract/Liver	4.8E-02	NA	NA	4.8E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	2.6E-02	NA	NA	2.6E-02
			Mercury	NA	NA	NA	NA	Immune System	6.5E-03	NA	NA	6.5E-03
			Nickel	NA	NA	NA	NA	Body and Organ Weight	5.7E-02	NA	NA	5.7E-02
			Vanadium	NA	NA	NA	NA	Metabolic	6.1E-02	NA	NA	6.1E-02
			Chemical Total	1.3E-04	NA	2.2E-05	1.5E-04		2.1E+02	NA	3.8E+01	2.5E+02
		Exposure Point Total					1.5E-04					2.5E+02
	Exposure Medium Total						1.5E-04					2.5E+02
Surface/Subsurface Soil Total							1.5E-04					2.5E+02
Air	Ambient Air	Ambient Air Facility Area	**P/PCBs**									
			PCBs, Total	NA	2.8E-08	NA	2.8E-08	NA	NA	NA	NA	NA
			Chemical Total	NA	2.8E-08	NA	2.8E-08		NA	NA	NA	NA
		Exposure Point Total					2.8E-08					NA
	Exposure Medium Total						2.8E-08					NA
Air Total							2.8E-08					NA
Receptor Total							1.5E-04					2.5E+02

Total Risk Across All Media =	1E-04
Total Hazard Across All Media =	250
Total Liver HI Across All Media =	0.09
Total Eye HI Across All Media =	249
Total GI Tract HI Across All Media =	0.09
Total Nails HI Across All Media =	249
Total Blood HI Across All Media =	0.03
Total Whole Body HI Across All Media =	0.03
Total Skin HI Across All Media =	250
Total Kidney HI Across All Media =	0.002
Total CNS HI Across All Media =	0.05
Total Immune System HI Across All Media =	249
Total Body and Organ Weight HI Across All Media =	0.06
Total Metabolic HI Across All Media =	0.06

TABLE B-9.8
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		South Landfill	Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	9.2E-07	NA	1.6E-06	2.5E-06	Eye/Skin/Nails/Immune System	6.4E-02	NA	1.1E-01	1.8E-01
			Heptachlor epoxide	NA	NA	NA	NA	Liver	NA	NA	NA	NA
			Dioxin									
			Dioxin TEQ	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	NA	NA	NA	NA
			Antimony	NA	NA	NA	NA	Whole Body/Blood	NA	NA	NA	NA
			Arsenic	NA	NA	NA	NA	Skin	NA	NA	NA	NA
			Cadmium	NA	NA	NA	NA	Kidney	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	GI Tract	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	GI Tract/Liver	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	Immune System	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	Metabolic	NA	NA	NA	NA
			Chemical Total	9.2E-07	NA	1.6E-06	2.5E-06		6.4E-02	NA	1.1E-01	1.8E-01
		Exposure Point Total					2.5E-06					1.8E-01
	Exposure Medium Total						2.5E-06					1.8E-01
Surface Soil Total							2.5E-06					1.8E-01
Air	Ambient Air	Ambient Air	**P/PCBs**									
		South Landfill	PCBs, Total	NA	9.8E-09	NA	9.8E-09	NA	NA	NA	NA	NA
			Chemical Total	NA	9.8E-09	NA	9.8E-09		NA	NA	NA	NA
		Exposure Point Total					9.8E-09					NA
	Exposure Medium Total						9.8E-09					NA
Air Total							9.8E-09					NA
Receptor Total							2.6E-06					1.8E-01

Total Risk Across All Media =	3E-06
Total Hazard Across All Media =	0.2
Total Eye HI Across All Media =	0.2
Total Nails HI Across All Media =	0.2
Total Skin HI Across All Media =	0.2
Total Immune System HI Across All Media =	0.2

TABLE B-9.9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		South Landfill	Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	1.2E-06	NA	4.0E-07	1.6E-06	Eye/Skin/Nails/Immune System	2.1E-01	NA	7.0E-02	2.8E-01
			Heptachlor epoxide	NA	NA	NA	NA	Liver	NA	NA	NA	NA
			Dioxin									
			Dioxin TEQ	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	NA	NA	NA	NA
			Antimony	NA	NA	NA	NA	Whole Body/Blood	NA	NA	NA	NA
			Arsenic	NA	NA	NA	NA	Skin	NA	NA	NA	NA
			Cadmium	NA	NA	NA	NA	Kidney	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	GI Tract	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	GI Tract/Liver	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	Immune System	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	Metabolic	NA	NA	NA	NA
			Chemical Total	1.2E-06	NA	4.0E-07	1.6E-06		2.1E-01	NA	7.0E-02	2.8E-01
		Exposure Point Total					1.6E-06					2.8E-01
	Exposure Medium Total						1.6E-06					2.8E-01
Surface Soil Total							1.6E-06					2.8E-01
Air	Ambient Air	Ambient Air	**P/PCBs**									
		South Landfill	PCBs, Total	NA	4.5E-09	NA	4.5E-09	NA	NA	NA	NA	NA
			Chemical Total	NA	4.5E-09	NA	4.5E-09		NA	NA	NA	NA
		Exposure Point Total					4.5E-09					NA
	Exposure Medium Total						4.5E-09					NA
Air Total							4.5E-09					NA
Receptor Total							1.6E-06					2.8E-01

Total Risk Across All Media =	2E-06
Total Hazard Across All Media =	0.3
Total Eye HI Across All Media =	0.3
Total Nails HI Across All Media =	0.3
Total Skin HI Across All Media =	0.3
Total Immune System HI Across All Media =	0.3

TABLE B-9.10
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		West End Landfill	Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	NA	NA	NA	NA	Eye/Skin/Nails/Immune System	NA	NA	NA	NA
			Heptachlor epoxide	NA	NA	NA	NA	Liver	NA	NA	NA	NA
			Dioxin									
			Dioxin TEQ	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	NA	NA	NA	NA
			Antimony	NA	NA	NA	NA	Whole Body/Blood	NA	NA	NA	NA
			Arsenic	NA	NA	NA	NA	Skin	NA	NA	NA	NA
			Cadmium	NA	NA	NA	NA	Kidney	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	GI Tract	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	GI Tract/Liver	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	Immune System	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	Metabolic	NA	NA	NA	NA
			Chemical Total	NA	NA	NA	NA		NA	NA	NA	NA
		Exposure Point Total					NA					NA
	Exposure Medium Total						NA					NA
Surface Soil Total							NA					NA
Air	Ambient Air	Ambient Air	**P/PCBs**									
		West End Landfill	PCBs, Total	NA	1.4E-08	NA	1.4E-08	NA	NA	NA	NA	NA
			Chemical Total	NA	1.4E-08	NA	1.4E-08		NA	NA	NA	NA
		Exposure Point Total					1.4E-08					NA
	Exposure Medium Total						1.4E-08					NA
Air Total							1.4E-08					NA
Receptor Total							1.4E-08					0.0E+00

Total Risk Across All Media = 1E-08

Total Hazard Across All Media = NA

TABLE B-9.11
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		West End Landfill	Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	NA	NA	NA	NA	Eye/Skin/Nails/Immune System	NA	NA	NA	NA
			Heptachlor epoxide	NA	NA	NA	NA	Liver	NA	NA	NA	NA
			Dioxin									
			Dioxin TEQ	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	NA	NA	NA	NA
			Antimony	NA	NA	NA	NA	Whole Body/Blood	NA	NA	NA	NA
			Arsenic	NA	NA	NA	NA	Skin	NA	NA	NA	NA
			Cadmium	NA	NA	NA	NA	Kidney	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	GI Tract	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	GI Tract/Liver	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	Immune System	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	Metabolic	NA	NA	NA	NA
			Chemical Total	NA	NA	NA	NA		NA	NA	NA	NA
		Exposure Point Total					NA					NA
	Exposure Medium Total						NA					NA
Surface Soil Total							NA					NA
Air	Ambient Air	Ambient Air	**P/PCBs**									
		West End Landfill	PCBs, Total	NA	6.6E-09	NA	6.6E-09	NA	NA	NA	NA	NA
			Chemical Total	NA	6.6E-09	NA	6.6E-09		NA	NA	NA	NA
		Exposure Point Total					6.6E-09					NA
	Exposure Medium Total						6.6E-09					NA
Air Total							6.6E-09					NA
Receptor Total							6.6E-09					NA

Total Risk Across All Media = 7E-09

Total Hazard Across All Media = NA

TABLE B-9.12
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	Off-site Residents
Receptor:	Child to Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic-Hazard Quotient					
				Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total
Air	Ambient Air	Ambient Air	**P/PCBs**											
			PCBs, Total	NA	NA	1.6E-06	NA	1.6E-06	NA	NA	NA	NA	NA	NA
			Chemical Total	NA	NA	1.6E-06	NA	1.6E-06		NA	NA	NA	NA	NA
		Exposure Point Total						1.6E-06						NA
	Exposure Medium Total							1.6E-06						NA
Air Total								1.6E-06						NA
Receptor Total								1.6E-06						NA

Total Risk Across All Media = 2E-06

Total Hazard Across All Media = NA

TABLE B-9.13
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	Off-site Residents
Receptor:	Child (0-6 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic-Hazard Quotient					
				Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total
Air	Ambient Air	Ambient Air	**P/PCBs**											
			PCBs, Total	NA	NA	1.0E-06	NA	1.0E-06	NA	NA	NA	NA	NA	NA
			Chemical Total	NA	NA	1.0E-06	NA	1.0E-06		NA	NA	NA	NA	NA
		Exposure Point Total						1.0E-06						NA
	Exposure Medium Total							1.0E-06						NA
Air Total								1.0E-06						NA
Receptor Total								1.0E-06						NA

Total Risk Across All Media = 1E-06

Total Hazard Across All Media = NA

TABLE B-9.14
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Off-site Residents
Receptor:	Child to Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic-Hazard Quotient					
				Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water	**VOCs**											
			1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	Adrenals	7.0E-02	4.9E-01	NA	1.8E-02	5.8E-01
			1,4-Dichlorobenzene	8.7E-07	7.9E-07	NA	2.1E-07	1.9E-06	NA	5.2E-03	4.6E-04	NA	8.4E-04	6.5E-03
			Chlorobenzene	NA	NA	NA	NA	NA	Liver	1.6E-02	1.4E-02	NA	1.8E-03	3.2E-02
			cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	Blood	6.4E-02	5.5E-02	NA	NA	1.2E-01
			Pentachlorophenol	3.5E-05	2.9E-05	NA	7.8E-05	1.4E-04	Liver/Kidney	4.2E-02	2.4E-02	NA	6.3E-02	1.3E-01
			Trichloroethylene	2.0E-05	2.2E-05	NA	1.4E-06	4.4E-05	Liver/Kidney/Fetus	7.2E-01	1.4E-02	NA	3.4E-02	7.7E-01
			SVOCs											
			2,4,6-Trichlorophenol	2.5E-06	2.1E-06	NA	4.9E-07	5.0E-06	NA	9.6E+00	5.5E+00	NA	1.3E+00	1.6E+01
			Indeno(1,2,3-cd)pyrene	8.0E-06	2.7E-06	NA	4.5E-05	5.6E-05	NA	NA	NA	NA	NA	NA
			P/PCBs											
			PCBs, Total	7.3E-02	NA	NA	3.1E-01	3.8E-01	Eye/Skin/Nails/Immune System	7.8E+03	NA	NA	2.3E+04	3.0E+04
			gamma-BHC	1.1E-05	1.0E-05	NA	6.6E-07	2.1E-05	Liver/Kidney	1.2E-01	7.5E-02	NA	5.0E-03	2.0E-01
			Methyl parathion	NA	NA	NA	NA	NA	Blood	1.9E+01	NA	NA	NA	1.9E+01
			Parathion	NA	NA	NA	NA	NA	NA	1.0E+02	NA	NA	5.0E+00	1.0E+02
			Dioxin											
			Dioxin TEQ	8.1E-06	NA	NA	NA	8.1E-06	NA	NA	NA	NA	NA	NA
			Inorganics											
			Antimony	NA	NA	NA	NA	NA	Whole Body/Blood	8.2E-01	NA	NA	2.1E-02	8.4E-01
			Arsenic	1.4E-04	NA	NA	7.7E-07	1.4E-04	Skin	1.3E+00	NA	NA	5.0E-03	1.3E+00
			Manganese	NA	NA	NA	NA	NA	CNS	5.9E-01	NA	NA	5.7E-02	6.5E-01
			Mercury	NA	NA	NA	NA	NA	Immune System	3.8E-01	7.7E-01	NA	1.5E-03	1.2E+00
			Chemical Total	7.3E-02	6.7E-05	NA	3.1E-01	3.8E-01		7.9E+03	7.0E+00	NA	2.3E+04	3.0E+04
		Exposure Point Total						3.8E-01						3.0E+04
	Exposure Medium Total							3.8E-01						3.0E+04
Groundwater Total								3.8E-01						3.0E+04
Air	Ambient Air	Ambient Air	**P/PCBs**											
			PCBs, Total	NA	NA	1.6E-06	NA	1.6E-06	NA	NA	NA	NA	NA	NA
			Chemical Total	NA	NA	1.6E-06	NA	1.6E-06		NA	NA	NA	NA	NA
		Exposure Point Total						1.6E-06						NA
	Exposure Medium Total							1.6E-06						NA
Air Total								1.6E-06						NA
Receptor Total								3.8E-01						3.0E+04

Total Risk Across All Media =	4E-01
Total Hazard Across All Media =	30,445
Total Liver HI Across All Media =	1
Total Eye HI Across All Media =	30,299
Total Adrenals HI Across All Media =	0.6
Total Nails HI Across All Media =	30,299
Total Blood HI Across All Media =	20
Total Whole Body HI Across All Media =	0.8
Total Skin HI Across All Media =	30,300
Total Kidney HI Across All Media =	1
Total CNS HI Across All Media =	0.7
Total Immune System HI Across All Media =	30,300

TABLE B-9.15
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Off-site Residents
Receptor:	Child (0-6 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic-Hazard Quotient					
				Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water	**VOCs**											
			1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	Adrenals	7.0E-02	7.0E+00	NA	3.1E-02	7.1E+00
			1,4-Dichlorobenzene	3.2E-07	2.8E-06	NA	8.9E-08	3.3E-06	NA	5.2E-03	6.6E-03	NA	1.4E-03	1.3E-02
			Chlorobenzene	NA	NA	NA	NA	NA	Liver	1.6E-02	2.0E-01	NA	3.0E-03	2.2E-01
			cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	Blood	6.4E-02	7.8E-01	NA	NA	8.5E-01
			Pentachlorophenol	1.3E-05	1.1E-04	NA	3.3E-05	1.5E-04	Liver/Kidney	4.2E-02	3.4E-01	NA	1.1E-01	4.9E-01
			Trichloroethylene	7.5E-06	7.9E-05	NA	5.9E-07	8.7E-05	Liver/Kidney/Fetus	7.2E-01	2.0E-01	NA	5.7E-02	9.8E-01
			SVOCs											
			2,4,6-Trichlorophenol	9.0E-07	7.4E-06	NA	2.1E-07	8.5E-06	NA	9.6E+00	7.9E+01	NA	2.2E+00	9.1E+01
			Indeno(1,2,3-cd)pyrene	2.9E-06	9.7E-06	NA	1.9E-05	3.2E-05	NA	NA	NA	NA	NA	NA
			P/PCBs											
			PCBs, Total	2.7E-02	NA	NA	1.3E-01	1.6E-01	Eye/Skin/Nails/Immune System	7.8E+03	NA	NA	3.9E+04	4.6E+04
			gamma-BHC	3.9E-06	3.6E-05	NA	2.8E-07	4.0E-05	Liver/Kidney	1.2E-01	1.1E+00	NA	8.5E-03	1.2E+00
			Methyl parathion	NA	NA	NA	NA	NA	Blood	1.9E+01	NA	NA	NA	1.9E+01
			Parathion	NA	NA	NA	NA	NA	NA	1.0E+02	NA	NA	8.6E+00	1.1E+02
			Dioxin											
			Dioxin TEQ	3.0E-06	NA	NA	NA	3.0E-06	NA	NA	NA	NA	NA	NA
			Inorganics											
			Antimony	NA	NA	NA	NA	NA	Whole Body/Blood	8.2E-01	NA	NA	3.6E-02	8.5E-01
			Arsenic	5.0E-05	NA	NA	3.3E-07	5.0E-05	Skin	1.3E+00	NA	NA	8.6E-03	1.3E+00
			Manganese	NA	NA	NA	NA	NA	CNS	5.9E-01	NA	NA	9.8E-02	6.9E-01
			Mercury	NA	NA	NA	NA	NA	Immune System	3.8E-01	1.1E+01	NA	2.6E-03	1.1E+01
			Chemical Total	2.7E-02	2.4E-04	NA	1.3E-01	1.6E-01		7.9E+03	1.0E+02	NA	3.9E+04	4.7E+04
		Exposure Point Total						1.6E-01						4.7E+04
	Exposure Medium Total							1.6E-01						4.7E+04
Groundwater Total								1.6E-01						4.7E+04
Air	Ambient Air	Ambient Air	**P/PCBs**											
			PCBs, Total	NA	NA	1.0E-06	NA	1.0E-06	NA	NA	NA	NA	NA	NA
			Chemical Total	NA	NA	1.0E-06	NA	1.0E-06		NA	NA	NA	NA	NA
		Exposure Point Total						1.0E-06						NA
	Exposure Medium Total							1.0E-06						NA
Air Total								1.0E-06						NA
Receptor Total								1.6E-01						4.7E+04

Total Risk Across All Media =	2E-01
Total Hazard Across All Media =	46,553
Total Liver HI Across All Media =	3
Total Eye HI Across All Media =	46,309
Total Adrenals HI Across All Media =	7
Total Nails HI Across All Media =	46,309
Total Blood HI Across All Media =	21
Total Whole Body HI Across All Media =	0.9
Total Skin HI Across All Media =	46,311
Total Kidney HI Across All Media =	3
Total CNS HI Across All Media =	0.7
Total Immune System HI Across All Media =	46,321

TABLE B-9.16
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Operations Area Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic-Hazard Quotient					
				Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water	**VOCs**											
			1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	Adrenals	1.1E-02	NA	NA	NA	1.1E-02
			1,4-Dichlorobenzene	2.0E-07	NA	NA	NA	2.0E-07	NA	8.0E-04	NA	NA	NA	8.0E-04
			Chlorobenzene	NA	NA	NA	NA	NA	Liver	2.5E-03	NA	NA	NA	2.5E-03
			cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	Blood	9.8E-03	NA	NA	NA	9.8E-03
			Pentachlorophenol	8.3E-06	NA	NA	NA	8.3E-06	Liver/Kidney	6.4E-03	NA	NA	NA	6.4E-03
			Trichloroethylene	4.8E-06	NA	NA	NA	4.8E-06	Liver/Kidney/Fetus	1.1E-01	NA	NA	NA	1.1E-01
			SVOCs											
			2,4,6-Trichlorophenol	5.8E-07	NA	NA	NA	5.8E-07	NA	1.5E+00	NA	NA	NA	1.5E+00
			Indeno(1,2,3-cd)pyrene	1.9E-06	NA	NA	NA	1.9E-06	NA	NA	NA	NA	NA	NA
			P/PCBs											
			PCBs, Total	1.7E-02	NA	NA	NA	1.7E-02	Eye/Skin/Nails/Immune System	1.2E+03	NA	NA	NA	1.2E+03
			gamma-BHC	2.5E-06	NA	NA	NA	2.5E-06	Liver/Kidney	1.8E-02	NA	NA	NA	1.8E-02
			Methyl parathion	NA	NA	NA	NA	NA	Blood	2.9E+00	NA	NA	NA	2.9E+00
			Parathion	NA	NA	NA	NA	NA	NA	1.5E+01	NA	NA	NA	1.5E+01
			Dioxin											
			Dioxin TEQ	1.9E-06	NA	NA	NA	1.9E-06	NA	NA	NA	NA	NA	NA
			Inorganics											
			Antimony	NA	NA	NA	NA	NA	Whole Body/Blood	1.2E-01	NA	NA	NA	1.2E-01
			Arsenic	3.2E-05	NA	NA	NA	3.2E-05	Skin	2.0E-01	NA	NA	NA	2.0E-01
			Manganese	NA	NA	NA	NA	NA	CNS	9.1E-02	NA	NA	NA	9.1E-02
			Mercury	NA	NA	NA	NA	NA	Immune System	5.8E-02	NA	NA	NA	5.8E-02
			Chemical Total	1.7E-02	NA	NA	NA	1.7E-02		1.2E+03	NA	NA	NA	1.2E+03
		Exposure Point Total						1.7E-02						1.2E+03
	Exposure Medium Total							1.7E-02						1.2E+03
Groundwater Total								1.7E-02						1.2E+03
Receptor Total								1.7E-02						1.2E+03

Total Risk Across All Media =	2E-02
Total Hazard Across All Media =	1,212
Total Liver HI Across All Media =	0.1
Total Eye HI Across All Media =	1,191
Total Adrenals HI Across All Media =	0.01
Total Nails HI Across All Media =	1,191
Total Blood HI Across All Media =	3
Total Whole Body HI Across All Media =	0.1
Total Skin HI Across All Media =	1,191
Total Kidney HI Across All Media =	0.1
Total CNS HI Across All Media =	0.09
Total Immune System HI Across All Media =	1,191

TABLE B-9.17
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic-Hazard Quotient					
				Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water	**VOCs**											
			1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	Adrenals	1.0E-03	NA	NA	NA	1.0E-03
			1,4-Dichlorobenzene	2.0E-08	NA	NA	NA	2.0E-08	NA	7.6E-05	NA	NA	NA	7.6E-05
			Chlorobenzene	NA	NA	NA	NA	NA	Liver	2.4E-04	NA	NA	NA	2.4E-04
			cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	Blood	9.4E-04	NA	NA	NA	9.4E-04
			Pentachlorophenol	7.9E-07	NA	NA	NA	7.9E-07	Liver/Kidney	6.2E-04	NA	NA	NA	6.2E-04
			Trichloroethylene	4.6E-07	NA	NA	NA	4.6E-07	Liver/Kidney/Fetus	1.1E-02	NA	NA	NA	1.1E-02
			SVOCs											
			2,4,6-Trichlorophenol	5.5E-08	NA	NA	NA	5.5E-08	NA	1.4E-01	NA	NA	NA	1.4E-01
			Indeno(1,2,3-cd)pyrene	1.8E-07	NA	NA	NA	1.8E-07	NA	NA	NA	NA	NA	NA
			P/PCBs											
			PCBs, Total	1.6E-03	NA	NA	NA	1.6E-03	Eye/Skin/Nails/Immune System	1.1E+02	NA	NA	NA	1.1E+02
			gamma-BHC	2.4E-07	NA	NA	NA	2.4E-07	Liver/Kidney	1.7E-03	NA	NA	NA	1.7E-03
			Methyl parathion	NA	NA	NA	NA	NA	Blood	2.8E-01	NA	NA	NA	2.8E-01
			Parathion	NA	NA	NA	NA	NA	NA	1.5E+00	NA	NA	NA	1.5E+00
			Dioxin											
			Dioxin TEQ	1.8E-07	NA	NA	NA	1.8E-07	NA	NA	NA	NA	NA	NA
			Inorganics											
			Antimony	NA	NA	NA	NA	NA	Whole Body/Blood	1.2E-02	NA	NA	NA	1.2E-02
			Arsenic	3.1E-06	NA	NA	NA	3.1E-06	Skin	1.9E-02	NA	NA	NA	1.9E-02
			Manganese	NA	NA	NA	NA	NA	CNS	8.7E-03	NA	NA	NA	8.7E-03
			Mercury	NA	NA	NA	NA	NA	Immune System	5.6E-03	NA	NA	NA	5.6E-03
			Chemical Total	1.6E-03	NA	NA	NA	1.6E-03		1.2E+02	NA	NA	NA	1.2E+02
		Exposure Point Total						1.6E-03						1.2E+02
	Exposure Medium Total							1.6E-03						1.2E+02
Groundwater Total								1.6E-03						1.2E+02
Receptor Total								1.6E-03						1.2E+02

Total Risk Across All Media = 2E-03

Total Hazard Across All Media = 116

Total Liver HI Across All Media =	0.01
Total Eye HI Across All Media =	114
Total Adrenals HI Across All Media =	0.001
Total Nails HI Across All Media =	114
Total Blood HI Across All Media =	0.3
Total Whole Body HI Across All Media =	0.01
Total Skin HI Across All Media =	114
Total Kidney HI Across All Media =	0.01
Total CNS HI Across All Media =	0.01
Total Immune System HI Across All Media =	114

TABLE B-10.1
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	Operations Area Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		Facility Area	Benzo(a)pyrene	2.4E-06	NA	2.9E-06	5.3E-06	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	7.9E-07	NA	9.4E-07	1.7E-06	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	3.9E-05	NA	7.2E-05	1.1E-04	Eye/Skin/Nails/Immune System	2.7E+00	NA	5.0E+00	7.8E+00
			Dioxin									
			Dioxin TEQ	2.0E-05	NA	5.4E-06	2.5E-05	NA	NA	NA	NA	NA
			Inorganics									
			Arsenic	3.1E-05	NA	2.8E-05	5.9E-05	Skin	1.9E-01	NA	1.7E-01	3.7E-01
			Chemical Total	9.4E-05	NA	1.1E-04	2.0E-04		3.0E+00	NA	5.2E+00	8.2E+00
		Exposure Point Total					2.0E-04					8.2E+00
	Exposure Medium Total						2.0E-04					8.2E+00
Surface Soil Total							2.0E-04					8.2E+00
Air	Ambient Air	Ambient Air	**P/PCBs**									
		Facility Area	PCBs, Total	NA	1.1E-06	NA	1.1E-06	NA	NA	NA	NA	NA
			Chemical Total	NA	1.1E-06	NA	1.1E-06		NA	NA	NA	NA
		Exposure Point Total					1.1E-06					NA
	Exposure Medium Total						1.1E-06					NA
Air Total							1.1E-06					NA
Receptor Total							2.0E-04					8.2E+00

Total Risk Across All Media =	2E-04
Total Hazard Across All Media =	8
Total Liver HI Across All Media =	0.03
Total Eye HI Across All Media =	8
Total GI Tract HI Across All Media =	0.03
Total Nails HI Across All Media =	8
Total Blood HI Across All Media =	0.01
Total Whole Body HI Across All Media =	0.01
Total Skin HI Across All Media =	8
Total Kidney HI Across All Media =	0.003
Total CNS HI Across All Media =	0.01
Total Immune System HI Across All Media =	8
Total Metabolic HI Across All Media =	0.02

TABLE B-10.2
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Operations Area Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		Facility Area	Benzo(a)pyrene	4.8E-06	NA	4.2E-06	9.0E-06	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	5.4E-07	NA	4.6E-07	1.0E-06	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	1.6E-06	NA	1.4E-06	2.9E-06	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	4.2E-03	NA	1.7E-03	5.9E-03	Eye/Skin/Nails/Immune System	3.0E+02	NA	1.2E+02	4.1E+02
			Heptachlor epoxide	1.2E-06	NA	NA	1.2E-06	Liver	2.9E-02	NA	NA	2.9E-02
			Dioxin									
			Dioxin TEQ	4.0E-05	NA	7.8E-06	4.7E-05	NA	NA	NA	NA	NA
			Inorganics									
			Arsenic	2.0E-04	NA	4.0E-05	2.4E-04	Skin	1.3E+00	NA	2.5E-01	1.5E+00
			Chemical Total	4.5E-03	NA	1.7E-03	6.2E-03		3.0E+02	NA	1.2E+02	4.2E+02
		Exposure Point Total					6.2E-03					4.2E+02
	Exposure Medium Total						6.2E-03					4.2E+02
Surface Soil Total							6.2E-03					4.2E+02
Air	Ambient Air	Ambient Air	**P/PCBs**									
		Facility Area	PCBs, Total	NA	1.1E-06	NA	1.1E-06	NA	NA	NA	NA	NA
			Chemical Total	NA	1.1E-06	NA	1.1E-06		NA	NA	NA	NA
		Exposure Point Total					1.1E-06					NA
	Exposure Medium Total						1.1E-06					NA
Air Total							1.1E-06					NA
Receptor Total							6.2E-03					4.2E+02

Total Risk Across All Media = 6E-03

Total Hazard Across All Media = 416

Total Liver HI Across All Media =	0.06
Total Eye HI Across All Media =	414
Total GI Tract HI Across All Media =	0.06
Total Nails HI Across All Media =	414
Total Blood HI Across All Media =	0.02
Total Whole Body HI Across All Media =	0.02
Total Skin HI Across All Media =	415
Total Kidney HI Across All Media =	0.006
Total CNS HI Across All Media =	0.02
Total Immune System HI Across All Media =	414
Total Metabolic HI Across All Media =	0.04

TABLE B-10.3
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		Facility Area	Benzo(a)pyrene	4.7E-07	NA	1.8E-06	2.3E-06	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	2.5E-05	NA	4.5E-05	7.0E-05	Eye/Skin/Nails/Immune System	1.8E+00	NA	3.1E+00	4.9E+00
			Dioxin									
			Dioxin TEQ	3.8E-06	NA	3.4E-06	7.2E-06	NA	NA	NA	NA	NA
			Inorganics									
			Arsenic	2.0E-05	NA	1.7E-05	3.7E-05	Skin	1.2E-01	NA	1.1E-01	2.3E-01
			Chemical Total	4.9E-05	NA	6.8E-05	1.2E-04		1.9E+00	NA	3.2E+00	5.1E+00
		Exposure Point Total					1.2E-04					5.1E+00
	Exposure Medium Total						1.2E-04					5.1E+00
Surface Soil Total							1.2E-04					5.1E+00
Receptor Total							1.2E-04					5.1E+00

Total Risk Across All Media =	1E-04
Total Hazard Across All Media =	5
Total Liver HI Across All Media =	0.006
Total Eye HI Across All Media =	5
Total GI Tract HI Across All Media =	0.006
Total Nails HI Across All Media =	5
Total Blood HI Across All Media =	0.002
Total Whole Body HI Across All Media =	0.002
Total Skin HI Across All Media =	5
Total Kidney HI Across All Media =	0.001
Total CNS HI Across All Media =	0.002
Total Immune System HI Across All Media =	5
Total Metabolic HI Across All Media =	0.004

TABLE B-10.4
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		Facility Area	Benzo(a)pyrene	4.7E-07	NA	1.8E-06	2.3E-06	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	4.1E-04	NA	7.2E-04	1.1E-03	Eye/Skin/Nails/Immune System	2.8E+01	NA	5.1E+01	7.9E+01
			Dioxin									
			Dioxin TEQ	3.8E-06	NA	3.4E-06	7.2E-06	NA	NA	NA	NA	NA
			Inorganics									
			Arsenic	2.0E-05	NA	1.7E-05	3.7E-05	Skin	1.2E-01	NA	1.1E-01	2.3E-01
			Chemical Total	4.3E-04	NA	7.5E-04	1.2E-03		2.9E+01	NA	5.1E+01	7.9E+01
		Exposure Point Total					1.2E-03					7.9E+01
	Exposure Medium Total						1.2E-03					7.9E+01
Surface Soil Total							1.2E-03					7.9E+01
Receptor Total							1.2E-03					7.9E+01

Total Risk Across All Media =	1E-03
Total Hazard Across All Media =	79
Total Liver HI Across All Media =	0.006
Total Eye HI Across All Media =	79
Total GI Tract HI Across All Media =	0.006
Total Nails HI Across All Media =	79
Total Blood HI Across All Media =	0.002
Total Whole Body HI Across All Media =	0.002
Total Skin HI Across All Media =	79
Total Kidney HI Across All Media =	0.001
Total CNS HI Across All Media =	0.002
Total Immune System HI Across All Media =	79
Total Metabolic HI Across All Media =	0.004

TABLE B-10.5
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	Trespasser
Receptor:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		Facility Area	Benzo(a)pyrene	6.0E-07	NA	4.4E-07	1.0E-06	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	3.3E-05	NA	1.1E-05	4.3E-05	Eye/Skin/Nails/Immune System	5.7E+00	NA	1.9E+00	7.6E+00
			Dioxin									
			Dioxin TEQ	4.9E-06	NA	8.3E-07	5.8E-06	NA	NA	NA	NA	NA
			Inorganics									
			Arsenic	2.5E-05	NA	4.3E-06	3.0E-05	Skin	4.0E-01	NA	6.6E-02	4.6E-01
			Chemical Total	6.4E-05	NA	1.7E-05	8.1E-05		6.1E+00	NA	2.0E+00	8.1E+00
		Exposure Point Total					8.1E-05					8.1E+00
	Exposure Medium Total						8.1E-05					8.1E+00
Surface Soil Total							8.1E-05					8.1E+00
Receptor Total							8.1E-05					8.1E+00

Total Risk Across All Media =	8E-05
Total Hazard Across All Media =	8
Total Liver HI Across All Media =	0.02
Total Eye HI Across All Media =	8
Total GI Tract HI Across All Media =	0.02
Total Nails HI Across All Media =	8
Total Blood HI Across All Media =	0.007
Total Whole Body HI Across All Media =	0.007
Total Skin HI Across All Media =	8
Total Kidney HI Across All Media =	0.002
Total CNS HI Across All Media =	0.008
Total Immune System HI Across All Media =	8
Total Metabolic HI Across All Media =	0.01

TABLE B-10.6
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Trespasser
Receptor:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		Facility Area	Benzo(a)pyrene	6.0E-07	NA	4.4E-07	1.0E-06	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	5.3E-04	NA	1.8E-04	7.0E-04	Eye/Skin/Nails/Immune System	9.2E+01	NA	3.1E+01	1.2E+02
			Dioxin									
			Dioxin TEQ	4.9E-06	NA	8.3E-07	5.8E-06	NA	NA	NA	NA	NA
			Inorganics									
			Arsenic	2.5E-05	NA	4.3E-06	3.0E-05	Skin	4.0E-01	NA	6.6E-02	4.6E-01
			Chemical Total	5.6E-04	NA	1.8E-04	7.4E-04		9.3E+01	NA	3.1E+01	1.2E+02
		Exposure Point Total					7.4E-04					1.2E+02
	Exposure Medium Total						7.4E-04					1.2E+02
Surface Soil Total							7.4E-04					1.2E+02
Receptor Total							7.4E-04					1.2E+02

Total Risk Across All Media =	7E-04
Total Hazard Across All Media =	124
Total Liver HI Across All Media =	0.02
Total Eye HI Across All Media =	123
Total GI Tract HI Across All Media =	0.02
Total Nails HI Across All Media =	123
Total Blood HI Across All Media =	0.007
Total Whole Body HI Across All Media =	0.007
Total Skin HI Across All Media =	124
Total Kidney HI Across All Media =	0.002
Total CNS HI Across All Media =	0.008
Total Immune System HI Across All Media =	123
Total Metabolic HI Across All Media =	0.01

TABLE B-10.7
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	Construction Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface/ Subsurface Soil	Surface Soil Subsurface Soil	Surface Soil Subsurface Soil Facility Area	**P/PCBs**									
			PCBs, Total	1.2E-04	NA	2.2E-05	1.4E-04	Eye/Skin/Nails/Immune System	2.1E+02	NA	3.8E+01	2.5E+02
			Dioxin									
			Dioxin TEQ	2.1E-06	NA	1.9E-07	2.3E-06	NA	NA	NA	NA	NA
			Inorganics									
			Arsenic	4.1E-06	NA	3.7E-07	4.5E-06	Skin	6.4E-01	NA	5.7E-02	6.9E-01
			Chemical Total	1.3E-04	NA	2.2E-05	1.5E-04		2.1E+02	NA	3.8E+01	2.5E+02
		Exposure Point Total					1.5E-04					2.5E+02
	Exposure Medium Total						1.5E-04					2.5E+02
Surface/Subsurface Soil Total							1.5E-04					2.5E+02
Air	Ambient Air	Ambient Air Facility Area	**P/PCBs**									
			PCBs, Total	NA	2.8E-08	NA	2.8E-08	NA	NA	NA	NA	NA
			Chemical Total	NA	2.8E-08	NA	2.8E-08		NA	NA	NA	NA
		Exposure Point Total					2.8E-08					NA
	Exposure Medium Total						2.8E-08					NA
Air Total							2.8E-08					NA
Receptor Total							1.5E-04					2.5E+02

Total Risk Across All Media =	1E-04
Total Hazard Across All Media =	250
Total Liver HI Across All Media =	0.09
Total Eye HI Across All Media =	249
Total GI Tract HI Across All Media =	0.09
Total Nails HI Across All Media =	249
Total Blood HI Across All Media =	0.03
Total Whole Body HI Across All Media =	0.03
Total Skin HI Across All Media =	250
Total Kidney HI Across All Media =	0.002
Total CNS HI Across All Media =	0.05
Total Immune System HI Across All Media =	249
Total Body and Organ Weight HI Across All Media =	0.06
Total Metabolic HI Across All Media =	0.06

TABLE B-10.8
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**P/PCBs**									
		South Landfill	PCBs, Total	9.2E-07	NA	1.6E-06	2.5E-06	Eye/Skin/Nails/Immune System	6.4E-02	NA	1.1E-01	1.8E-01
			Chemical Total	9.2E-07	NA	1.6E-06	2.5E-06		6.4E-02	NA	1.1E-01	1.8E-01
		Exposure Point Total					2.5E-06					1.8E-01
	Exposure Medium Total						2.5E-06					1.8E-01
Surface Soil Total							2.5E-06					1.8E-01
Receptor Total							2.6E-06					1.8E-01

Total Risk Across All Media =	3E-06
Total Hazard Across All Media =	0.2
Total Eye HI Across All Media =	0.2
Total Nails HI Across All Media =	0.2
Total Skin HI Across All Media =	0.2
Total Immune System HI Across All Media =	0.2

TABLE B-10.9
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**P/PCBs**									
		South Landfill	PCBs, Total	1.2E-06	NA	4.0E-07	1.6E-06	Eye/Skin/Nails/Immune System	2.1E-01	NA	7.0E-02	2.8E-01
			Chemical Total	1.2E-06	NA	4.0E-07	1.6E-06		2.1E-01	NA	7.0E-02	2.8E-01
		Exposure Point Total					1.6E-06					2.8E-01
	Exposure Medium Total						1.6E-06					2.8E-01
Surface Soil Total							1.6E-06					2.8E-01
Receptor Total							1.6E-06					2.8E-01

Total Risk Across All Media =	2E-06
Total Hazard Across All Media =	0.3
Total Eye HI Across All Media =	0.3
Total Nails HI Across All Media =	0.3
Total Skin HI Across All Media =	0.3
Total Immune System HI Across All Media =	0.3

TABLE B-10.10
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil West End Landfill	Surface Soil	Surface Soil	Chemical Total	NA	NA	NA	NA		NA	NA	NA	NA
		Exposure Point Total					NA					NA
	Exposure Medium Total						NA					NA
Surface Soil Total							NA					NA
Receptor Total							1.4E-08					NA

Total Risk Across All Media = 1E-08

Total Hazard Across All Media = NA

TABLE B-10.11
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil West End Landfill	Surface Soil	Surface Soil	Chemical Total	NA	NA	NA	NA		NA	NA	NA	NA
		Exposure Point Total					NA					NA
	Exposure Medium Total						NA					NA
Surface Soil Total							NA					NA
Receptor Total							6.6E-09					NA

Total Risk Across All Media = 7E-09

Total Hazard Across All Media = NA

TABLE B-10.12
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	Off-site Residents
Receptor:	Child to Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic-Hazard Quotient					
				Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total
Air	Ambient Air	Ambient Air	**P/PCBs**											
			PCBs, Total	NA	NA	1.6E-06	NA	1.6E-06	NA	NA	NA	NA	NA	NA
			Chemical Total	NA	NA	1.6E-06	NA	1.6E-06		NA	NA	NA	NA	NA
		Exposure Point Total						1.6E-06						NA
	Exposure Medium Total							1.6E-06						NA
Air Total								1.6E-06						NA
Receptor Total								1.6E-06						NA

Total Risk Across All Media = 2E-06

Total Hazard Across All Media = NA

TABLE B-10.13
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	Off-site Residents
Receptor:	Child (0-6 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic-Hazard Quotient					
				Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total
Air	Ambient Air	Ambient Air	**P/PCBs**											
			PCBs, Total	NA	NA	1.0E-06	NA	1.0E-06	NA	NA	NA	NA	NA	NA
			Chemical Total	NA	NA	1.0E-06	NA	1.0E-06		NA	NA	NA	NA	NA
		Exposure Point Total						1.0E-06						NA
	Exposure Medium Total							1.0E-06						NA
Air Total								1.0E-06						NA
Receptor Total								1.0E-06						NA

Total Risk Across All Media = 1E-06

Total Hazard Across All Media = NA

TABLE B-10.14
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Off-site Residents
Receptor:	Child to Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic-Hazard Quotient					
				Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water	**VOCs**											
			1,4-Dichlorobenzene	8.7E-07	7.9E-07	NA	2.1E-07	1.9E-06	NA	5.2E-03	4.6E-04	NA	8.4E-04	6.5E-03
			Pentachlorophenol	3.5E-05	2.9E-05	NA	7.8E-05	1.4E-04	Liver/Kidney	4.2E-02	2.4E-02	NA	6.3E-02	1.3E-01
			Trichloroethylene	2.0E-05	2.2E-05	NA	1.4E-06	4.4E-05	Liver/Kidney/Fetus	7.2E-01	1.4E-02	NA	3.4E-02	7.7E-01
			SVOCs											
			2,4,6-Trichlorophenol	2.5E-06	2.1E-06	NA	4.9E-07	5.0E-06	NA	9.6E+00	5.5E+00	NA	1.3E+00	1.6E+01
			Indeno(1,2,3-cd)pyrene	8.0E-06	2.7E-06	NA	4.5E-05	5.6E-05	NA	NA	NA	NA	NA	NA
			P/PCBs											
			PCBs, Total	7.3E-02	NA	NA	3.1E-01	3.8E-01	Eye/Skin/Nails/Immune System	7.8E+03	NA	NA	2.3E+04	3.0E+04
			Methyl parathion	NA	NA	NA	NA	NA	Blood	1.9E+01	NA	NA	NA	1.9E+01
			Parathion	NA	NA	NA	NA	NA	NA	1.0E+02	NA	NA	5.0E+00	1.0E+02
			Dioxin											
			Dioxin TEQ	8.1E-06	NA	NA	NA	8.1E-06	NA	NA	NA	NA	NA	NA
			Inorganics											
			Arsenic	1.4E-04	NA	NA	7.7E-07	1.4E-04	Skin	1.3E+00	NA	NA	5.0E-03	1.3E+00
			Chemical Total	7.3E-02	6.7E-05	NA	3.1E-01	3.8E-01		7.9E+03	7.0E+00	NA	2.3E+04	3.0E+04
		Exposure Point Total						3.8E-01						3.0E+04
	Exposure Medium Total							3.8E-01						3.0E+04
Groundwater Total								3.8E-01						3.0E+04
Air	Ambient Air	Ambient Air	**P/PCBs**											
			PCBs, Total	NA	NA	1.6E-06	NA	1.6E-06	NA	NA	NA	NA	NA	NA
			Chemical Total	NA	NA	1.6E-06	NA	1.6E-06		NA	NA	NA	NA	NA
		Exposure Point Total						1.6E-06						NA
	Exposure Medium Total							1.6E-06						NA
Air Total								1.6E-06						NA
Receptor Total								3.8E-01						3.0E+04

Total Risk Across All Media =	4E-01
Total Hazard Across All Media =	30,445
Total Liver HI Across All Media =	1
Total Eye HI Across All Media =	30,299
Total Adrenals HI Across All Media =	0.6
Total Nails HI Across All Media =	30,299
Total Blood HI Across All Media =	20
Total Whole Body HI Across All Media =	0.8
Total Skin HI Across All Media =	30,300
Total Kidney HI Across All Media =	1
Total CNS HI Across All Media =	0.7
Total Immune System HI Across All Media =	30,300

TABLE B-10.15
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Off-site Residents
Receptor:	Child (0-6 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic-Hazard Quotient					
				Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water	**VOCs**											
			1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	Adrenals	7.0E-02	7.0E+00	NA	3.1E-02	7.1E+00
			1,4-Dichlorobenzene	3.2E-07	2.8E-06	NA	8.9E-08	3.3E-06	NA	5.2E-03	6.6E-03	NA	1.4E-03	1.3E-02
			Pentachlorophenol	1.3E-05	1.1E-04	NA	3.3E-05	1.5E-04	Liver/Kidney	4.2E-02	3.4E-01	NA	1.1E-01	4.9E-01
			Trichloroethylene	7.5E-06	7.9E-05	NA	5.9E-07	8.7E-05	Liver/Kidney/Fetus	7.2E-01	2.0E-01	NA	5.7E-02	9.8E-01
			SVOCs											
			2,4,6-Trichlorophenol	9.0E-07	7.4E-06	NA	2.1E-07	8.5E-06	NA	9.6E+00	7.9E+01	NA	2.2E+00	9.1E+01
			Indeno(1,2,3-cd)pyrene	2.9E-06	9.7E-06	NA	1.9E-05	3.2E-05	NA	NA	NA	NA	NA	NA
			P/PCBs											
			PCBs, Total	2.7E-02	NA	NA	1.3E-01	1.6E-01	Eye/Skin/Nails/Immune System	7.8E+03	NA	NA	3.9E+04	4.6E+04
			gamma-BHC	3.9E-06	3.6E-05	NA	2.8E-07	4.0E-05	Liver/Kidney	1.2E-01	1.1E+00	NA	8.5E-03	1.2E+00
			Methyl parathion	NA	NA	NA	NA	NA	Blood	1.9E+01	NA	NA	NA	1.9E+01
			Parathion	NA	NA	NA	NA	NA	NA	1.0E+02	NA	NA	8.6E+00	1.1E+02
			Dioxin											
			Dioxin TEQ	3.0E-06	NA	NA	NA	3.0E-06	NA	NA	NA	NA	NA	NA
			Inorganics											
			Arsenic	5.0E-05	NA	NA	3.3E-07	5.0E-05	Skin	1.3E+00	NA	NA	8.6E-03	1.3E+00
			Mercury	NA	NA	NA	NA	NA	Immune System	3.8E-01	1.1E+01	NA	2.6E-03	1.1E+01
			Chemical Total	2.7E-02	2.4E-04	NA	1.3E-01	1.6E-01		7.9E+03	1.0E+02	NA	3.9E+04	4.7E+04
		Exposure Point Total						1.6E-01						4.7E+04
	Exposure Medium Total							1.6E-01						4.7E+04
Groundwater Total								1.6E-01						4.7E+04
Air	Ambient Air	Ambient Air	**P/PCBs**											
			PCBs, Total	NA	NA	1.0E-06	NA	1.0E-06	NA	NA	NA	NA	NA	NA
			Chemical Total	NA	NA	1.0E-06	NA	1.0E-06		NA	NA	NA	NA	NA
		Exposure Point Total						1.0E-06						NA
	Exposure Medium Total							1.0E-06						NA
Air Total								1.0E-06						NA
Receptor Total								1.6E-01						4.7E+04

Total Risk Across All Media =	2E-01
Total Hazard Across All Media =	46,553
Total Liver HI Across All Media =	3
Total Eye HI Across All Media =	46,309
Total Adrenals HI Across All Media =	7
Total Nails HI Across All Media =	46,309
Total Blood HI Across All Media =	21
Total Whole Body HI Across All Media =	0.9
Total Skin HI Across All Media =	46,311
Total Kidney HI Across All Media =	3
Total CNS HI Across All Media =	0.7
Total Immune System HI Across All Media =	46,321

TABLE B-10.16
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Operations Area Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic-Hazard Quotient					
				Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water	**VOCs**											
			Pentachlorophenol	8.3E-06	NA	NA	NA	8.3E-06	Liver/Kidney	6.4E-03	NA	NA	NA	6.4E-03
			Trichloroethylene	4.8E-06	NA	NA	NA	4.8E-06	Liver/Kidney/Fetus	1.1E-01	NA	NA	NA	1.1E-01
			SVOCs											
			2,4,6-Trichlorophenol	5.8E-07	NA	NA	NA	5.8E-07	NA	1.5E+00	NA	NA	NA	1.5E+00
			Indeno(1,2,3-cd)pyrene	1.9E-06	NA	NA	NA	1.9E-06	NA	NA	NA	NA	NA	NA
			P/PCBs											
			PCBs, Total	1.7E-02	NA	NA	NA	1.7E-02	Eye/Skin/Nails/Immune System	1.2E+03	NA	NA	NA	1.2E+03
			Methyl parathion	NA	NA	NA	NA	NA	Blood	2.9E+00	NA	NA	NA	2.9E+00
			Parathion	NA	NA	NA	NA	NA	NA	1.5E+01	NA	NA	NA	1.5E+01
			Dioxin											
			Dioxin TEQ	1.9E-06	NA	NA	NA	1.9E-06	NA	NA	NA	NA	NA	NA
			Inorganics											
			Arsenic	3.2E-05	NA	NA	NA	3.2E-05	Skin	2.0E-01	NA	NA	NA	2.0E-01
			Chemical Total	1.7E-02	NA	NA	NA	1.7E-02		1.2E+03	NA	NA	NA	1.2E+03
		Exposure Point Total						1.7E-02						1.2E+03
	Exposure Medium Total							1.7E-02						1.2E+03
Groundwater Total								1.7E-02						1.2E+03
Receptor Total								1.7E-02						1.2E+03

Total Risk Across All Media = 2E-02

Total Hazard Across All Media = 1,212

Total Liver HI Across All Media =	0.1
Total Eye HI Across All Media =	1,191
Total Adrenals HI Across All Media =	0.01
Total Nails HI Across All Media =	1,191
Total Blood HI Across All Media =	3
Total Whole Body HI Across All Media =	0.1
Total Skin HI Across All Media =	1,191
Total Kidney HI Across All Media =	0.1
Total CNS HI Across All Media =	0.09
Total Immune System HI Across All Media =	1,191

TABLE B-10.17
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic-Hazard Quotient					
				Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water	**VOCs**											
			Pentachlorophenol	7.9E-07	NA	NA	NA	7.9E-07	Liver/Kidney	6.2E-04	NA	NA	NA	6.2E-04
			Trichloroethylene	4.6E-07	NA	NA	NA	4.6E-07	Liver/Kidney/Fetus	1.1E-02	NA	NA	NA	1.1E-02
			SVOCs											
			2,4,6-Trichlorophenol	5.5E-08	NA	NA	NA	5.5E-08	NA	1.4E-01	NA	NA	NA	1.4E-01
			Indeno(1,2,3-cd)pyrene	1.8E-07	NA	NA	NA	1.8E-07	NA	NA	NA	NA	NA	NA
			P/PCBs											
			PCBs, Total	1.6E-03	NA	NA	NA	1.6E-03	Eye/Skin/Nails/Immune System	1.1E+02	NA	NA	NA	1.1E+02
			Methyl parathion	NA	NA	NA	NA	NA	Blood	2.8E-01	NA	NA	NA	2.8E-01
			Parathion	NA	NA	NA	NA	NA	NA	1.5E+00	NA	NA	NA	1.5E+00
			Dioxin											
			Dioxin TEQ	1.8E-07	NA	NA	NA	1.8E-07	NA	NA	NA	NA	NA	NA
			Inorganics											
			Arsenic	3.1E-06	NA	NA	NA	3.1E-06	Skin	1.9E-02	NA	NA	NA	1.9E-02
			Chemical Total	1.6E-03	NA	NA	NA	1.6E-03		1.2E+02	NA	NA	NA	1.2E+02
		Exposure Point Total						1.6E-03						1.2E+02
	Exposure Medium Total							1.6E-03						1.2E+02
Groundwater Total								1.6E-03						1.2E+02
Receptor Total								1.6E-03						1.2E+02

Total Risk Across All Media = 2E-03

Total Hazard Across All Media = 116

Total Liver HI Across All Media =	0.01
Total Eye HI Across All Media =	114
Total Adrenals HI Across All Media =	0.001
Total Nails HI Across All Media =	114
Total Blood HI Across All Media =	0.3
Total Whole Body HI Across All Media =	0.01
Total Skin HI Across All Media =	114
Total Kidney HI Across All Media =	0.01
Total CNS HI Across All Media =	0.01
Total Immune System HI Across All Media =	114

Appendix C

ProUCL Output

List of ProUCL Output Included in Appendix C
Anniston PCB Site, Operable Unit 3

Surface Soil (Current Land-use Scenario)
- PCBs (Facility Area)

Surface Soil (Future Land-use Scenario)
- PCBs (Facility Area)

Subsurface Soil (Current and Future Land-use Scenario)
- PCBs (Facility Area)
- Arsenic (Facility Area)
- Barium (Facility Area)
- Cadmium (Facility Area)
- Chromium (Facility Area)
- Lead (Facility Area)
- Manganese (Facility Area)
- Mercury (Facility Area)
- Nickel (Facility Area)
- Vanadium (Facility Area)

Surface Soil (Current and Future Land-use Scenario)
- PCBs (South Landfill)

Groundwater
- Chlorobenzene
- PCBs
- Mercury

Ambient Air
- PCBs (South Landfill)
- PCBs (West End Landfill)
- PCBs (All Locations)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	F:\All Works\Anniston\Final Report\Data\Input\ProUCL input files\SS_OA_current.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

PCBmax

General Statistics

Number of Valid Samples	30	Number of Detected Data	27
Number of Unique Samples	27	Number of Non-Detect Data	3
		Percent Non-Detects	10.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	23	Minimum Detected	3.135
Maximum Detected	930000	Maximum Detected	13.74
Mean of Detected	65540	Mean of Detected	9.131
SD of Detected	181515	SD of Detected	2.33
Minimum Non-Detect	38	Minimum Non-Detect	3.638
Maximum Non-Detect	44	Maximum Non-Detect	3.784

Note: Data have multiple DLs - Use of KM Method is recommended
For all methods (except KM, DL/2, and ROS Methods),
Observations < Largest ND are treated as NDs

Number treated as Non-Detect	4
Number treated as Detected	26
Single DL Non-Detect Percentage	13.33%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.378	Shapiro Wilk Test Statistic	0.969
5% Shapiro Wilk Critical Value	0.923	5% Shapiro Wilk Critical Value	0.923
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	58988	Mean	8.518
SD	173029	SD	2.892
95% DL/2 (t) UCL	112664	95% H-Stat (DL/2) UCL	3482286
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	41059	Mean in Log Scale	8.666
SD	186045	SD in Log Scale	2.623
95% MLE (t) UCL	98774	Mean in Original Scale	58994
95% MLE (Tiku) UCL	95147	SD in Original Scale	173027
		95% Percentile Bootstrap UCL	116820
		95% BCA Bootstrap UCL	159248

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.331	Data appear Lognormal at 5% Significance Level	
Theta Star	198229		
nu star	17.85		
A-D Test Statistic	0.98	Nonparametric Statistics	

5% A-D Critical Value	0.843
K-S Test Statistic	0.843
5% K-S Critical Value	0.182

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics using Extrapolated Data

Minimum	0
Maximum	930000
Mean	58986
Median	11500
SD	173030
k star	0.164
Theta star	359396
Nu star	9.847
AppChi2	3.847
95% Gamma Approximate UCL	151004
95% Adjusted Gamma UCL	159918

Note: DL/2 is not a recommended method.

Kaplan-Meier (KM) Method

Mean	58988
SD	170121
SE of Mean	31651
95% KM (t) UCL	112768
95% KM (z) UCL	111050
95% KM (jackknife) UCL	112651
95% KM (bootstrap t) UCL	280091
95% KM (BCA) UCL	124303
95% KM (Percentile Bootstrap) UCL	116432
95% KM (Chebyshev) UCL	196953
97.5% KM (Chebyshev) UCL	256650
99% KM (Chebyshev) UCL	373914

Potential UCLs to Use

99% KM (Chebyshev) UCL	373914

PCBavg

General Statistics

Number of Valid Samples	30
Number of Unique Samples	27

Number of Detected Data	27
Number of Non-Detect Data	3
Percent Non-Detects	10.00%

Raw Statistics

Minimum Detected	23
Maximum Detected	542000
Mean of Detected	51169
SD of Detected	112795
Minimum Non-Detect	38
Maximum Non-Detect	44

Log-transformed Statistics

Minimum Detected	3.135
Maximum Detected	13.2
Mean of Detected	9.111
SD of Detected	2.291
Minimum Non-Detect	3.638
Maximum Non-Detect	3.784

Note: Data have multiple DLs - Use of KM Method is recommended
For all methods (except KM, DL/2, and ROS Methods),
Observations < Largest ND are treated as NDs

Number treated as Non-Detect	4
Number treated as Detected	26
Single DL Non-Detect Percentage	13.33%

UCL Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic	0.483
5% Shapiro Wilk Critical Value	0.923

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic	0.963
5% Shapiro Wilk Critical Value	0.923

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method

Mean	46054
SD	107936
95% DL/2 (t) UCL	79538

Maximum Likelihood Estimate(MLE) Method

Assuming Lognormal Distribution

DL/2 Substitution Method

Mean	8.5
SD	2.86
95% H-Stat (DL/2) UCL	2939060

Log ROS Method

Mean	35223
SD	116487
95% MLE (t) UCL	71359
95% MLE (Tiku) UCL	69240

Mean in Log Scale	8.655
SD in Log Scale	2.578
Mean in Original Scale	46062
SD in Original Scale	107932
95% Percentile Bootstrap UCL	81240
95% BCA Bootstrap UCL	97821

Gamma Distribution Test with Detected Values Only

k star (bias corrected)	0.365
Theta Star	140227
nu star	19.7
A-D Test Statistic	0.632
5% A-D Critical Value	0.834
K-S Test Statistic	0.834
5% K-S Critical Value	0.181

Data follow Appr. Gamma Distribution at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics using Extrapolated Data	
Minimum	0
Maximum	542000
Mean	46052
Median	11500
SD	107936
k star	0.17
Theta star	270486
Nu star	10.22
AppChi2	4.077
95% Gamma Approximate UCL	115394
95% Adjusted Gamma UCL	122037

Note: DL/2 is not a recommended method.

Data Distribution Test with Detected Values Only

Data Follow Appr. Gamma Distribution at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method	
Mean	46055
SD	106121
SE of Mean	19744
95% KM (t) UCL	79602
95% KM (z) UCL	78531
95% KM (jackknife) UCL	79525
95% KM (bootstrap t) UCL	142445
95% KM (BCA) UCL	87207
95% KM (Percentile Bootstrap) UCL	81925
95% KM (Chebyshev) UCL	132117
97.5% KM (Chebyshev) UCL	169356
99% KM (Chebyshev) UCL	242506

Potential UCLs to Use

95% KM (Chebyshev) UCL	132117

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	F:\All Works\Anniston\Final Report\Data\Input\ProUCL input files\SS_OA_future.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

PCB

General Statistics

Number of Valid Samples	31	Number of Detected Data	28
Number of Unique Samples	28	Number of Non-Detect Data	3
		Percent Non-Detects	9.68%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	23	Minimum Detected	3.135
Maximum Detected	17000000	Maximum Detected	16.65
Mean of Detected	670342	Mean of Detected	9.4
SD of Detected	3205265	SD of Detected	2.692
Minimum Non-Detect	38	Minimum Non-Detect	3.638
Maximum Non-Detect	44	Maximum Non-Detect	3.784

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	27
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	12.90%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.218	Shapiro Wilk Test Statistic	0.971
5% Shapiro Wilk Critical Value	0.924	5% Shapiro Wilk Critical Value	0.924
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	605472	Mean	8.781
SD	3047448	SD	3.197
95% DL/2 (t) UCL	1534447	95% H-Stat (DL/2) UCL	18314751
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	284179	Mean in Log Scale	8.878
SD	3246869	SD in Log Scale	3.024
95% MLE (t) UCL	1273944	Mean in Original Scale	605475
95% MLE (Tiku) UCL	1206542	SD in Original Scale	3047447
		95% Percentile Bootstrap UCL	1695204
		95% BCA Bootstrap UCL	2268077

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.189	Data appear Lognormal at 5% Significance Level	
Theta Star	3540015		
nu star	10.6		
A-D Test Statistic	3.895	Nonparametric Statistics	

CDM

5% A-D Critical Value	0.904
K-S Test Statistic	0.904
5% K-S Critical Value	0.184

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics using Extrapolated Data	
Minimum	0
Maximum	17000000
Mean	605470
Median	11800
SD	3047448
k star	0.127
Theta star	4774994
Nu star	7.862
AppChi2	2.655
95% Gamma Approximate UCL	1792737
95% Adjusted Gamma UCL	1911986

Note: DL/2 is not a recommended method.

Kaplan-Meier (KM) Method	
Mean	605472
SD	2997892
SE of Mean	548318
95% KM (t) UCL	1536110
95% KM (z) UCL	1507375
95% KM (jackknife) UCL	1534433
95% KM (bootstrap t) UCL	38145082
95% KM (BCA) UCL	1696109
95% KM (Percentile Bootstrap) UCL	1670757
95% KM (Chebyshev) UCL	2995534
97.5% KM (Chebyshev) UCL	4029716
99% KM (Chebyshev) UCL	6061165

Potential UCLs to Use

99% KM (Chebyshev) UCL	6061165

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	F:\Anniston Data\Data\Input Data\SS&SB_OA_Future_Input.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

PCB

General Statistics

Number of Valid Samples	58	Number of Detected Data	51
Number of Unique Samples	50	Number of Non-Detect Data	7
		Percent Non-Detects	12.07%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	23	Minimum Detected	3.135
Maximum Detected	17000000	Maximum Detected	16.65
Mean of Detected	403790	Mean of Detected	9.124
SD of Detected	2377237	SD of Detected	2.716
Minimum Non-Detect	18.5	Minimum Non-Detect	2.918
Maximum Non-Detect	47.5	Maximum Non-Detect	3.861

Note: Data have multiple DLs - Use of KM Method is recommended
For all methods (except KM, DL/2, and ROS Methods),
Observations < Largest ND are treated as NDs

Number treated as Non-Detect	9
Number treated as Detected	49
Single DL Non-Detect Percentage	15.52%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.462	Lilliefors Test Statistic	0.0879
5% Lilliefors Critical Value	0.124	5% Lilliefors Critical Value	0.124
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	355059	Mean	8.378
SD	2230437	SD	3.256
95% DL/2 (t) UCL	844747	95% H-Stat (DL/2) UCL	3861964
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	57220	Mean in Log Scale	8.438
SD	2431507	SD in Log Scale	3.163
95% MLE (t) UCL	591053	Mean in Original Scale	355061
95% MLE (Tiku) UCL	562709	SD in Original Scale	2230437
		95% Percentile Bootstrap UCL	938615
		95% BCA Bootstrap UCL	1497852

Gamma Distribution Test with Detected Values Only

k star (bias corrected)	0.197
Theta Star	2051957
nu star	20.07
A-D Test Statistic	5.291
5% A-D Critical Value	0.911
K-S Test Statistic	0.911
5% K-S Critical Value	0.138

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics using Extrapolated Data	
Minimum	0
Maximum	17000000
Mean	355056
Median	7985
SD	2230437
k star	0.116
Theta star	3054278
Nu star	13.48
AppChi2	6.22
95% Gamma Approximate UCL	769730
95% Adjusted Gamma UCL	785649

Note: DL/2 is not a recommended method.

Data Distribution Test with Detected Values Only

Data appear Lognormal at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method	
Mean	355060
SD	2211125
SE of Mean	293224
95% KM (t) UCL	845338
95% KM (z) UCL	837370
95% KM (jackknife) UCL	844747
95% KM (bootstrap t) UCL	6253768
95% KM (BCA) UCL	951176
95% KM (Percentile Bootstrap) UCL	942494
95% KM (Chebyshev) UCL	1633193
97.5% KM (Chebyshev) UCL	2186243
99% KM (Chebyshev) UCL	3272601

Potential UCLs to Use

99% KM (Chebyshev) UCL	3272601

Arsenic

General Statistics

Number of Valid Samples	19	Number of Detected Data	18
Number of Unique Samples	17	Number of Non-Detect Data	1
		Percent Non-Detects	5.26%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	3.8	Minimum Detected	1.335
Maximum Detected	390	Maximum Detected	5.966
Mean of Detected	30.86	Mean of Detected	2.33
SD of Detected	89.87	SD of Detected	1.053
Minimum Non-Detect	12	Minimum Non-Detect	2.485
Maximum Non-Detect	12	Maximum Non-Detect	2.485

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.304	Shapiro Wilk Test Statistic	0.721
5% Shapiro Wilk Critical Value	0.897	5% Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	29.55	Mean	2.301
SD	87.53	SD	1.031
95% DL/2 (t) UCL	64.37	95% H-Stat (DL/2) UCL	32.48
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	2.308
		SD in Log Scale	1.028
		Mean in Original Scale	29.59
		SD in Original Scale	87.52
		95% Percentile Bootstrap UCL	69.07
		95% BCA Bootstrap UCL	89.68

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.509	Data do not follow a Discernable Distribution (0.05)	
Theta Star	60.59		
nu star	18.33		
A-D Test Statistic	3.58	Nonparametric Statistics	
5% A-D Critical Value	0.794	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.794	Mean	29.59
5% K-S Critical Value	0.214	SD	85.18
Data not Gamma Distributed at 5% Significance Level		SE of Mean	20.11
		95% KM (t) UCL	64.46

Assuming Gamma Distribution	
Gamma ROS Statistics using Extrapolated Data	
Minimum	0
Maximum	390
Mean	29.23
Median	7.9
SD	87.63
k star	0.292
Theta star	100.3
Nu star	11.08
AppChi2	4.626
95% Gamma Approximate UCL	70
95% Adjusted Gamma UCL	75.9

Note: DL/2 is not a recommended method.

95% KM (z) UCL	62.67
95% KM (jackknife) UCL	64.41
95% KM (bootstrap t) UCL	634.1
95% KM (BCA) UCL	69.51
95% KM (Percentile Bootstrap) UCL	69.37
95% KM (Chebyshev) UCL	117.2
97.5% KM (Chebyshev) UCL	155.2
99% KM (Chebyshev) UCL	229.7
Potential UCLs to Use	
97.5% KM (Chebyshev) UCL	155.2

Barium

General Statistics

Number of Valid Samples	19	Number of Unique Samples	19

Raw Statistics

Minimum	18
Maximum	780
Mean	126.7
Median	55
SD	178.8
Coefficient of Variation	1.411
Skewness	3.084

Log-transformed Statistics

Minimum of Log Data	2.89
Maximum of Log Data	6.659
Mean of log Data	4.318
SD of log Data	0.947

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.584
Shapiro Wilk Critical Value	0.901

Data not Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.932
Shapiro Wilk Critical Value	0.901

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	197.9

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL	225.2
95% Modified-t UCL	202.7

Assuming Lognormal Distribution

95% H-UCL	207.7
95% Chebyshev (MVUE) UCL	233.1
97.5% Chebyshev (MVUE) UCL	284.7
99% Chebyshev (MVUE) UCL	386

Gamma Distribution Test

k star (bias corrected)	0.954
Theta Star	132.8
nu star	36.25
Approximate Chi Square Value (.05)	23.47
Adjusted Level of Significance	0.0369
Adjusted Chi Square Value	22.58
Anderson-Darling Test Statistic	1.23
Anderson-Darling 5% Critical Value	0.767
Kolmogorov-Smirnov Test Statistic	0.246
Kolmogorov-Smirnov 5% Critical Value	0.204

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL	195.7
95% Adjusted Gamma UCL	203.5

Data Distribution

Data appear Lognormal at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	194.2
95% Jackknife UCL	197.9
95% Standard Bootstrap UCL	193.8
95% Bootstrap-t UCL	314.4
95% Hall's Bootstrap UCL	453.6
95% Percentile Bootstrap UCL	197.1
95% BCA Bootstrap UCL	235.3
95% Chebyshev(Mean, Sd) UCL	305.5
97.5% Chebyshev(Mean, Sd) UCL	382.9
99% Chebyshev(Mean, Sd) UCL	534.8

Potential UCL to Use

Use 95% H-UCL 207.7

Cadmium

General Statistics

Number of Valid Samples	19	Number of Detected Data	5
Number of Unique Samples	5	Number of Non-Detect Data	14
		Percent Non-Detects	73.68%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.52	Minimum Detected	-0.654
Maximum Detected	4.7	Maximum Detected	1.548
Mean of Detected	1.502	Mean of Detected	0.00985
SD of Detected	1.794	SD of Detected	0.884
Minimum Non-Detect	0.5	Minimum Non-Detect	-0.693
Maximum Non-Detect	6	Maximum Non-Detect	1.792

Note: Data have multiple DLs - Use of KM Method is recommended
For all methods (except KM, DL/2, and ROS Methods),
Observations < Largest ND are treated as NDs

Number treated as Non-Detect	19
Number treated as Detected	0
Single DL Non-Detect Percentage	100.00%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.629	Shapiro Wilk Test Statistic	0.769
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.871	Mean	-0.712
SD	1.235	SD	0.953
95% DL/2 (t) UCL	1.363	95% H-Stat (DL/2) UCL	1.828
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.522
		SD in Log Scale	1.136
		Mean in Original Scale	0.502
		SD in Original Scale	1.047
		95% Percentile Bootstrap UCL	0.937
		95% BCA Bootstrap UCL	1.223

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.695	Data appear Lognormal at 5% Significance Level	
Theta Star	2.163		
nu star	6.945		
A-D Test Statistic	0.849	Nonparametric Statistics	
5% A-D Critical Value	0.687	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.687	Mean	0.809
5% K-S Critical Value	0.362	SD	0.978
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.265

Assuming Gamma Distribution	
Gamma ROS Statistics using Extrapolated Data	
Minimum	0.52
Maximum	4.7
Mean	1.487
Median	1.196
SD	0.936
k star	3.154
Theta star	0.471
Nu star	119.8
AppChi2	95.56
95% Gamma Approximate UCL	1.865
95% Adjusted Gamma UCL	1.902

Note: DL/2 is not a recommended method.

95% KM (t) UCL	1.269
95% KM (z) UCL	1.245
95% KM (jackknife) UCL	1.184
95% KM (bootstrap t) UCL	4.244
95% KM (BCA) UCL	1.723
95% KM (Percentile Bootstrap) UCL	1.391
95% KM (Chebyshev) UCL	1.965
97.5% KM (Chebyshev) UCL	2.466
99% KM (Chebyshev) UCL	3.449
Potential UCLs to Use	
95% KM (t) UCL	1.269
95% KM (% Bootstrap) UCL	1.391

Chromium

General Statistics

Number of Valid Samples	19	Number of Detected Data	18
Number of Unique Samples	12	Number of Non-Detect Data	1
		Percent Non-Detects	5.26%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	12	Minimum Detected	2.485
Maximum Detected	110	Maximum Detected	4.7
Mean of Detected	26.89	Mean of Detected	3.102
SD of Detected	23.02	SD of Detected	0.556
Minimum Non-Detect	12	Minimum Non-Detect	2.485
Maximum Non-Detect	12	Maximum Non-Detect	2.485

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.595	Shapiro Wilk Test Statistic	0.844
5% Shapiro Wilk Critical Value	0.897	5% Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	25.79	Mean	3.033
SD	22.88	SD	0.618
95% DL/2 (t) UCL	34.89	95% H-Stat (DL/2) UCL	32.57
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	25.36	Mean in Log Scale	3.035
SD	22.87	SD in Log Scale	0.615
95% MLE (t) UCL	34.46	Mean in Original Scale	25.8
95% MLE (Tiku) UCL	33.75	SD in Original Scale	22.87
		95% Percentile Bootstrap UCL	34.84
		95% BCA Bootstrap UCL	40.11

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.368	Data do not follow a Discernable Distribution (0.05)	
Theta Star	11.36		
nu star	85.23		
A-D Test Statistic	1.493	Nonparametric Statistics	
5% A-D Critical Value	0.747	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.747	Mean	26.11
5% K-S Critical Value	0.205	SD	22.03
Data not Gamma Distributed at 5% Significance Level		SE of Mean	5.2
		95% KM (t) UCL	35.12
Assuming Gamma Distribution		95% KM (z) UCL	34.66
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	35.07

Minimum	0
Maximum	110
Mean	25.47
Median	19
SD	23.21
k star	0.425
Theta star	59.97
Nu star	16.14
AppChi2	8.063
95% Gamma Approximate UCL	51
95% Adjusted Gamma UCL	54.34

Note: DL/2 is not a recommended method.

95% KM (bootstrap t) UCL	47.39
95% KM (BCA) UCL	35.63
95% KM (Percentile Bootstrap) UCL	35.58
95% KM (Chebyshev) UCL	48.77
97.5% KM (Chebyshev) UCL	58.58
99% KM (Chebyshev) UCL	77.84

Potential UCLs to Use

95% KM (Chebyshev) UCL	48.77

Lead

General Statistics

Number of Valid Samples	19	Number of Unique Samples	16

Raw Statistics

Minimum	8.7
Maximum	4700
Mean	302.4
Median	41
SD	1066
Coefficient of Variation	3.526
Skewness	4.342

Log-transformed Statistics

Minimum of Log Data	2.163
Maximum of Log Data	8.455
Mean of log Data	3.987
SD of log Data	1.346

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.279
Shapiro Wilk Critical Value	0.901

Data not Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.811
Shapiro Wilk Critical Value	0.901

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	726.5

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL	965
95% Modified-t UCL	767.1

Assuming Lognormal Distribution

95% H-UCL	362.6
95% Chebyshev (MVUE) UCL	315.9
97.5% Chebyshev (MVUE) UCL	399.5
99% Chebyshev (MVUE) UCL	563.5

Gamma Distribution Test

k star (bias corrected)	0.358
Theta Star	843.4
nu star	13.62
Approximate Chi Square Value (.05)	6.313
Adjusted Level of Significance	0.0369
Adjusted Chi Square Value	5.882
Anderson-Darling Test Statistic	3.664
Anderson-Darling 5% Critical Value	0.826
Kolmogorov-Smirnov Test Statistic	0.347
Kolmogorov-Smirnov 5% Critical Value	0.213

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL	652.4
95% Adjusted Gamma UCL	700.2

Data Distribution

Data do not follow a Discernable Distribution (0.05)

Nonparametric Statistics

95% CLT UCL	704.7
95% Jackknife UCL	726.5
95% Standard Bootstrap UCL	702.4
95% Bootstrap-t UCL	8449
95% Hall's Bootstrap UCL	4804
95% Percentile Bootstrap UCL	782.8
95% BCA Bootstrap UCL	1050
95% Chebyshev(Mean, Sd) UCL	1369
97.5% Chebyshev(Mean, Sd) UCL	1830
99% Chebyshev(Mean, Sd) UCL	2736

Potential UCL to Use

Use 99% Chebyshev (Mean, Sd) UCL 2736

Manganese

General Statistics

Number of Valid Samples	19	Number of Unique Samples	17

Raw Statistics		Log-transformed Statistics	
Minimum	70	Minimum of Log Data	4.248
Maximum	12000	Maximum of Log Data	9.393
Mean	1413	Mean of log Data	6.234
Median	590	SD of log Data	1.327
SD	2857		
Coefficient of Variation	2.022		
Skewness	3.297		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.486	Shapiro Wilk Test Statistic	0.924
Shapiro Wilk Critical Value	0.901	Shapiro Wilk Critical Value	0.901
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	2550	95% H-UCL	3271
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	2897
95% Adjusted-CLT UCL	3021	97.5% Chebyshev (MVUE) UCL	3658
95% Modified-t UCL	2632	99% Chebyshev (MVUE) UCL	5153

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.545	Data appear Lognormal at 5% Significance Level	
Theta Star	2594		
nu star	20.7		
Approximate Chi Square Value (.05)	11.37		
Adjusted Level of Significance	0.0369		
Adjusted Chi Square Value	10.77		
Anderson-Darling Test Statistic	1.633		
Anderson-Darling 5% Critical Value	0.793		
Kolmogorov-Smirnov Test Statistic	0.316		
Kolmogorov-Smirnov 5% Critical Value	0.208		
Data not Gamma Distributed at 5% Significance Level			

Assuming Gamma Distribution		Nonparametric Statistics	
95% Approximate Gamma UCL	2573	95% CLT UCL	2491
95% Adjusted Gamma UCL	2717	95% Jackknife UCL	2550
		95% Standard Bootstrap UCL	2478
		95% Bootstrap-t UCL	6114
		95% Hall's Bootstrap UCL	6220
		95% Percentile Bootstrap UCL	2532
		95% BCA Bootstrap UCL	3104
		95% Chebyshev(Mean, Sd) UCL	4270
		97.5% Chebyshev(Mean, Sd) UCL	5506
		99% Chebyshev(Mean, Sd) UCL	7934
Potential UCL to Use		Use 95% Chebyshev (MVUE) UCL	2897

Mercury

General Statistics

Number of Valid Samples	19	Number of Detected Data	18
Number of Unique Samples	17	Number of Non-Detect Data	1
		Percent Non-Detects	5.26%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.032	Minimum Detected	-3.442
Maximum Detected	3.3	Maximum Detected	1.194
Mean of Detected	0.751	Mean of Detected	-1.213
SD of Detected	0.964	SD of Detected	1.522
Minimum Non-Detect	0.033	Minimum Non-Detect	-3.411
Maximum Non-Detect	0.033	Maximum Non-Detect	-3.411

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.762	Shapiro Wilk Test Statistic	0.933
5% Shapiro Wilk Critical Value	0.897	5% Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.712	Mean	-1.365
SD	0.952	SD	1.621
95% DL/2 (t) UCL	1.091	95% H-Stat (DL/2) UCL	3.794
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.648	Mean in Log Scale	-1.369
SD	1.004	SD in Log Scale	1.629
95% MLE (t) UCL	1.048	Mean in Original Scale	0.712
95% MLE (Tiku) UCL	1.029	SD in Original Scale	0.952
		95% Percentile Bootstrap UCL	1.091
		95% BCA Bootstrap UCL	1.15

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.585	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1.283		
nu star	21.08		
A-D Test Statistic	0.538	Nonparametric Statistics	
5% A-D Critical Value	0.786	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.786	Mean	0.713
5% K-S Critical Value	0.213	SD	0.926
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.219
		95% KM (t) UCL	1.092

Assuming Gamma Distribution	
Gamma ROS Statistics using Extrapolated Data	
Minimum	0
Maximum	3.3
Mean	0.711
Median	0.3
SD	0.953
k star	0.333
Theta star	2.138
Nu star	12.65
AppChi2	5.655
95% Gamma Approximate UCL	1.591
95% Adjusted Gamma UCL	1.713

Note: DL/2 is not a recommended method.

95% KM (z) UCL	1.073
95% KM (jackknife) UCL	1.091
95% KM (bootstrap t) UCL	1.301
95% KM (BCA) UCL	1.083
95% KM (Percentile Bootstrap) UCL	1.09
95% KM (Chebyshev) UCL	1.666
97.5% KM (Chebyshev) UCL	2.078
99% KM (Chebyshev) UCL	2.888
Potential UCLs to Use	
95% KM (Chebyshev) UCL	1.666

Nickel

General Statistics

Number of Valid Samples	19	Number of Detected Data	18
Number of Unique Samples	15	Number of Non-Detect Data	1
		Percent Non-Detects	5.26%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	7.5	Minimum Detected	2.015
Maximum Detected	2400	Maximum Detected	7.783
Mean of Detected	163.1	Mean of Detected	3.31
SD of Detected	559.2	SD of Detected	1.402
Minimum Non-Detect	4.4	Minimum Non-Detect	1.482
Maximum Non-Detect	4.4	Maximum Non-Detect	1.482

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.294	Shapiro Wilk Test Statistic	0.79
5% Shapiro Wilk Critical Value	0.897	5% Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	154.6	Mean	3.177
SD	544.7	SD	1.481
95% DL/2 (t) UCL	371.3	95% H-Stat (DL/2) UCL	233.3
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	134.1	Mean in Log Scale	3.145
SD	547.7	SD in Log Scale	1.54
95% MLE (t) UCL	351.9	Mean in Original Scale	154.6
95% MLE (Tiku) UCL	329.5	SD in Original Scale	544.7
		95% Percentile Bootstrap UCL	404
		95% BCA Bootstrap UCL	538.4

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.348	Data do not follow a Discernable Distribution (0.05)	
Theta Star	468.9		
nu star	12.52		
A-D Test Statistic	3.275	**Nonparametric Statistics**	
5% A-D Critical Value	0.827	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.827	Mean	154.9
5% K-S Critical Value	0.219	SD	530.1
Data not Gamma Distributed at 5% Significance Level		SE of Mean	125.1
		95% KM (t) UCL	371.9

Assuming Gamma Distribution	
Gamma ROS Statistics using Extrapolated Data	
Minimum	0
Maximum	2400
Mean	154.5
Median	15
SD	544.7
k star	0.236
Theta star	654
Nu star	8.977
AppChi2	3.313
95% Gamma Approximate UCL	418.7
95% Adjusted Gamma UCL	459.5

Note: DL/2 is not a recommended method.

95% KM (z) UCL	360.7
95% KM (jackknife) UCL	371.5
95% KM (bootstrap t) UCL	3498
95% KM (BCA) UCL	412.2
95% KM (Percentile Bootstrap) UCL	405.1
95% KM (Chebyshev) UCL	700.4
97.5% KM (Chebyshev) UCL	936.4
99% KM (Chebyshev) UCL	1400
Potential UCLs to Use	
97.5% KM (Chebyshev) UCL	936.4

Vanadium

General Statistics

Number of Valid Samples	19	Number of Unique Samples	17

Raw Statistics

Minimum	15
Maximum	93
Mean	40.26
Median	39
SD	17.83
Coefficient of Variation	0.443
Skewness	1.495

Log-transformed Statistics

Minimum of Log Data	2.708
Maximum of Log Data	4.533
Mean of log Data	3.612
SD of log Data	0.417

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.89
Shapiro Wilk Critical Value	0.901

Data not Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.984
Shapiro Wilk Critical Value	0.901

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	47.35

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL	48.49
95% Modified-t UCL	47.59

Assuming Lognormal Distribution

95% H-UCL	48.91
95% Chebyshev (MVUE) UCL	57.43
97.5% Chebyshev (MVUE) UCL	64.87
99% Chebyshev (MVUE) UCL	79.5

Gamma Distribution Test

k star (bias corrected)	5.225
Theta Star	7.707
nu star	198.5
Approximate Chi Square Value (.05)	166.9
Adjusted Level of Significance	0.0369
Adjusted Chi Square Value	164.4
Anderson-Darling Test Statistic	0.241
Anderson-Darling 5% Critical Value	0.742
Kolmogorov-Smirnov Test Statistic	0.108
Kolmogorov-Smirnov 5% Critical Value	0.199

Data appear Gamma Distributed at 5% Significance Level

Data Distribution

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL	47.89
95% Adjusted Gamma UCL	48.62

Nonparametric Statistics

95% CLT UCL	46.99
95% Jackknife UCL	47.35
95% Standard Bootstrap UCL	46.95
95% Bootstrap-t UCL	49.84
95% Hall's Bootstrap UCL	53.92
95% Percentile Bootstrap UCL	47.32
95% BCA Bootstrap UCL	47.68
95% Chebyshev(Mean, Sd) UCL	58.09
97.5% Chebyshev(Mean, Sd) UCL	65.8
99% Chebyshev(Mean, Sd) UCL	80.95

Potential UCL to Use

Use 95% Approximate Gamma UCL 47.89

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	F:\Anniston Data\Data\Input Data\SS_SL_Current&Future_Input_PCB.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

PCB

General Statistics

Number of Valid Samples	13	Number of Detected Data	11
Number of Unique Samples	11	Number of Non-Detect Data	2
		Percent Non-Detects	15.38%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	226	Minimum Detected	5.421
Maximum Detected	27000	Maximum Detected	10.2
Mean of Detected	5215	Mean of Detected	7.312
SD of Detected	8009	SD of Detected	1.812
Minimum Non-Detect	40	Minimum Non-Detect	3.689
Maximum Non-Detect	43	Maximum Non-Detect	3.761

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	2
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	11
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	15.38%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.682	Shapiro Wilk Test Statistic	0.86
5% Shapiro Wilk Critical Value	0.85	5% Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4416	Mean	6.654
SD	7567	SD	2.307
95% DL/2 (t) UCL	8156	95% H-Stat (DL/2) UCL	270896
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	3591	Mean in Log Scale	6.668
SD	8168	SD in Log Scale	2.282
95% MLE (t) UCL	7629	Mean in Original Scale	4416
95% MLE (Tiku) UCL	7477	SD in Original Scale	7567
		95% Percentile Bootstrap UCL	8164
		95% BCA Bootstrap UCL	9750

Gamma Distribution Test with Detected Values Only	
k star (bias corrected)	0.43
Theta Star	12125
nu star	9.462
A-D Test Statistic	0.668
5% A-D Critical Value	0.78
K-S Test Statistic	0.78
5% K-S Critical Value	0.269
Data appear Gamma Distributed at 5% Significance Level	

Assuming Gamma Distribution	
Gamma ROS Statistics using Extrapolated Data	
Minimum	0
Maximum	27000
Mean	4413
Median	348
SD	7569
k star	0.162
Theta star	27303
Nu star	4.202
AppChi2	0.803
95% Gamma Approximate UCL	23088
95% Adjusted Gamma UCL	29966

Note: DL/2 is not a recommended method.

Data Distribution Test with Detected Values Only
Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics	
Kaplan-Meier (KM) Method	
Mean	4447
SD	7252
SE of Mean	2109
95% KM (t) UCL	8207
95% KM (z) UCL	7917
95% KM (jackknife) UCL	8178
95% KM (bootstrap t) UCL	12960
95% KM (BCA) UCL	7858
95% KM (Percentile Bootstrap) UCL	8012
95% KM (Chebyshev) UCL	13642
97.5% KM (Chebyshev) UCL	17621
99% KM (Chebyshev) UCL	25436
Potential UCLs to Use	
95% KM (Chebyshev) UCL	13642

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	F:\Anniston Data\Data\Input Data\GW_Input.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Chlorobenzene

General Statistics

Number of Valid Samples	25	Number of Detected Data	6
Number of Unique Samples	6	Number of Non-Detect Data	19
		Percent Non-Detects	76.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	3.4	Minimum Detected	1.224
Maximum Detected	12	Maximum Detected	2.485
Mean of Detected	5.45	Mean of Detected	1.593
SD of Detected	3.241	SD of Detected	0.451
Minimum Non-Detect	1	Minimum Non-Detect	0
Maximum Non-Detect	100	Maximum Non-Detect	4.605

Note: Data have multiple DLs - Use of KM Method is recommended

For all methods (except KM, DL/2, and ROS Methods),

Observations < Largest ND are treated as NDs

Number treated as Non-Detect	25
Number treated as Detected	0
Single DL Non-Detect Percentage	100.00%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.633	Shapiro Wilk Test Statistic	0.734
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	5.408	Mean	0.436
SD	10.86	SD	1.513
95% DL/2 (t) UCL	9.123	95% H-Stat (DL/2) UCL	9.499
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.418
		SD in Log Scale	0.891
		Mean in Original Scale	2.245
		SD in Original Scale	2.425
		95% Percentile Bootstrap UCL	3.131
		95% BCA Bootstrap UCL	3.338

Gamma Distribution Test with Detected Values Only

k star (bias corrected)	2.625
Theta Star	2.076
nu star	31.5
A-D Test Statistic	0.999
5% A-D Critical Value	0.698
K-S Test Statistic	0.698
5% K-S Critical Value	0.333

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics using Extrapolated Data	
Minimum	2.083
Maximum	13.59
Mean	8.536
Median	9.174
SD	3.694
k star	3.937
Theta star	2.168
Nu star	196.8
AppChi2	165.4
95% Gamma Approximate UCL	10.16
95% Adjusted Gamma UCL	10.28

Note: DL/2 is not a recommended method.

Data Distribution Test with Detected Values Only

Data do not follow a Discernable Distribution (0.05)

Nonparametric Statistics

Kaplan-Meier (KM) Method	
Mean	3.986
SD	1.833
SE of Mean	0.438
95% KM (t) UCL	4.735
95% KM (z) UCL	4.706
95% KM (jackknife) UCL	4.61
95% KM (bootstrap t) UCL	6.376
95% KM (BCA) UCL	5.52
95% KM (Percentile Bootstrap) UCL	5.035
95% KM (Chebyshev) UCL	5.895
97.5% KM (Chebyshev) UCL	6.721
99% KM (Chebyshev) UCL	8.344

Potential UCLs to Use

95% KM (t) UCL	4.735
95% KM (% Bootstrap) UCL	5.035

PCB

General Statistics

Number of Valid Samples	26	Number of Detected Data	7
Number of Unique Samples	6	Number of Non-Detect Data	19
		Percent Non-Detects	73.08%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.3	Minimum Detected	0.262
Maximum Detected	15500	Maximum Detected	9.649
Mean of Detected	4371	Mean of Detected	5.911
SD of Detected	6001	SD of Detected	3.407
Minimum Non-Detect	0.235	Minimum Non-Detect	-1.448
Maximum Non-Detect	0.495	Maximum Non-Detect	-0.703

Note: Data have multiple DLs - Use of KM Method is recommended
For all methods (except KM, DL/2, and ROS Methods),
Observations < Largest ND are treated as NDs

Number treated as Non-Detect	19
Number treated as Detected	7
Single DL Non-Detect Percentage	73.08%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.771	Shapiro Wilk Test Statistic	0.891
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1177	Mean	0.121
SD	3543	SD	3.957
95% DL/2 (t) UCL	2364	95% H-Stat (DL/2) UCL	875858
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-3.159
		SD in Log Scale	6.888
		Mean in Original Scale	1177
		SD in Original Scale	3543
		95% Percentile Bootstrap UCL	2365
		95% BCA Bootstrap UCL	2966

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only
k star (bias corrected)	0.256	Data appear Gamma Distributed at 5% Significance Level
Theta Star	17054	
nu star	3.588	
A-D Test Statistic	0.528	Nonparametric Statistics
5% A-D Critical Value	0.791	Kaplan-Meier (KM) Method
K-S Test Statistic	0.791	Mean 1178
5% K-S Critical Value	0.336	SD 3474
Data appear Gamma Distributed at 5% Significance Level		SE of Mean 735.8
		95% KM (t) UCL 2435

Assuming Gamma Distribution	
Gamma ROS Statistics using Extrapolated Data	
Minimum	0
Maximum	15500
Mean	2733
Median	1199
SD	3707
k star	0.113
Theta star	24238
Nu star	5.864
AppChi2	1.571
95% Gamma Approximate UCL	10204
95% Adjusted Gamma UCL	11211

Note: DL/2 is not a recommended method.

95% KM (z) UCL	2388
95% KM (jackknife) UCL	2326
95% KM (bootstrap t) UCL	3300
95% KM (BCA) UCL	2758
95% KM (Percentile Bootstrap) UCL	2447
95% KM (Chebyshev) UCL	4385
97.5% KM (Chebyshev) UCL	5773
99% KM (Chebyshev) UCL	8499
Potential UCLs to Use	
95% KM (t) UCL	2435

Mercury

General Statistics

Number of Valid Samples	19	Number of Detected Data	6
Number of Unique Samples	6	Number of Non-Detect Data	13
		Percent Non-Detects	68.42%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	1	Minimum Detected	0
Maximum Detected	4.1	Maximum Detected	1.411
Mean of Detected	2	Mean of Detected	0.558
SD of Detected	1.193	SD of Detected	0.558
Minimum Non-Detect	0.2	Minimum Non-Detect	-1.609
Maximum Non-Detect	0.2	Maximum Non-Detect	-1.609

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.854	Shapiro Wilk Test Statistic	0.905
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.7	Mean	-1.399
SD	1.104	SD	1.397
95% DL/2 (t) UCL	1.139	95% H-Stat (DL/2) UCL	0.72
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	2.126	Mean in Log Scale	-0.901
SD	1.089	SD in Log Scale	1.259
95% MLE (t) UCL	2.559	Mean in Original Scale	0.818
95% MLE (Tiku) UCL	2.884	SD in Original Scale	1.049
		95% Percentile Bootstrap UCL	1.224
		95% BCA Bootstrap UCL	1.332

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.038	Data appear Normal at 5% Significance Level	
Theta Star	0.982		
nu star	24.45		
A-D Test Statistic	0.396	Nonparametric Statistics	
5% A-D Critical Value	0.7	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.7	Mean	1.316
5% K-S Critical Value	0.334	SD	0.769
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.193
		95% KM (t) UCL	1.651

Assuming Gamma Distribution	
Gamma ROS Statistics using Extrapolated Data	
Minimum	0.442
Maximum	5.664
Mean	2.995
Median	2.84
SD	1.632
k star	2.367
Theta star	1.265
Nu star	89.93
AppChi2	69.07
95% Gamma Approximate UCL	3.899
95% Adjusted Gamma UCL	3.992

Note: DL/2 is not a recommended method.

95% KM (z) UCL	1.634
95% KM (jackknife) UCL	1.594
95% KM (bootstrap t) UCL	1.849
95% KM (BCA) UCL	2.353
95% KM (Percentile Bootstrap) UCL	1.784
95% KM (Chebyshev) UCL	2.158
97.5% KM (Chebyshev) UCL	2.522
99% KM (Chebyshev) UCL	3.238
Potential UCLs to Use	
95% KM (t) UCL	1.651
95% KM (Percentile Bootstrap) UCL	1.784

General UCL Statistics for Full Data Sets

User Selected Options

From File	F:\Anniston Data\Data\Input Data\Air_SL_Input.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

PCB

General Statistics

Number of Valid Samples	76	Number of Unique Samples	76
Number of Missing Values	6		

Raw Statistics

Minimum	0.109
Maximum	39.22
Mean	5.591
Median	3.756
SD	6.192
Coefficient of Variation	1.108
Skewness	2.603

Log-transformed Statistics

Minimum of Log Data	-2.219
Maximum of Log Data	3.669
Mean of log Data	1.029
SD of log Data	1.399

Relevant UCL Statistics

Normal Distribution Test

Lilliefors Test Statistic	0.188
Lilliefors Critical Value	0.102

Data not Normal at 5% Significance Level

Lognormal Distribution Test

Lilliefors Test Statistic	0.104
Lilliefors Critical Value	0.102

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	6.774

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL	6.986
95% Modified-t UCL	6.809

Assuming Lognormal Distribution

95% H-UCL	11.45
95% Chebyshev (MVUE) UCL	14.04
97.5% Chebyshev (MVUE) UCL	16.97
99% Chebyshev (MVUE) UCL	22.72

Gamma Distribution Test

k star (bias corrected)	0.826
Theta Star	6.768
nu star	125.6
Approximate Chi Square Value (.05)	100.7
Adjusted Level of Significance	0.0468
Adjusted Chi Square Value	100.3
Anderson-Darling Test Statistic	0.338
Anderson-Darling 5% Critical Value	0.788
Kolmogorov-Smirnov Test Statistic	0.0639
Kolmogorov-Smirnov 5% Critical Value	0.106

Data appear Gamma Distributed at 5% Significance Level

Data Distribution

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	6.759
95% Jackknife UCL	6.774
95% Standard Bootstrap UCL	6.762
95% Bootstrap-t UCL	7.1
95% Hall's Bootstrap UCL	7.261
95% Percentile Bootstrap UCL	6.768
95% BCA Bootstrap UCL	7.018
95% Chebyshev(Mean, Sd) UCL	8.687
97.5% Chebyshev(Mean, Sd) UCL	10.03

Assuming Gamma Distribution	99% Chebyshev(Mean, Sd) UCL 12.66
95% Approximate Gamma UCL 6.973	
95% Adjusted Gamma UCL 7.002	
Potential UCL to Use	Use 95% Approximate Gamma UCL 6.973

General UCL Statistics for Full Data Sets

User Selected Options

From File	F:\Anniston Data\Data\Input Data\Air_WL_Input.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

PCB

General Statistics

Number of Valid Samples	81	Number of Unique Samples	81
Number of Missing Values	3		

Raw Statistics

Minimum	0.205
Maximum	43.43
Mean	8.338
Median	6.897
SD	7.952
Coefficient of Variation	0.954
Skewness	1.866

Log-transformed Statistics

Minimum of Log Data	-1.586
Maximum of Log Data	3.771
Mean of log Data	1.547
SD of log Data	1.284

Relevant UCL Statistics

Normal Distribution Test

Lilliefors Test Statistic	0.153
Lilliefors Critical Value	0.0984

Data not Normal at 5% Significance Level

Lognormal Distribution Test

Lilliefors Test Statistic	0.156
Lilliefors Critical Value	0.0984

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	9.808

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL	9.987
95% Modified-t UCL	9.839

Assuming Lognormal Distribution

95% H-UCL	15.39
95% Chebyshev (MVUE) UCL	18.99
97.5% Chebyshev (MVUE) UCL	22.65
99% Chebyshev (MVUE) UCL	29.85

Gamma Distribution Test

k star (bias corrected)	0.976
Theta Star	8.543
nu star	158.1
Approximate Chi Square Value (.05)	130
Adjusted Level of Significance	0.047
Adjusted Chi Square Value	129.6
Anderson-Darling Test Statistic	0.525
Anderson-Darling 5% Critical Value	0.782
Kolmogorov-Smirnov Test Statistic	0.0995
Kolmogorov-Smirnov 5% Critical Value	0.102

Data appear Gamma Distributed at 5% Significance Level

Data Distribution

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	9.791
95% Jackknife UCL	9.808
95% Standard Bootstrap UCL	9.805
95% Bootstrap-t UCL	10.02
95% Hall's Bootstrap UCL	10.14
95% Percentile Bootstrap UCL	9.813
95% BCA Bootstrap UCL	10.14
95% Chebyshev(Mean, Sd) UCL	12.19
97.5% Chebyshev(Mean, Sd) UCL	13.86

Assuming Gamma Distribution	99% Chebyshev(Mean, Sd) UCL 17.13
95% Approximate Gamma UCL 10.14	
95% Adjusted Gamma UCL 10.17	
Potential UCL to Use	Use 95% Approximate Gamma UCL 10.14

General UCL Statistics for Full Data Sets

User Selected Options

From File	E:\All Works\Anniston\Air Analysis\ProUCL Air Data.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

1 - East

General Statistics

Number of Valid Samples	72	Number of Unique Samples	72

Raw Statistics

Minimum	0.146
Maximum	27.3
Mean	5.651
Median	4.269
SD	5.562
Coefficient of Variation	0.984
Skewness	1.685

Log-transformed Statistics

Minimum of Log Data	-1.924
Maximum of Log Data	3.307
Mean of log Data	1.135
SD of log Data	1.269

Relevant UCL Statistics

Normal Distribution Test

Lilliefors Test Statistic	0.161
Lilliefors Critical Value	0.104

Data not Normal at 5% Significance Level

Lognormal Distribution Test

Lilliefors Test Statistic	0.124
Lilliefors Critical Value	0.104

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	6.743

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL	6.868
95% Modified-t UCL	6.765

Assuming Lognormal Distribution

95% H-UCL	10.18
95% Chebyshev (MVUE) UCL	12.52
97.5% Chebyshev (MVUE) UCL	14.99
99% Chebyshev (MVUE) UCL	19.83

Gamma Distribution Test

k star (bias corrected)	0.94
Theta Star	6.011
nu star	135.4
Approximate Chi Square Value (.05)	109.5
Adjusted Level of Significance	0.0467
Adjusted Chi Square Value	109
Anderson-Darling Test Statistic	0.574
Anderson-Darling 5% Critical Value	0.782
Kolmogorov-Smirnov Test Statistic	0.0854
Kolmogorov-Smirnov 5% Critical Value	0.108

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL	6.987
95% Adjusted Gamma UCL	7.017

Data Distribution

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	6.729
95% Jackknife UCL	6.743
95% Standard Bootstrap UCL	6.701
95% Bootstrap-t UCL	7.004
95% Hall's Bootstrap UCL	6.894
95% Percentile Bootstrap UCL	6.768
95% BCA Bootstrap UCL	6.919
95% Chebyshev(Mean, Sd) UCL	8.508
97.5% Chebyshev(Mean, Sd) UCL	9.745
99% Chebyshev(Mean, Sd) UCL	12.17

Potential UCL to Use

Use 95% Approximate Gamma UCL 6.987

1 - East (Colo)

General Statistics

Number of Valid Samples	35	Number of Unique Samples	35

Raw Statistics

Minimum	0.054
Maximum	22.69
Mean	4.638
Median	2.432
SD	5.654
Coefficient of Variation	1.219
Skewness	1.886

Log-transformed Statistics

Minimum of Log Data	-2.92
Maximum of Log Data	3.122
Mean of log Data	0.667
SD of log Data	1.547

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.761
Shapiro Wilk Critical Value	0.934

Data not Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.957
Shapiro Wilk Critical Value	0.934

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	6.254

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL	6.536
95% Modified-t UCL	6.305

Assuming Lognormal Distribution

95% H-UCL	14.69
95% Chebyshev (MVUE) UCL	14.9
97.5% Chebyshev (MVUE) UCL	18.74
99% Chebyshev (MVUE) UCL	26.29

Gamma Distribution Test

k star (bias corrected)	0.656
Theta Star	7.065
nu star	45.95
Approximate Chi Square Value (.05)	31.4
Adjusted Level of Significance	0.0425
Adjusted Chi Square Value	30.83
Anderson-Darling Test Statistic	0.305
Anderson-Darling 5% Critical Value	0.793
Kolmogorov-Smirnov Test Statistic	0.0878
Kolmogorov-Smirnov 5% Critical Value	0.155

Data appear Gamma Distributed at 5% Significance Level

Data Distribution

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL	6.788
95% Adjusted Gamma UCL	6.913

Nonparametric Statistics

95% CLT UCL	6.21
95% Jackknife UCL	6.254
95% Standard Bootstrap UCL	6.179
95% Bootstrap-t UCL	6.951
95% Hall's Bootstrap UCL	6.896
95% Percentile Bootstrap UCL	6.192
95% BCA Bootstrap UCL	6.375
95% Chebyshev(Mean, Sd) UCL	8.804
97.5% Chebyshev(Mean, Sd) UCL	10.61
99% Chebyshev(Mean, Sd) UCL	14.15

Potential UCL to Use

Use 95% Approximate Gamma UCL 6.788

General Statistics

Number of Valid Samples	76	Number of Unique Samples	76

Raw Statistics

Minimum	0.109
Maximum	39.22
Mean	5.591
Median	3.756
SD	6.192
Coefficient of Variation	1.108
Skewness	2.603

Log-transformed Statistics

Minimum of Log Data	-2.219
Maximum of Log Data	3.669
Mean of log Data	1.029
SD of log Data	1.399

Relevant UCL Statistics

Normal Distribution Test

Lilliefors Test Statistic	0.188
Lilliefors Critical Value	0.102

Data not Normal at 5% Significance Level

Lognormal Distribution Test

Lilliefors Test Statistic	0.104
Lilliefors Critical Value	0.102

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	6.774

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL	6.986
95% Modified-t UCL	6.809

Assuming Lognormal Distribution

95% H-UCL	11.45
95% Chebyshev (MVUE) UCL	14.04
97.5% Chebyshev (MVUE) UCL	16.97
99% Chebyshev (MVUE) UCL	22.72

Gamma Distribution Test

k star (bias corrected)	0.826
Theta Star	6.768
nu star	125.6
Approximate Chi Square Value (.05)	100.7
Adjusted Level of Significance	0.0468
Adjusted Chi Square Value	100.3
Anderson-Darling Test Statistic	0.338
Anderson-Darling 5% Critical Value	0.788
Kolmogorov-Smirnov Test Statistic	0.0639
Kolmogorov-Smirnov 5% Critical Value	0.106

Data appear Gamma Distributed at 5% Significance Level

Data Distribution

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	6.759
95% Jackknife UCL	6.774
95% Standard Bootstrap UCL	6.755
95% Bootstrap-t UCL	7.069
95% Hall's Bootstrap UCL	7.333
95% Percentile Bootstrap UCL	6.869
95% BCA Bootstrap UCL	7.061
95% Chebyshev(Mean, Sd) UCL	8.687
97.5% Chebyshev(Mean, Sd) UCL	10.03
99% Chebyshev(Mean, Sd) UCL	12.66

Assuming Gamma Distribution

95% Approximate Gamma UCL	6.973
95% Adjusted Gamma UCL	7.002

Potential UCL to Use

Use 95% Approximate Gamma UCL 6.973

General Statistics

Number of Valid Samples	81	Number of Unique Samples	81

Raw Statistics

Minimum	0.205
Maximum	43.43
Mean	8.338
Median	6.897
SD	7.952
Coefficient of Variation	0.954
Skewness	1.866

Log-transformed Statistics

Minimum of Log Data	-1.586
Maximum of Log Data	3.771
Mean of log Data	1.547
SD of log Data	1.284

Relevant UCL Statistics

Normal Distribution Test

Lilliefors Test Statistic	0.153
Lilliefors Critical Value	0.0984

Data not Normal at 5% Significance Level

Lognormal Distribution Test

Lilliefors Test Statistic	0.156
Lilliefors Critical Value	0.0984

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	9.808

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL	9.987
95% Modified-t UCL	9.839

Assuming Lognormal Distribution

95% H-UCL	15.39
95% Chebyshev (MVUE) UCL	18.99
97.5% Chebyshev (MVUE) UCL	22.65
99% Chebyshev (MVUE) UCL	29.85

Gamma Distribution Test

k star (bias corrected)	0.976
Theta Star	8.543
nu star	158.1
Approximate Chi Square Value (.05)	130
Adjusted Level of Significance	0.047
Adjusted Chi Square Value	129.6
Anderson-Darling Test Statistic	0.525
Anderson-Darling 5% Critical Value	0.782
Kolmogorov-Smirnov Test Statistic	0.0995
Kolmogorov-Smirnov 5% Critical Value	0.102

Data appear Gamma Distributed at 5% Significance Level

Data Distribution

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	9.791
95% Jackknife UCL	9.808
95% Standard Bootstrap UCL	9.743
95% Bootstrap-t UCL	9.97
95% Hall's Bootstrap UCL	10
95% Percentile Bootstrap UCL	9.85
95% BCA Bootstrap UCL	10.04
95% Chebyshev(Mean, Sd) UCL	12.19
97.5% Chebyshev(Mean, Sd) UCL	13.86
99% Chebyshev(Mean, Sd) UCL	17.13

Assuming Gamma Distribution

95% Approximate Gamma UCL	10.14
95% Adjusted Gamma UCL	10.17

Potential UCL to Use

Use 95% Approximate Gamma UCL 10.14

General Statistics

Number of Valid Samples	80	Number of Unique Samples	80

Raw Statistics

Minimum	0.0679
Maximum	115.6
Mean	21.01
Median	14.28
SD	22.99
Coefficient of Variation	1.094
Skewness	1.982

Log-transformed Statistics

Minimum of Log Data	-2.69
Maximum of Log Data	4.75
Mean of log Data	2.352
SD of log Data	1.452

Relevant UCL Statistics

Normal Distribution Test

Lilliefors Test Statistic	0.225
Lilliefors Critical Value	0.0991

Data not Normal at 5% Significance Level

Lognormal Distribution Test

Lilliefors Test Statistic	0.145
Lilliefors Critical Value	0.0991

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	25.29

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL	25.84
95% Modified-t UCL	25.38

Assuming Lognormal Distribution

95% H-UCL	46.94
95% Chebyshev (MVUE) UCL	57.53
97.5% Chebyshev (MVUE) UCL	69.71
99% Chebyshev (MVUE) UCL	93.64

Gamma Distribution Test

k star (bias corrected)	0.826
Theta Star	25.42
nu star	132.2
Approximate Chi Square Value (.05)	106.6
Adjusted Level of Significance	0.047
Adjusted Chi Square Value	106.2
Anderson-Darling Test Statistic	0.454
Anderson-Darling 5% Critical Value	0.789
Kolmogorov-Smirnov Test Statistic	0.0871
Kolmogorov-Smirnov 5% Critical Value	0.103

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL	26.04
95% Adjusted Gamma UCL	26.15

Data Distribution

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	25.24
95% Jackknife UCL	25.29
95% Standard Bootstrap UCL	25.19
95% Bootstrap-t UCL	26.2
95% Hall's Bootstrap UCL	25.8
95% Percentile Bootstrap UCL	25.02
95% BCA Bootstrap UCL	25.84
95% Chebyshev(Mean, Sd) UCL	32.21
97.5% Chebyshev(Mean, Sd) UCL	37.06
99% Chebyshev(Mean, Sd) UCL	46.58

Potential UCL to Use

Use 95% Approximate Gamma UCL 26.04

General Statistics

Number of Valid Samples	73	Number of Unique Samples	73

Raw Statistics

Minimum	0.614
Maximum	90.82
Mean	11.55
Median	9.217
SD	12.42
Coefficient of Variation	1.076
Skewness	4.102

Log-transformed Statistics

Minimum of Log Data	-0.488
Maximum of Log Data	4.509
Mean of log Data	2.085
SD of log Data	0.869

Relevant UCL Statistics

Normal Distribution Test

Lilliefors Test Statistic	0.217
Lilliefors Critical Value	0.104

Data not Normal at 5% Significance Level

Lognormal Distribution Test

Lilliefors Test Statistic	0.0839
Lilliefors Critical Value	0.104

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	13.97

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL	14.68
95% Modified-t UCL	14.08

Assuming Lognormal Distribution

95% H-UCL	14.58
95% Chebyshev (MVUE) UCL	17.57
97.5% Chebyshev (MVUE) UCL	20.14
99% Chebyshev (MVUE) UCL	25.18

Gamma Distribution Test

k star (bias corrected)	1.474
Theta Star	7.834
nu star	215.2
Approximate Chi Square Value (.05)	182.2
Adjusted Level of Significance	0.0467
Adjusted Chi Square Value	181.6
Anderson-Darling Test Statistic	0.704
Anderson-Darling 5% Critical Value	0.769
Kolmogorov-Smirnov Test Statistic	0.099
Kolmogorov-Smirnov 5% Critical Value	0.106

Data appear Gamma Distributed at 5% Significance Level

Data Distribution

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL	13.63
95% Adjusted Gamma UCL	13.68

Nonparametric Statistics

95% CLT UCL	13.94
95% Jackknife UCL	13.97
95% Standard Bootstrap UCL	13.94
95% Bootstrap-t UCL	15.21
95% Hall's Bootstrap UCL	23.81
95% Percentile Bootstrap UCL	14.22
95% BCA Bootstrap UCL	14.93
95% Chebyshev(Mean, Sd) UCL	17.88
97.5% Chebyshev(Mean, Sd) UCL	20.62
99% Chebyshev(Mean, Sd) UCL	26.01

Potential UCL to Use

Use 95% Approximate Gamma UCL 13.63

General Statistics

Number of Valid Samples	6	Number of Unique Samples	6

Raw Statistics

Minimum	10.76
Maximum	72.58
Mean	32.51
Median	25.71
SD	23.48
Coefficient of Variation	0.722
Skewness	1.096

Log-transformed Statistics

Minimum of Log Data	2.376
Maximum of Log Data	4.285
Mean of log Data	3.264
SD of log Data	0.727

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.887
Shapiro Wilk Critical Value	0.788

Data appear Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.951
Shapiro Wilk Critical Value	0.788

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	51.83

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL	52.87
95% Modified-t UCL	52.55

Assuming Lognormal Distribution

95% H-UCL	101.9
95% Chebyshev (MVUE) UCL	74.04
97.5% Chebyshev (MVUE) UCL	92.07
99% Chebyshev (MVUE) UCL	127.5

Gamma Distribution Test

k star (bias corrected)	1.334
Theta Star	24.37
nu star	16.01
Approximate Chi Square Value (.05)	7.969
Adjusted Level of Significance	0.0122
Adjusted Chi Square Value	6.036
Anderson-Darling Test Statistic	0.294
Anderson-Darling 5% Critical Value	0.703
Kolmogorov-Smirnov Test Statistic	0.253
Kolmogorov-Smirnov 5% Critical Value	0.335

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL	65.32
95% Adjusted Gamma UCL	86.24

Data Distribution

Data appear Normal at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	48.28
95% Jackknife UCL	51.83
95% Standard Bootstrap UCL	46.81
95% Bootstrap-t UCL	58.84
95% Hall's Bootstrap UCL	64.35
95% Percentile Bootstrap UCL	47.69
95% BCA Bootstrap UCL	51.26
95% Chebyshev(Mean, Sd) UCL	74.3
97.5% Chebyshev(Mean, Sd) UCL	92.38
99% Chebyshev(Mean, Sd) UCL	127.9

Potential UCL to Use

Use 95% Student's-t UCL 51.83

General Statistics

Number of Valid Samples	10	Number of Unique Samples	10

Raw Statistics

Minimum	2.89
Maximum	145.5
Mean	37.47
Median	12.66
SD	48.77
Coefficient of Variation	1.301
Skewness	1.653

Log-transformed Statistics

Minimum of Log Data	1.061
Maximum of Log Data	4.98
Mean of log Data	2.906
SD of log Data	1.249

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.719
Shapiro Wilk Critical Value	0.842

Data not Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.923
Shapiro Wilk Critical Value	0.842

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	65.74

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL	71.45
95% Modified-t UCL	67.08

Assuming Lognormal Distribution

95% H-UCL	181
95% Chebyshev (MVUE) UCL	99.92
97.5% Chebyshev (MVUE) UCL	127.8
99% Chebyshev (MVUE) UCL	182.6

Gamma Distribution Test

k star (bias corrected)	0.643
Theta Star	58.24
nu star	12.87
Approximate Chi Square Value (.05)	5.803
Adjusted Level of Significance	0.0267
Adjusted Chi Square Value	5.003
Anderson-Darling Test Statistic	0.724
Anderson-Darling 5% Critical Value	0.754
Kolmogorov-Smirnov Test Statistic	0.269
Kolmogorov-Smirnov 5% Critical Value	0.275

Data appear Gamma Distributed at 5% Significance Level

Data Distribution

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL	83.08
95% Adjusted Gamma UCL	96.36

Nonparametric Statistics

95% CLT UCL	62.83
95% Jackknife UCL	65.74
95% Standard Bootstrap UCL	61.49
95% Bootstrap-t UCL	112
95% Hall's Bootstrap UCL	85.98
95% Percentile Bootstrap UCL	63.78
95% BCA Bootstrap UCL	72.07
95% Chebyshev(Mean, Sd) UCL	104.7
97.5% Chebyshev(Mean, Sd) UCL	133.8
99% Chebyshev(Mean, Sd) UCL	190.9

Potential UCL to Use

Use 95% Approximate Gamma UCL 83.08

General Statistics

Number of Valid Samples	6	Number of Unique Samples	6

Raw Statistics

Minimum	6.053
Maximum	26.65
Mean	15.23
Median	12.8
SD	8.013
Coefficient of Variation	0.526
Skewness	0.605

Log-transformed Statistics

Minimum of Log Data	1.801
Maximum of Log Data	3.283
Mean of log Data	2.602
SD of log Data	0.55

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.915
Shapiro Wilk Critical Value	0.788

Data appear Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.958
Shapiro Wilk Critical Value	0.788

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	21.82

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL	21.48
95% Modified-t UCL	21.96

Assuming Lognormal Distribution

95% H-UCL	31.58
95% Chebyshev (MVUE) UCL	30.2
97.5% Chebyshev (MVUE) UCL	36.66
99% Chebyshev (MVUE) UCL	49.35

Gamma Distribution Test

k star (bias corrected)	2.248
Theta Star	6.775
nu star	26.98
Approximate Chi Square Value (.05)	16.13
Adjusted Level of Significance	0.0122
Adjusted Chi Square Value	13.2
Anderson-Darling Test Statistic	0.266
Anderson-Darling 5% Critical Value	0.699
Kolmogorov-Smirnov Test Statistic	0.197
Kolmogorov-Smirnov 5% Critical Value	0.333

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL	25.47
95% Adjusted Gamma UCL	31.12

Data Distribution

Data appear Normal at 5% Significance Level

Nonparametric Statistics

95% CLT UCL	20.61
95% Jackknife UCL	21.82
95% Standard Bootstrap UCL	20.23
95% Bootstrap-t UCL	28.41
95% Hall's Bootstrap UCL	77.88
95% Percentile Bootstrap UCL	20.29
95% BCA Bootstrap UCL	20.53
95% Chebyshev(Mean, Sd) UCL	29.49
97.5% Chebyshev(Mean, Sd) UCL	35.66
99% Chebyshev(Mean, Sd) UCL	47.78

Potential UCL to Use

Use 95% Student's-t UCL 21.82

Appendix D

Shower Model Assumptions and Calculations

List of Tables Included in Appendix D
Anniston PCB Site, Operable Unit 3

TABLES

TABLE D-1

VALUES USED FOR SHOWER MODEL

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Air
Receptor Population:	Resident
Receptor Age:	Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CW	Chemical Concentration in Water	µg/L	See Table D-3	See Table D-3	See Table D-3	See Table D-3	Maximum air concentration in bathroom
	f	Fraction volatilized	--	See Table 4-2	Schaum et al. (1)	See Table 4-2	Schaum et al. (1)	(Camax) (µg/m^3) =
	Fw	Water flow rate	L/hr	1,000	Schaum et al.	500	Schaum et al.	CW x f x Fw x t1 x 1/Va
	t1	Time of shower	hr	0.25	EPA 2001e	0.10	EPA 2001e	
	Va	Bathroom volume	m^3	16	Schaum et al.	6	Schaum et al.	EPC (µg/m^3) =
	t2	Time after shower in bathroom	hr	0.33	EPA 2001	0.15	EPA 2001	(((Camax/2) x t1) + (Camax x t2)) / (t1 + t2)

RME = Reasonable Maximum Exposure.

CTE = Central Tendency Exposure.

EPC = Exposure Point Concentration, the average air concentration in the bathroom during and after shower.

(1) Applies only to volatile chemicals.

Sources:

EPA 2001: Personal communication with M. Olsen of EPA Region 2, July 13, 2001. Based on EPA Region 2 and the Andelman model as modified by Schaum et al.

Schaum et al. 1994. Estimating Dermal and Inhalation Exposure to Volatile Chemicals in Domestic Water. Water Contamination and Health, edited by Rhoda G.M. Wang. New York: Marcel Dekker, Inc.

TABLE D-2

VALUES USED FOR SHOWER MODEL

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Air
Receptor Population:	Resident
Receptor Age:	Child (0-6 yrs)

Exposure Route	Parameter Code	Parameter Definition	Unit	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CW	Chemical Concentration in Water	µg/L	See Table D-4	See Table D-4	See Table D-4	See Table D-4	Maximum air concentration in bathroom
	f	Fraction volatilized	--	See Table 4-2	Schaum et al. (1)	See Table 4-2	Schaum et al. (1)	(Camax) (µg/m^3) =
	Fw	Water flow rate	L/hr	1,000	Schaum et al.	500	Schaum et al.	CW x f x Fw x t1 x 1/Va
	t1	Time of shower	hr	0.45	EPA 2001	0.14	EPA 2001	
	Va	Bathroom volume	m^3	16	Schaum et al.	6	Schaum et al.	EPC (µg/m^3) =
	t2	Time after shower in bathroom	hr	0.55	EPA 2001	0.19	EPA 2001	(((Camax/2) x t1) + (Camax x t2)) / (t1 + t2)

RME = Reasonable Maximum Exposure.

CTE = Central Tendency Exposure.

EPC = Exposure Point Concentration, the average air concentration in the bathroom during and after shower.

(1) Applies only to volatile chemicals.

Sources:

EPA 2001: Personal communication with M. Olsen of EPA Region 2, July 13, 2001. Based on EPA Region 2 and the Andelman model as modified by Schaum et al.

Schaum et al. 1994. Estimating Dermal and Inhalation Exposure to Volatile Chemicals in Domestic Water. Water Contamination and Health, edited by Rhoda G.M. Wang. New York: Marcel Dekker, Inc.

TABLE D-3
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Air
Receptor Population:	Resident
Receptor Age:	Adult

Exposure Point	Chemical of Potential Concern	Groundwater EPC Value (µg/L)	Reasonable Maximum Exposure				Central Tendency Exposure			
			Fraction Volatilized	Camax Value ($\mu g/m^3$)	Medium EPC Value	Medium EPC Unit	Fraction Volatilized	Camax Value ($\mu g/m^3$)	Medium EPC Value	Medium EPC Unit
Groundwater	**VOCs**									
	1,2,4-Trichlorobenzene	1.1E+01	4.6E-01	7.8E+01	6.1E+01	$\mu g/m^3$	4.6E-01	4.2E+01	3.3E+01	$\mu g/m^3$
	1,4-Dichlorobenzene	2.4E+00	4.4E-01	1.7E+01	1.3E+01	$\mu g/m^3$	4.4E-01	9.0E+00	7.2E+00	$\mu g/m^3$
	Chlorobenzene	5.1E+00	4.7E-01	3.8E+01	3.0E+01	$\mu g/m^3$	4.7E-01	2.0E+01	1.6E+01	$\mu g/m^3$
	cis-1,2-Dichloroethene	1.0E+01	5.6E-01	8.8E+01	6.9E+01	$\mu g/m^3$	5.6E-01	4.7E+01	3.8E+01	$\mu g/m^3$
	Pentachlorophenol	2.0E+01	3.7E-01	1.1E+02	9.0E+01	$\mu g/m^3$	3.7E-01	6.1E+01	4.9E+01	$\mu g/m^3$
	Trichloroethylene	3.4E+00	4.9E-01	2.6E+01	2.0E+01	$\mu g/m^3$	4.9E-01	1.4E+01	1.1E+01	$\mu g/m^3$
	SVOCs									
	2,4,6-Trichlorophenol	1.5E+01	3.8E-01	8.9E+01	7.0E+01	$\mu g/m^3$	3.8E-01	4.7E+01	3.8E+01	$\mu g/m^3$
	Indeno(1,2,3-cd)pyrene	7.3E-01	3.6E-01	4.1E+00	3.2E+00	$\mu g/m^3$	3.6E-01	2.2E+00	1.7E+00	$\mu g/m^3$
	P/PCBs									
	PCBs, Total	2.8E+03	NA	NA	NA	NA	NA	NA	NA	NA
	gamma-BHC	5.5E-01	4.2E-01	3.6E+00	2.8E+00	$\mu g/m^3$	4.2E-01	1.9E+00	1.5E+00	$\mu g/m^3$
	Methyl parathion	7.4E+01	NA	NA	NA	NA	NA	NA	NA	NA
	Parathion	9.4E+03	NA	NA	NA	NA	NA	NA	NA	NA
	Dioxin									
	Dioxin TEQ	3.6E-06	NA	NA	NA	NA	NA	NA	NA	NA
	Inorganics									
	Antimony	5.1E+00	NA	NA	NA	NA	NA	NA	NA	NA
	Arsenic	6.1E+00	NA	NA	NA	NA	NA	NA	NA	NA
	Manganese	1.3E+03	NA	NA	NA	NA	NA	NA	NA	NA
	Mercury	1.8E+00	3.8E-01	1.1E+01	8.3E+00	$\mu g/m^3$	3.8E-01	5.7E+00	4.5E+00	$\mu g/m^3$

EPC = Exposure Point Concentration.

Camax = Maximum concentration of contaminant in air .

TABLE D-4
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Air
Receptor Population:	Resident
Receptor Age:	Child (0-6 yrs)

Exposure Point	Chemical of Potential Concern	Groundwater EPC Value (µg/L)	Reasonable Maximum Exposure				Central Tendency Exposure			
			Fraction Volatilized	Camax Value ($\mu g/m^3$)	Medium EPC Value	Medium EPC Unit	Fraction Volatilized	Camax Value ($\mu g/m^3$)	Medium EPC Value	Medium EPC Unit
Groundwater	**VOCs**									
	1,2,4-Trichlorobenzene	1.1E+01	4.6E-01	1.4E+02	1.1E+02	$\mu g/m^3$	4.6E-01	5.8E+01	4.6E+01	$\mu g/m^3$
	1,4-Dichlorobenzene	2.4E+00	4.4E-01	3.0E+01	2.4E+01	$\mu g/m^3$	4.4E-01	1.3E+01	9.9E+00	$\mu g/m^3$
	Chlorobenzene	5.1E+00	4.7E-01	6.8E+01	5.3E+01	$\mu g/m^3$	4.7E-01	2.8E+01	2.2E+01	$\mu g/m^3$
	cis-1,2-Dichloroethene	1.0E+01	5.6E-01	1.6E+02	1.2E+02	$\mu g/m^3$	5.6E-01	6.6E+01	5.2E+01	$\mu g/m^3$
	Pentachlorophenol	2.0E+01	3.7E-01	2.1E+02	1.6E+02	$\mu g/m^3$	3.7E-01	8.6E+01	6.7E+01	$\mu g/m^3$
	Trichloroethylene	3.4E+00	4.9E-01	4.7E+01	3.6E+01	$\mu g/m^3$	4.9E-01	1.9E+01	1.5E+01	$\mu g/m^3$
	SVOCs									
	2,4,6-Trichlorophenol	1.5E+01	3.8E-01	1.6E+02	1.2E+02	$\mu g/m^3$	3.8E-01	6.6E+01	5.2E+01	$\mu g/m^3$
	Indeno(1,2,3-cd)pyrene	7.3E-01	3.6E-01	7.3E+00	5.7E+00	$\mu g/m^3$	3.6E-01	3.0E+00	2.4E+00	$\mu g/m^3$
	P/PCBs									
	PCBs, Total	2.8E+03	NA	NA	NA	NA	NA	NA	NA	NA
	gamma-BHC	5.5E-01	4.2E-01	6.5E+00	5.1E+00	$\mu g/m^3$	4.2E-01	2.7E+00	2.1E+00	$\mu g/m^3$
	Methyl parathion	7.4E+01	NA	NA	NA	NA	NA	NA	NA	NA
	Parathion	9.4E+03	NA	NA	NA	NA	NA	NA	NA	NA
	Dioxin									
	Dioxin TEQ	3.6E-06	NA	NA	NA	NA	NA	NA	NA	NA
	Inorganics									
	Antimony	5.1E+00	NA	NA	NA	NA	NA	NA	NA	NA
	Arsenic	6.1E+00	NA	NA	NA	NA	NA	NA	NA	NA
	Manganese	1.3E+03	NA	NA	NA	NA	NA	NA	NA	NA
	Mercury	1.8E+00	3.8E-01	1.9E+01	1.5E+01	$\mu g/m^3$	3.8E-01	7.9E+00	6.2E+00	$\mu g/m^3$

EPC = Exposure Point Concentration.

Camax = Maximum concentration of contaminant in air.

Appendix E

RAGS D Standard Tables – CTE

List of Tables Included in Appendix E
Anniston PCB Site, Operable Unit 3

TABLES

TABLE E-7.1

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	Operations Area Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil Facility Area	Incidental Ingestion	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	4.6E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	3.3E-08	3.6E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	1.0E-07	mg/kg/day	7.3E+00	(mg/kg-day)-1	7.6E-07	8.1E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	1.2E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	8.4E-08	9.0E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	3.4E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	2.5E-07	2.7E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	7.2E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	5.2E-08	5.6E-07	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	1.3E+02	mg/kg	2.2E-06	mg/kg/day	1.0E+00	(mg/kg-day)-1	2.2E-06	1.7E-05	mg/kg/day	2.0E-05	mg/kg-day	8.5E-01
				Heptachlor epoxide	3.8E-01	mg/kg	2.1E-08	mg/kg/day	9.1E+00	(mg/kg-day)-1	1.9E-07	1.6E-07	mg/kg/day	1.3E-05	mg/kg-day	1.3E-02
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	4.2E-11	mg/kg/day	1.5E+05	(mg/kg-day)-1	6.2E-06	3.2E-10	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	1.0E-03	mg/kg/day	NA	NA	NA	8.1E-03	mg/kg/day	1.0E+00	mg/kg-day	8.1E-03
				Antimony	8.7E+00	mg/kg	4.8E-07	mg/kg/day	NA	NA	NA	3.7E-06	mg/kg/day	4.0E-04	mg/kg-day	9.3E-03
				Arsenic	3.9E+02	mg/kg	6.4E-06	mg/kg/day	1.5E+00	(mg/kg-day)-1	9.7E-06	5.0E-05	mg/kg/day	3.0E-04	mg/kg-day	1.7E-01
				Cadmium	4.7E+00	mg/kg	2.6E-07	mg/kg/day	NA	NA	NA	2.0E-06	mg/kg/day	1.0E-03	mg/kg-day	2.0E-03
				Chromium	2.3E+01	mg/kg	1.3E-06	mg/kg/day	NA	NA	NA	9.9E-06	mg/kg/day	3.0E-03	mg/kg-day	3.3E-03
				Iron	2.6E+04	mg/kg	1.4E-03	mg/kg/day	NA	NA	NA	1.1E-02	mg/kg/day	7.0E-01	mg/kg-day	1.6E-02
				Lead	4.7E+03	mg/kg	2.6E-04	mg/kg/day	NA	NA	NA	2.0E-03	mg/kg/day	NA	NA	NA
				Manganese	8.3E+02	mg/kg	4.6E-05	mg/kg/day	NA	NA	NA	3.6E-04	mg/kg/day	1.4E-01	mg/kg-day	2.5E-03
				Mercury	2.6E+00	mg/kg	1.4E-07	mg/kg/day	NA	NA	NA	1.1E-06	mg/kg/day	3.0E-04	mg/kg-day	3.7E-03
				Vanadium	4.0E+01	mg/kg	2.2E-06	mg/kg/day	NA	NA	NA	1.7E-05	mg/kg/day	1.0E-03	mg/kg-day	1.7E-02
			Exp. Route Total								1.9E-05					1.1E+00
Surface Soil	Surface Soil	Surface Soil Facility Area	Dermal Contact	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	5.4E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	4.0E-08	4.2E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	1.2E-07	mg/kg/day	7.3E+00	(mg/kg-day)-1	9.1E-07	9.7E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	1.4E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.0E-07	1.1E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	4.1E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	3.0E-07	3.2E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	8.5E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	6.2E-08	6.6E-07	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	1.3E+02	mg/kg	4.0E-06	mg/kg/day	1.0E+00	(mg/kg-day)-1	4.0E-06	3.1E-05	mg/kg/day	2.0E-05	mg/kg-day	1.6E+00
				Heptachlor epoxide	3.8E-01	mg/kg	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	1.1E-11	mg/kg/day	1.5E+05	(mg/kg-day)-1	1.7E-06	8.9E-11	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	8.7E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	3.9E+02	mg/kg	5.9E-06	mg/kg/day	1.5E+00	(mg/kg-day)-1	8.9E-06	4.6E-05	mg/kg/day	3.0E-04	mg/kg-day	1.5E-01
				Cadmium	4.7E+00	mg/kg	2.4E-09	mg/kg/day	NA	NA	NA	1.8E-08	mg/kg/day	2.5E-05	mg/kg-day	7.4E-04
				Chromium	2.3E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	2.6E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	4.7E+03	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	8.3E+02	mg/kg	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	2.6E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	4.0E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								1.6E-05					1.7E+00
Air	Ambient Air	Ambient Air Facility Area	Inhalation	**P/PCBs**												
				PCBs, Total	7.3E+01	ng/m3	9.6E-07	mg/kg/day	3.5E-01	(mg/kg-day)-1	3.4E-07	2.7E-06	mg/kg/day	NA	NA	NA
			Exp. Route Total								3.4E-07					NA
		Exposure Point Total									4E-05					3E+00

TABLE E-7.2

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Operations Area Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil Facility Area	Incidental Ingestion	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	9.1E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	6.7E-08	7.1E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	2.1E-07	mg/kg/day	7.3E+00	(mg/kg-day)-1	1.5E-06	1.6E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	2.3E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.7E-07	1.8E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	6.8E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	5.0E-07	5.3E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	1.4E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.0E-07	1.1E-06	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	6.1E+03	mg/kg	6.7E-04	mg/kg/day	1.0E+00	(mg/kg-day)-1	6.7E-04	5.2E-03	mg/kg/day	2.0E-05	mg/kg-day	2.6E+02
				Heptachlor epoxide	3.8E-01	mg/kg	4.2E-08	mg/kg/day	9.1E+00	(mg/kg-day)-1	3.8E-07	3.3E-07	mg/kg/day	1.3E-05	mg/kg-day	2.5E-02
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	8.3E-11	mg/kg/day	1.5E+05	(mg/kg-day)-1	1.2E-05	6.5E-10	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	2.1E-03	mg/kg/day	NA	NA	NA	1.6E-02	mg/kg/day	1.0E+00	mg/kg-day	1.6E-02
				Antimony	8.7E+00	mg/kg	9.6E-07	mg/kg/day	NA	NA	NA	7.5E-06	mg/kg/day	4.0E-04	mg/kg-day	1.9E-02
				Arsenic	3.9E+02	mg/kg	4.3E-05	mg/kg/day	1.5E+00	(mg/kg-day)-1	6.4E-05	3.3E-04	mg/kg/day	3.0E-04	mg/kg-day	1.1E+00
				Cadmium	4.7E+00	mg/kg	5.2E-07	mg/kg/day	NA	NA	NA	4.0E-06	mg/kg/day	1.0E-03	mg/kg-day	4.0E-03
				Chromium	2.3E+01	mg/kg	2.5E-06	mg/kg/day	NA	NA	NA	2.0E-05	mg/kg/day	3.0E-03	mg/kg-day	6.6E-03
				Iron	2.6E+04	mg/kg	2.9E-03	mg/kg/day	NA	NA	NA	2.2E-02	mg/kg/day	7.0E-01	mg/kg-day	3.2E-02
				Lead	4.7E+03	mg/kg	5.2E-04	mg/kg/day	NA	NA	NA	4.0E-03	mg/kg/day	NA	NA	NA
				Manganese	8.3E+02	mg/kg	9.1E-05	mg/kg/day	NA	NA	NA	7.1E-04	mg/kg/day	1.4E-01	mg/kg-day	5.1E-03
				Mercury	2.6E+00	mg/kg	2.9E-07	mg/kg/day	NA	NA	NA	2.2E-06	mg/kg/day	3.0E-04	mg/kg-day	7.4E-03
				Vanadium	4.0E+01	mg/kg	4.4E-06	mg/kg/day	NA	NA	NA	3.4E-05	mg/kg/day	1.0E-03	mg/kg-day	3.4E-02
			Exp. Route Total								7.5E-04					2.6E+02
Surface Soil	Surface Soil	Surface Soil Facility Area	Dermal Contact	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	7.8E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	5.7E-08	6.1E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	1.8E-07	mg/kg/day	7.3E+00	(mg/kg-day)-1	1.3E-06	1.4E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	2.0E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.4E-07	1.5E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	5.9E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	4.3E-07	4.6E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	1.2E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	9.0E-08	9.6E-07	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	6.1E+03	mg/kg	2.6E-04	mg/kg/day	1.0E+00	(mg/kg-day)-1	2.6E-04	2.1E-03	mg/kg/day	2.0E-05	mg/kg-day	1.0E+02
				Heptachlor epoxide	3.8E-01	mg/kg	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	1.6E-11	mg/kg/day	1.5E+05	(mg/kg-day)-1	2.5E-06	1.3E-10	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	8.7E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	3.9E+02	mg/kg	8.5E-06	mg/kg/day	1.5E+00	(mg/kg-day)-1	1.3E-05	6.6E-05	mg/kg/day	3.0E-04	mg/kg-day	2.2E-01
				Cadmium	4.7E+00	mg/kg	3.4E-09	mg/kg/day	NA	NA	NA	2.7E-08	mg/kg/day	2.5E-05	mg/kg-day	1.1E-03
				Chromium	2.3E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	2.6E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	4.7E+03	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	8.3E+02	mg/kg	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	2.6E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	4.0E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								2.8E-04					1.0E+02
Air	Ambient Air	Ambient Air Facility Area	Inhalation	**P/PCBs**												
				PCBs, Total	7.3E+01	ng/m3	9.6E-07	mg/kg/day	3.5E-01	(mg/kg-day)-1	3.4E-07	2.7E-06	mg/kg/day	NA	NA	NA
			Exp. Route Total								3.4E-07					NA
		Exposure Point Total									1E-03					4E+02

TABLE E-7.3

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	O&M Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil Facility Area	Incidental Ingestion	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	5.0E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	3.7E-09	3.9E-08	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	1.1E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	8.4E-08	8.9E-08	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	1.3E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	9.3E-09	9.9E-08	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	3.7E-09	mg/kg/day	7.3E+00	(mg/kg-day)-1	2.7E-08	2.9E-08	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	7.9E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	5.7E-09	6.1E-08	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	3.7E+02	mg/kg	2.3E-06	mg/kg/day	1.0E+00	(mg/kg-day)-1	2.3E-06	1.8E-05	mg/kg/day	2.0E-05	mg/kg-day	8.8E-01
				Heptachlor epoxide	3.8E-01	mg/kg	2.3E-09	mg/kg/day	9.1E+00	(mg/kg-day)-1	2.1E-08	1.8E-08	mg/kg/day	1.3E-05	mg/kg-day	1.4E-03
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	4.6E-12	mg/kg/day	1.5E+05	(mg/kg-day)-1	6.8E-07	3.6E-11	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	1.1E-04	mg/kg/day	NA	NA	NA	8.9E-04	mg/kg/day	1.0E+00	mg/kg-day	8.9E-04
				Antimony	8.7E+00	mg/kg	5.3E-08	mg/kg/day	NA	NA	NA	4.1E-07	mg/kg/day	4.0E-04	mg/kg-day	1.0E-03
				Arsenic	3.9E+02	mg/kg	2.4E-06	mg/kg/day	1.5E+00	(mg/kg-day)-1	3.5E-06	1.8E-05	mg/kg/day	3.0E-04	mg/kg-day	6.1E-02
				Cadmium	4.7E+00	mg/kg	2.8E-08	mg/kg/day	NA	NA	NA	2.2E-07	mg/kg/day	1.0E-03	mg/kg-day	2.2E-04
				Chromium	2.3E+01	mg/kg	1.4E-07	mg/kg/day	NA	NA	NA	1.1E-06	mg/kg/day	3.0E-03	mg/kg-day	3.6E-04
				Iron	2.6E+04	mg/kg	1.6E-04	mg/kg/day	NA	NA	NA	1.2E-03	mg/kg/day	7.0E-01	mg/kg-day	1.7E-03
				Lead	4.7E+03	mg/kg	2.8E-05	mg/kg/day	NA	NA	NA	2.2E-04	mg/kg/day	NA	NA	NA
				Manganese	8.3E+02	mg/kg	5.0E-06	mg/kg/day	NA	NA	NA	3.9E-05	mg/kg/day	1.4E-01	mg/kg-day	2.8E-04
				Mercury	2.6E+00	mg/kg	1.6E-08	mg/kg/day	NA	NA	NA	1.2E-07	mg/kg/day	3.0E-04	mg/kg-day	4.1E-04
				Vanadium	4.0E+01	mg/kg	2.4E-07	mg/kg/day	NA	NA	NA	1.9E-06	mg/kg/day	1.0E-03	mg/kg-day	1.9E-03
			Exp. Route Total								6.6E-06					9.5E-01
Surface Soil	Surface Soil	Surface Soil Facility Area	Dermal Contact	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	4.3E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	3.1E-09	3.3E-08	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	9.8E-09	mg/kg/day	7.3E+00	(mg/kg-day)-1	7.2E-08	7.7E-08	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	1.1E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	7.9E-09	8.5E-08	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	3.2E-09	mg/kg/day	7.3E+00	(mg/kg-day)-1	2.3E-08	2.5E-08	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	6.7E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	4.9E-09	5.2E-08	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	3.7E+02	mg/kg	8.9E-07	mg/kg/day	1.0E+00	(mg/kg-day)-1	8.9E-07	7.0E-06	mg/kg/day	2.0E-05	mg/kg-day	3.5E-01
				Heptachlor epoxide	3.8E-01	mg/kg	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	9.0E-13	mg/kg/day	1.5E+05	(mg/kg-day)-1	1.4E-07	7.0E-12	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	8.7E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	3.9E+02	mg/kg	4.7E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	7.0E-07	3.6E-06	mg/kg/day	3.0E-04	mg/kg-day	1.2E-02
				Cadmium	4.7E+00	mg/kg	1.9E-10	mg/kg/day	NA	NA	NA	1.5E-09	mg/kg/day	2.5E-05	mg/kg-day	5.8E-05
				Chromium	2.3E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	2.6E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	4.7E+03	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	8.3E+02	mg/kg	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	2.6E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	4.0E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								1.8E-06					3.6E-01
Air	Ambient Air	Ambient Air Facility Area	Inhalation	**P/PCBs**												
				PCBs, Total	7.3E+01	ng/m3	5.3E-08	mg/kg/day	3.5E-01	(mg/kg-day)-1	1.8E-08	4.1E-07	mg/kg/day	NA	NA	NA
			Exp. Route Total								1.8E-08					NA
		Exposure Point Total									8E-06					1E+00

TABLE E-7.4

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	O&M Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil Facility Area	Incidental Ingestion	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	5.0E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	3.7E-09	3.9E-08	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	1.1E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	8.4E-08	8.9E-08	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	1.3E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	9.3E-09	9.9E-08	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	3.7E-09	mg/kg/day	7.3E+00	(mg/kg-day)-1	2.7E-08	2.9E-08	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	7.9E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	5.7E-09	6.1E-08	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	6.1E+03	mg/kg	3.7E-05	mg/kg/day	1.0E+00	(mg/kg-day)-1	3.7E-05	2.8E-04	mg/kg/day	2.0E-05	mg/kg-day	1.4E+01
				Heptachlor epoxide	3.8E-01	mg/kg	2.3E-09	mg/kg/day	9.1E+00	(mg/kg-day)-1	2.1E-08	1.8E-08	mg/kg/day	1.3E-05	mg/kg-day	1.4E-03
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	4.6E-12	mg/kg/day	1.5E+05	(mg/kg-day)-1	6.8E-07	3.6E-11	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	1.1E-04	mg/kg/day	NA	NA	NA	8.9E-04	mg/kg/day	1.0E+00	mg/kg-day	8.9E-04
				Antimony	8.7E+00	mg/kg	5.3E-08	mg/kg/day	NA	NA	NA	4.1E-07	mg/kg/day	4.0E-04	mg/kg-day	1.0E-03
				Arsenic	3.9E+02	mg/kg	2.4E-06	mg/kg/day	1.5E+00	(mg/kg-day)-1	3.5E-06	1.8E-05	mg/kg/day	3.0E-04	mg/kg-day	6.1E-02
				Cadmium	4.7E+00	mg/kg	2.8E-08	mg/kg/day	NA	NA	NA	2.2E-07	mg/kg/day	1.0E-03	mg/kg-day	2.2E-04
				Chromium	2.3E+01	mg/kg	1.4E-07	mg/kg/day	NA	NA	NA	1.1E-06	mg/kg/day	3.0E-03	mg/kg-day	3.6E-04
				Iron	2.6E+04	mg/kg	1.6E-04	mg/kg/day	NA	NA	NA	1.2E-03	mg/kg/day	7.0E-01	mg/kg-day	1.7E-03
				Lead	4.7E+03	mg/kg	2.8E-05	mg/kg/day	NA	NA	NA	2.2E-04	mg/kg/day	NA	NA	NA
				Manganese	8.3E+02	mg/kg	5.0E-06	mg/kg/day	NA	NA	NA	3.9E-05	mg/kg/day	1.4E-01	mg/kg-day	2.8E-04
				Mercury	2.6E+00	mg/kg	1.6E-08	mg/kg/day	NA	NA	NA	1.2E-07	mg/kg/day	3.0E-04	mg/kg-day	4.1E-04
				Vanadium	4.0E+01	mg/kg	2.4E-07	mg/kg/day	NA	NA	NA	1.9E-06	mg/kg/day	1.0E-03	mg/kg-day	1.9E-03
			Exp. Route Total								4.1E-05					1.4E+01
Surface Soil	Surface Soil	Surface Soil Facility Area	Dermal Contact	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	4.3E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	3.1E-09	3.3E-08	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	9.8E-09	mg/kg/day	7.3E+00	(mg/kg-day)-1	7.2E-08	7.7E-08	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	1.1E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	7.9E-09	8.5E-08	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	3.2E-09	mg/kg/day	7.3E+00	(mg/kg-day)-1	2.3E-08	2.5E-08	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	6.7E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	4.9E-09	5.2E-08	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	6.1E+03	mg/kg	1.4E-05	mg/kg/day	1.0E+00	(mg/kg-day)-1	1.4E-05	1.1E-04	mg/kg/day	2.0E-05	mg/kg-day	5.6E+00
				Heptachlor epoxide	3.8E-01	mg/kg	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	9.0E-13	mg/kg/day	1.5E+05	(mg/kg-day)-1	1.4E-07	7.0E-12	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	8.7E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	3.9E+02	mg/kg	4.7E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	7.0E-07	3.6E-06	mg/kg/day	3.0E-04	mg/kg-day	1.2E-02
				Cadmium	4.7E+00	mg/kg	1.9E-10	mg/kg/day	NA	NA	NA	1.5E-09	mg/kg/day	2.5E-05	mg/kg-day	5.8E-05
				Chromium	2.3E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	2.6E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	4.7E+03	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	8.3E+02	mg/kg	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	2.6E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	4.0E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								1.5E-05					5.6E+00
Air	Ambient Air	Ambient Air Facility Area	Inhalation	**P/PCBs**												
				PCBs, Total	7.3E+01	ng/m3	5.3E-08	mg/kg/day	3.5E-01	(mg/kg-day)-1	1.8E-08	4.1E-07	mg/kg/day	NA	NA	NA
			Exp. Route Total								1.8E-08					NA
		Exposure Point Total									6E-05					2E+01

TABLE E-7.5

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	Trespasser
Receptor Age:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil Facility Area	Incidental Ingestion	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	7.2E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	5.3E-09	5.1E-08	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	1.7E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	1.2E-07	1.2E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	1.8E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.3E-08	1.3E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	5.4E-09	mg/kg/day	7.3E+00	(mg/kg-day)-1	3.9E-08	3.8E-08	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	1.1E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	8.3E-09	7.9E-08	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	3.7E+02	mg/kg	3.3E-06	mg/kg/day	1.0E+00	(mg/kg-day)-1	3.3E-06	2.3E-05	mg/kg/day	2.0E-05	mg/kg-day	1.1E+00
				Heptachlor epoxide	3.8E-01	mg/kg	3.3E-09	mg/kg/day	9.1E+00	(mg/kg-day)-1	3.0E-08	2.3E-08	mg/kg/day	1.3E-05	mg/kg-day	1.8E-03
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	6.6E-12	mg/kg/day	1.5E+05	(mg/kg-day)-1	9.9E-07	4.6E-11	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	1.7E-04	mg/kg/day	NA	NA	NA	1.2E-03	mg/kg/day	1.0E+00	mg/kg-day	1.2E-03
				Antimony	8.7E+00	mg/kg	7.6E-08	mg/kg/day	NA	NA	NA	5.3E-07	mg/kg/day	4.0E-04	mg/kg-day	1.3E-03
				Arsenic	3.9E+02	mg/kg	3.4E-06	mg/kg/day	1.5E+00	(mg/kg-day)-1	5.1E-06	2.4E-05	mg/kg/day	3.0E-04	mg/kg-day	7.9E-02
				Cadmium	4.7E+00	mg/kg	4.1E-08	mg/kg/day	NA	NA	NA	2.9E-07	mg/kg/day	1.0E-03	mg/kg-day	2.9E-04
				Chromium	2.3E+01	mg/kg	2.0E-07	mg/kg/day	NA	NA	NA	1.4E-06	mg/kg/day	3.0E-03	mg/kg-day	4.7E-04
				Iron	2.6E+04	mg/kg	2.3E-04	mg/kg/day	NA	NA	NA	1.6E-03	mg/kg/day	7.0E-01	mg/kg-day	2.3E-03
				Lead	4.7E+03	mg/kg	4.1E-05	mg/kg/day	NA	NA	NA	2.9E-04	mg/kg/day	NA	NA	NA
				Manganese	8.3E+02	mg/kg	7.2E-06	mg/kg/day	NA	NA	NA	5.1E-05	mg/kg/day	1.4E-01	mg/kg-day	3.6E-04
				Mercury	2.6E+00	mg/kg	2.3E-08	mg/kg/day	NA	NA	NA	1.6E-07	mg/kg/day	3.0E-04	mg/kg-day	5.3E-04
				Vanadium	4.0E+01	mg/kg	3.5E-07	mg/kg/day	NA	NA	NA	2.4E-06	mg/kg/day	1.0E-03	mg/kg-day	2.4E-03
			Exp. Route Total								9.5E-06					1.2E+00
Surface Soil	Surface Soil	Surface Soil Facility Area	Dermal Contact	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	1.1E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	7.7E-10	7.4E-09	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	2.4E-09	mg/kg/day	7.3E+00	(mg/kg-day)-1	1.8E-08	1.7E-08	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	2.7E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.9E-09	1.9E-08	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	7.9E-10	mg/kg/day	7.3E+00	(mg/kg-day)-1	5.7E-09	5.5E-09	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	1.6E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.2E-09	1.2E-08	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	3.7E+02	mg/kg	2.2E-07	mg/kg/day	1.0E+00	(mg/kg-day)-1	2.2E-07	1.5E-06	mg/kg/day	2.0E-05	mg/kg-day	7.6E-02
				Heptachlor epoxide	3.8E-01	mg/kg	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	2.2E-13	mg/kg/day	1.5E+05	(mg/kg-day)-1	3.3E-08	1.5E-12	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	8.7E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	3.9E+02	mg/kg	1.1E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	1.7E-07	8.0E-07	mg/kg/day	3.0E-04	mg/kg-day	2.7E-03
				Cadmium	4.7E+00	mg/kg	4.6E-11	mg/kg/day	NA	NA	NA	3.2E-10	mg/kg/day	2.5E-05	mg/kg-day	1.3E-05
				Chromium	2.3E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	2.6E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	4.7E+03	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	8.3E+02	mg/kg	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	2.6E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	4.0E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								4.5E-07					7.9E-02
Air	Ambient Air	Ambient Air Facility Area	Inhalation	**P/PCBs**												
				PCBs, Total	7.3E+01	ng/m3	1.4E-08	mg/kg/day	3.5E-01	(mg/kg-day)-1	4.7E-09	9.5E-08	mg/kg/day	NA	NA	NA
			Exp. Route Total								4.7E-09					NA
		Exposure Point Total									1E-05					1E+00

TABLE E-7.6

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Trespasser
Receptor Age:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil Facility Area	Incidental Ingestion	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	7.2E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	5.3E-09	5.1E-08	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	1.7E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	1.2E-07	1.2E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	1.8E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.3E-08	1.3E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	5.4E-09	mg/kg/day	7.3E+00	(mg/kg-day)-1	3.9E-08	3.8E-08	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	1.1E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	8.3E-09	7.9E-08	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	6.1E+03	mg/kg	5.3E-05	mg/kg/day	1.0E+00	(mg/kg-day)-1	5.3E-05	3.7E-04	mg/kg/day	2.0E-05	mg/kg-day	1.8E+01
				Heptachlor epoxide	3.8E-01	mg/kg	3.3E-09	mg/kg/day	9.1E+00	(mg/kg-day)-1	3.0E-08	2.3E-08	mg/kg/day	1.3E-05	mg/kg-day	1.8E-03
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	6.6E-12	mg/kg/day	1.5E+05	(mg/kg-day)-1	9.9E-07	4.6E-11	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	1.7E-04	mg/kg/day	NA	NA	NA	1.2E-03	mg/kg/day	1.0E+00	mg/kg-day	1.2E-03
				Antimony	8.7E+00	mg/kg	7.6E-08	mg/kg/day	NA	NA	NA	5.3E-07	mg/kg/day	4.0E-04	mg/kg-day	1.3E-03
				Arsenic	3.9E+02	mg/kg	3.4E-06	mg/kg/day	1.5E+00	(mg/kg-day)-1	5.1E-06	2.4E-05	mg/kg/day	3.0E-04	mg/kg-day	7.9E-02
				Cadmium	4.7E+00	mg/kg	4.1E-08	mg/kg/day	NA	NA	NA	2.9E-07	mg/kg/day	1.0E-03	mg/kg-day	2.9E-04
				Chromium	2.3E+01	mg/kg	2.0E-07	mg/kg/day	NA	NA	NA	1.4E-06	mg/kg/day	3.0E-03	mg/kg-day	4.7E-04
				Iron	2.6E+04	mg/kg	2.3E-04	mg/kg/day	NA	NA	NA	1.6E-03	mg/kg/day	7.0E-01	mg/kg-day	2.3E-03
				Lead	4.7E+03	mg/kg	4.1E-05	mg/kg/day	NA	NA	NA	2.9E-04	mg/kg/day	NA	NA	NA
				Manganese	8.3E+02	mg/kg	7.2E-06	mg/kg/day	NA	NA	NA	5.1E-05	mg/kg/day	1.4E-01	mg/kg-day	3.6E-04
				Mercury	2.6E+00	mg/kg	2.3E-08	mg/kg/day	NA	NA	NA	1.6E-07	mg/kg/day	3.0E-04	mg/kg-day	5.3E-04
				Vanadium	4.0E+01	mg/kg	3.5E-07	mg/kg/day	NA	NA	NA	2.4E-06	mg/kg/day	1.0E-03	mg/kg-day	2.4E-03
			Exp. Route Total								5.9E-05					1.9E+01
Surface Soil	Surface Soil	Surface Soil Facility Area	Dermal Contact	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	1.1E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	7.7E-10	7.4E-09	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	2.4E-09	mg/kg/day	7.3E+00	(mg/kg-day)-1	1.8E-08	1.7E-08	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	2.7E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.9E-09	1.9E-08	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	7.9E-10	mg/kg/day	7.3E+00	(mg/kg-day)-1	5.7E-09	5.5E-09	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	1.6E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.2E-09	1.2E-08	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	6.1E+03	mg/kg	3.5E-06	mg/kg/day	1.0E+00	(mg/kg-day)-1	3.5E-06	2.5E-05	mg/kg/day	2.0E-05	mg/kg-day	1.2E+00
				Heptachlor epoxide	3.8E-01	mg/kg	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	2.2E-13	mg/kg/day	1.5E+05	(mg/kg-day)-1	3.3E-08	1.5E-12	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	8.7E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	3.9E+02	mg/kg	1.1E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	1.7E-07	8.0E-07	mg/kg/day	3.0E-04	mg/kg-day	2.7E-03
				Cadmium	4.7E+00	mg/kg	4.6E-11	mg/kg/day	NA	NA	NA	3.2E-10	mg/kg/day	2.5E-05	mg/kg-day	1.3E-05
				Chromium	2.3E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	2.6E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	4.7E+03	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	8.3E+02	mg/kg	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	2.6E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	4.0E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								3.8E-06					1.2E+00
Air	Ambient Air	Ambient Air Facility Area	Inhalation	**P/PCBs**												
				PCBs, Total	7.3E+01	ng/m3	1.4E-08	mg/kg/day	3.5E-01	(mg/kg-day)-1	4.7E-09	9.5E-08	mg/kg/day	NA	NA	NA
			Exp. Route Total								4.7E-09					NA
		Exposure Point Total									6E-05					2E+01

TABLE E-7.7

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/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				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface/ Subsurface Soil	Surface/ Subsurface Soil	Surface/ Subsurface Soil Facility Area	Incidental Ingestion	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	6.1E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	4.5E-09	4.3E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	1.4E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	1.0E-07	9.8E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	1.5E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.1E-08	1.1E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	4.6E-09	mg/kg/day	7.3E+00	(mg/kg-day)-1	3.3E-08	3.2E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	9.6E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	7.0E-09	6.7E-07	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	3.3E+03	mg/kg	2.4E-05	mg/kg/day	1.0E+00	(mg/kg-day)-1	2.4E-05	1.7E-03	mg/kg/day	2.0E-05	mg/kg-day	8.5E+01
				Heptachlor epoxide	3.8E-01	mg/kg	2.8E-09	mg/kg/day	9.1E+00	(mg/kg-day)-1	2.6E-08	2.0E-07	mg/kg/day	1.3E-05	mg/kg-day	1.5E-02
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	5.6E-12	mg/kg/day	1.5E+05	(mg/kg-day)-1	8.4E-07	3.9E-10	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	1.4E-04	mg/kg/day	NA	NA	NA	9.8E-03	mg/kg/day	1.0E+00	mg/kg-day	9.8E-03
				Antimony	8.7E+00	mg/kg	6.4E-08	mg/kg/day	NA	NA	NA	4.5E-06	mg/kg/day	4.0E-04	mg/kg-day	1.1E-02
				Arsenic	1.5E+02	mg/kg	1.1E-06	mg/kg/day	1.5E+00	(mg/kg-day)-1	1.6E-06	7.6E-05	mg/kg/day	3.0E-04	mg/kg-day	2.5E-01
				Barium	1.9E+02	mg/kg	1.4E-06	mg/kg/day	NA	NA	NA	9.9E-05	mg/kg/day	2.0E-01	mg/kg-day	5.0E-04
				Cadmium	1.3E+00	mg/kg	9.7E-09	mg/kg/day	NA	NA	NA	6.8E-07	mg/kg/day	1.0E-03	mg/kg-day	6.8E-04
				Chromium	4.7E+01	mg/kg	3.5E-07	mg/kg/day	NA	NA	NA	2.4E-05	mg/kg/day	3.0E-03	mg/kg-day	8.1E-03
				Iron	2.6E+04	mg/kg	1.9E-04	mg/kg/day	NA	NA	NA	1.3E-02	mg/kg/day	7.0E-01	mg/kg-day	1.9E-02
				Lead	2.6E+03	mg/kg	1.9E-05	mg/kg/day	NA	NA	NA	1.3E-03	mg/kg/day	NA	NA	NA
				Manganese	2.8E+03	mg/kg	2.1E-05	mg/kg/day	NA	NA	NA	1.4E-03	mg/kg/day	1.4E-01	mg/kg-day	1.0E-02
				Mercury	1.5E+00	mg/kg	1.1E-08	mg/kg/day	NA	NA	NA	7.8E-07	mg/kg/day	3.0E-04	mg/kg-day	2.6E-03
				Nickel	8.9E+02	mg/kg	6.6E-06	mg/kg/day	NA	NA	NA	4.6E-04	mg/kg/day	2.0E-02	mg/kg-day	2.3E-02
				Vanadium	4.7E+01	mg/kg	3.5E-07	mg/kg/day	NA	NA	NA	2.4E-05	mg/kg/day	1.0E-03	mg/kg-day	2.4E-02
			Exp. Route Total								2.7E-05					8.5E+01
Surface/ Subsurface Soil	Surface/ Subsurface Soil	Surface/ Subsurface Soil Facility Area	Dermal Contact	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	8.0E-10	mg/kg/day	7.3E-01	(mg/kg-day)-1	5.8E-10	5.6E-08	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	1.8E-09	mg/kg/day	7.3E+00	(mg/kg-day)-1	1.3E-08	1.3E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	2.0E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.5E-09	1.4E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	5.9E-10	mg/kg/day	7.3E+00	(mg/kg-day)-1	4.3E-09	4.2E-08	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	1.2E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	9.1E-10	8.7E-08	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	3.3E+03	mg/kg	1.4E-06	mg/kg/day	1.0E+00	(mg/kg-day)-1	1.4E-06	1.0E-04	mg/kg/day	2.0E-05	mg/kg-day	5.1E+00
				Heptachlor epoxide	3.8E-01	mg/kg	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	1.7E-13	mg/kg/day	1.5E+05	(mg/kg-day)-1	2.5E-08	1.2E-11	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	8.7E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	1.5E+02	mg/kg	3.3E-08	mg/kg/day	1.5E+00	(mg/kg-day)-1	4.9E-08	2.3E-06	mg/kg/day	3.0E-04	mg/kg-day	7.6E-03
				Barium	1.9E+02	mg/kg	NA	NA	NA	NA	NA	NA	NA	1.4E-02	mg/kg-day	NA
				Cadmium	1.3E+00	mg/kg	9.7E-12	mg/kg/day	NA	NA	NA	6.8E-10	mg/kg/day	2.5E-05	mg/kg-day	2.7E-05
				Chromium	4.7E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	2.6E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	2.6E+03	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	2.8E+03	mg/kg	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	1.5E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Nickel	8.9E+02	mg/kg	NA	NA	NA	NA	NA	NA	NA	8.0E-04	mg/kg-day	NA
				Vanadium	4.7E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								1.5E-06					5.1E+00
Air	Ambient Air	Ambient Air Facility Area	Inhalation	**P/PCBs**												
				PCBs, Total	7.3E+01	ng/m3	3.2E-08	mg/kg/day	3.5E-01	(mg/kg-day)-1	1.1E-08	2.3E-06	mg/kg/day	NA	NA	NA
			Exp. Route Total								1.1E-08					NA
		Exposure Point Total									3E-05					9E+01

TABLE E-7.8

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	O&M Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil	Incidental Ingestion	**SVOCs**												
		South Landfill		Benzo(a)anthracene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(a)pyrene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				P/PCBs												
				PCBs, Total	1.4E+01	mg/kg	8.2E-08	mg/kg/day	1.0E+00	(mg/kg-day)-1	8.2E-08	6.4E-07	mg/kg/day	2.0E-05	mg/kg-day	3.2E-02
				Heptachlor epoxide	NA	NA	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.0E-04	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+00	(mg/kg-day)-1	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E-03	mg/kg-day	NA
				Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-03	mg/kg-day	NA
				Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.4E-01	mg/kg-day	NA
				Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E-03	mg/kg-day	NA
			Exp. Route Total								8.2E-08					3.2E-02
Surface Soil	Surface Soil	Surface Soil	Dermal Contact	**SVOCs**												
		South Landfill		Benzo(a)anthracene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(a)pyrene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				P/PCBs												
				PCBs, Total	1.4E+01	mg/kg	3.3E-08	mg/kg/day	1.0E+00	(mg/kg-day)-1	3.3E-08	2.5E-07	mg/kg/day	2.0E-05	mg/kg-day	1.3E-02
				Heptachlor epoxide	NA	NA	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+00	(mg/kg-day)-1	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5E-05	mg/kg-day	NA
				Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								3.3E-08					1.3E-02
Air	Ambien Air	Ambient Air	Inhalation	**P/PCBs**												
		South Landfill		PCBs, Total	7.0E+00	ng/m3	5.1E-09	mg/kg/day	3.5E-01	(mg/kg-day)-1	1.8E-09	3.9E-08	mg/kg/day	NA	NA	NA
			Exp. Route Total								1.8E-09					NA
		Exposure Point Total									1E-07					4E-02

TABLE E-7.9

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor Age:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil	Incidental Ingestion	**SVOCs**												
		South Landfill		Benzo(a)anthracene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(a)pyrene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				P/PCBs												
				PCBs, Total	1.4E+01	mg/kg	1.2E-07	mg/kg/day	1.0E+00	(mg/kg-day)-1	1.2E-07	8.3E-07	mg/kg/day	2.0E-05	mg/kg-day	4.2E-02
				Heptachlor epoxide	NA	NA	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.0E-04	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+00	(mg/kg-day)-1	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E-03	mg/kg-day	NA
				Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-03	mg/kg-day	NA
				Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.4E-01	mg/kg-day	NA
				Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E-03	mg/kg-day	NA
			Exp. Route Total								1.2E-07					4.2E-02
Surface Soil	Surface Soil	Surface Soil	Dermal Contact	**SVOCs**												
		South Landfill		Benzo(a)anthracene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(a)pyrene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				P/PCBs												
				PCBs, Total	1.4E+01	mg/kg	8.0E-09	mg/kg/day	1.0E+00	(mg/kg-day)-1	8.0E-09	5.6E-08	mg/kg/day	2.0E-05	mg/kg-day	2.8E-03
				Heptachlor epoxide	NA	NA	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+00	(mg/kg-day)-1	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5E-05	mg/kg-day	NA
				Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								8.0E-09					2.8E-03
Air	Ambient Air	Ambient Air	Inhalation	**P/PCBs**												
		South Landfill		PCBs, Total	7.0E+00	ng/m3	1.3E-09	mg/kg/day	3.5E-01	(mg/kg-day)-1	4.5E-10	9.1E-09	mg/kg/day	NA	NA	NA
			Exp. Route Total								4.5E-10					NA
		Exposure Point Total									1E-07					4E-02

TABLE E-7.10

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	O&M Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil	Incidental Ingestion	**SVOCs**												
		West End Landfill		Benzo(a)anthracene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(a)pyrene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				P/PCBs												
				PCBs, Total	NA	NA	NA	NA	1.0E+00	(mg/kg-day)-1	NA	NA	NA	2.0E-05	mg/kg-day	NA
				Heptachlor epoxide	NA	NA	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.0E-04	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+00	(mg/kg-day)-1	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E-03	mg/kg-day	NA
				Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-03	mg/kg-day	NA
				Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.4E-01	mg/kg-day	NA
				Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E-03	mg/kg-day	NA
			Exp. Route Total								NA					NA
Surface Soil	Surface Soil	Surface Soil	Dermal Contact	**SVOCs**												
		West End Landfill		Benzo(a)anthracene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(a)pyrene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				P/PCBs												
				PCBs, Total	NA	NA	NA	NA	1.0E+00	(mg/kg-day)-1	NA	NA	NA	2.0E-05	mg/kg-day	NA
				Heptachlor epoxide	NA	NA	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+00	(mg/kg-day)-1	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5E-05	mg/kg-day	NA
				Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								NA					NA
Air	Ambient Air	Ambient Air West Landfill	Inhalation	**P/PCBs** PCBs, Total	1.0E+01	ng/m3	7.3E-09	mg/kg/day	3.5E-01	(mg/kg-day)-1	2.6E-09	5.7E-08	mg/kg/day	NA	NA	NA
			Exp. Route Total								2.6E-09					NA
		Exposure Point Total									3E-09					NA

TABLE E-7.11

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor Age:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil	Incidental Ingestion	**SVOCs**												
		West End Landfill		Benzo(a)anthracene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(a)pyrene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				P/PCBs												
				PCBs, Total	NA	NA	NA	NA	1.0E+00	(mg/kg-day)-1	NA	NA	NA	2.0E-05	mg/kg-day	NA
				Heptachlor epoxide	NA	NA	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.0E-04	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+00	(mg/kg-day)-1	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E-03	mg/kg-day	NA
				Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-03	mg/kg-day	NA
				Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.4E-01	mg/kg-day	NA
				Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E-03	mg/kg-day	NA
			Exp. Route Total								NA					NA
Surface Soil	Surface Soil	Surface Soil	Dermal Contact	**SVOCs**												
		West End Landfill		Benzo(a)anthracene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(a)pyrene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				P/PCBs												
				PCBs, Total	NA	NA	NA	NA	1.0E+00	(mg/kg-day)-1	NA	NA	NA	2.0E-05	mg/kg-day	NA
				Heptachlor epoxide	NA	NA	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+00	(mg/kg-day)-1	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5E-05	mg/kg-day	NA
				Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								NA					NA
Air	Ambient Air	Ambient Air	Inhalation	**P/PCBs**												
		West Landfill		PCBs, Total	1.0E+01	ng/m3	1.9E-09	mg/kg/day	3.5E-01	(mg/kg-day)-1	6.6E-10	1.3E-08	mg/kg/day	NA	NA	NA
			Exp. Route Total								6.6E-10					NA
		Exposure Point Total									7E-10					NA

TABLE E-7.12

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Operations Area Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Groundwater	Groundwater	Tap Water	Ingestion	**VOCs**												
				1,2,4-Trichlorobenzene	1.1E+01	µg/L	1.2E-05	mg/kg/day	NA	NA	NA	3.4E-05	mg/kg/day	1.0E-02	mg/kg-day	3.4E-03
				1,4-Dichlorobenzene	2.4E+00	µg/L	2.7E-06	mg/kg/day	2.4E-02	(mg/kg-day)-1	6.5E-08	7.5E-06	mg/kg/day	3.0E-02	mg/kg-day	2.5E-04
				Chlorobenzene	5.1E+00	µg/L	5.6E-06	mg/kg/day	NA	NA	NA	1.6E-05	mg/kg/day	2.0E-02	mg/kg-day	7.9E-04
				cis-1,2-Dichloroethene	1.0E+01	µg/L	1.1E-05	mg/kg/day	NA	NA	NA	3.1E-05	mg/kg/day	1.0E-02	mg/kg-day	3.1E-03
				Pentachlorophenol	2.0E+01	µg/L	2.2E-05	mg/kg/day	1.2E-01	(mg/kg-day)-1	2.6E-06	6.1E-05	mg/kg/day	3.0E-02	mg/kg-day	2.0E-03
				Trichloroethylene	3.4E+00	µg/L	3.7E-06	mg/kg/day	4.0E-01	(mg/kg-day)-1	1.5E-06	1.0E-05	mg/kg/day	3.0E-04	mg/kg-day	3.5E-02
				SVOCs												
				2,4,6-Trichlorophenol	1.5E+01	µg/L	1.7E-05	mg/kg/day	1.1E-02	(mg/kg-day)-1	1.8E-07	4.6E-05	mg/kg/day	1.0E-04	mg/kg-day	4.6E-01
				Indeno(1,2,3-cd)pyrene	7.3E-01	µg/L	8.0E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	5.9E-07	2.3E-06	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	2.8E+03	µg/L	3.0E-03	mg/kg/day	1.0E+00	(mg/kg-day)-1	3.0E-03	8.5E-03	mg/kg/day	2.0E-05	mg/kg-day	4.3E+02
				gamma-BHC	5.5E-01	µg/L	6.1E-07	mg/kg/day	1.3E+00	(mg/kg-day)-1	7.9E-07	1.7E-06	mg/kg/day	3.0E-04	mg/kg-day	5.7E-03
				Methyl parathion	7.4E+01	µg/L	8.2E-05	mg/kg/day	NA	NA	NA	2.3E-04	mg/kg/day	2.5E-04	mg/kg-day	9.1E-01
				Parathion	9.4E+03	µg/L	1.0E-02	mg/kg/day	NA	NA	NA	2.9E-02	mg/kg/day	6.0E-03	mg/kg-day	4.8E+00
				Dioxin												
				Dioxin TEQ	3.6E-06	µg/L	4.0E-12	mg/kg/day	1.5E+05	(mg/kg-day)-1	6.0E-07	1.1E-11	mg/kg/day	NA	NA	NA
				Inorganics												
				Antimony	5.1E+00	µg/L	5.6E-06	mg/kg/day	NA	NA	NA	1.6E-05	mg/kg/day	4.0E-04	mg/kg-day	3.9E-02
				Arsenic	6.1E+00	µg/L	6.7E-06	mg/kg/day	1.5E+00	(mg/kg-day)-1	1.0E-05	1.9E-05	mg/kg/day	3.0E-04	mg/kg-day	6.3E-02
				Manganese	1.3E+03	µg/L	1.4E-03	mg/kg/day	NA	NA	NA	4.0E-03	mg/kg/day	1.4E-01	mg/kg-day	2.9E-02
				Mercury	1.8E+00	µg/L	2.0E-06	mg/kg/day	NA	NA	NA	5.5E-06	mg/kg/day	3.0E-04	mg/kg-day	1.8E-02
			Exp. Route Total								3.1E-03					4.3E+02
		Exposure Point Total									3E-03					4E+02

TABLE E-7.13

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	O&M Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Groundwater	Groundwater	Tap Water	Ingestion	**VOCs**												
				1,2,4-Trichlorobenzene	1.1E+01	µg/L	6.6E-07	mg/kg/day	NA	NA	NA	5.2E-06	mg/kg/day	1.0E-02	mg/kg-day	5.2E-04
				1,4-Dichlorobenzene	2.4E+00	µg/L	1.5E-07	mg/kg/day	2.4E-02	(mg/kg-day)-1	3.5E-09	1.1E-06	mg/kg/day	3.0E-02	mg/kg-day	3.8E-05
				Chlorobenzene	5.1E+00	µg/L	3.1E-07	mg/kg/day	NA	NA	NA	2.4E-06	mg/kg/day	2.0E-02	mg/kg-day	1.2E-04
				cis-1,2-Dichloroethene	1.0E+01	µg/L	6.0E-07	mg/kg/day	NA	NA	NA	4.7E-06	mg/kg/day	1.0E-02	mg/kg-day	4.7E-04
				Pentachlorophenol	2.0E+01	µg/L	1.2E-06	mg/kg/day	1.2E-01	(mg/kg-day)-1	1.4E-07	9.3E-06	mg/kg/day	3.0E-02	mg/kg-day	3.1E-04
				Trichloroethylene	3.4E+00	µg/L	2.1E-07	mg/kg/day	4.0E-01	(mg/kg-day)-1	8.2E-08	1.6E-06	mg/kg/day	3.0E-04	mg/kg-day	5.3E-03
				SVOCs												
				2,4,6-Trichlorophenol	1.5E+01	µg/L	9.1E-07	mg/kg/day	1.1E-02	(mg/kg-day)-1	1.0E-08	7.0E-06	mg/kg/day	1.0E-04	mg/kg-day	7.0E-02
				Indeno(1,2,3-cd)pyrene	7.3E-01	µg/L	4.4E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	3.2E-08	3.4E-07	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	2.8E+03	µg/L	1.7E-04	mg/kg/day	1.0E+00	(mg/kg-day)-1	1.7E-04	1.3E-03	mg/kg/day	2.0E-05	mg/kg-day	6.5E+01
				gamma-BHC	5.5E-01	µg/L	3.3E-08	mg/kg/day	1.3E+00	(mg/kg-day)-1	4.3E-08	2.6E-07	mg/kg/day	3.0E-04	mg/kg-day	8.6E-04
				Methyl parathion	7.4E+01	µg/L	4.5E-06	mg/kg/day	NA	NA	NA	3.5E-05	mg/kg/day	2.5E-04	mg/kg-day	1.4E-01
				Parathion	9.4E+03	µg/L	5.7E-04	mg/kg/day	NA	NA	NA	4.4E-03	mg/kg/day	6.0E-03	mg/kg-day	7.3E-01
				Dioxin												
				Dioxin TEQ	3.6E-06	µg/L	2.2E-13	mg/kg/day	1.5E+05	(mg/kg-day)-1	3.3E-08	1.7E-12	mg/kg/day	NA	NA	NA
				Inorganics												
				Antimony	5.1E+00	µg/L	3.1E-07	mg/kg/day	NA	NA	NA	2.4E-06	mg/kg/day	4.0E-04	mg/kg-day	6.0E-03
				Arsenic	6.1E+00	µg/L	3.7E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	5.5E-07	2.9E-06	mg/kg/day	3.0E-04	mg/kg-day	9.5E-03
				Manganese	1.3E+03	µg/L	7.9E-05	mg/kg/day	NA	NA	NA	6.1E-04	mg/kg/day	1.4E-01	mg/kg-day	4.4E-03
				Mercury	1.8E+00	µg/L	1.1E-07	mg/kg/day	NA	NA	NA	8.4E-07	mg/kg/day	3.0E-04	mg/kg-day	2.8E-03
			Exp. Route Total								1.7E-04					6.6E+01
		Exposure Point Total									2E-04					7E+01

TABLE E-8.1
CALCULATION OF RADIATION CANCER RISKS
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	NA
Receptor Population:	NA
Receptor Age:	NA

Medium	Exposure Medium	Exposure Point	Exposure Route	Radionuclide of Potential Concern	EPC		Risk Calculation Approach	Cancer Risk Calculations				
								Intake/Activity		CSF		Cancer Risk
					Value	Units		Value	Units	Value	Units	
NOT APPLICABLE TO THIS SITE												
			Exp. Route Total									
		Exposure Point Total										
Total of Receptor Risks Across All Media												

TABLE E-9.1
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	Operations Area Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		Facility Area	Benzo(a)anthracene	3.3E-08	NA	4.0E-08	7.3E-08	NA	NA	NA	NA	NA
			Benzo(a)pyrene	7.6E-07	NA	9.1E-07	1.7E-06	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	8.4E-08	NA	1.0E-07	1.9E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	2.5E-07	NA	3.0E-07	5.5E-07	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	5.2E-08	NA	6.2E-08	1.1E-07	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	2.2E-06	NA	4.0E-06	6.2E-06	Eye/Skin/Nails/Immune System	8.5E-01	NA	1.6E+00	2.4E+00
			Heptachlor epoxide	1.9E-07	NA	NA	1.9E-07	Liver	1.3E-02	NA	NA	1.3E-02
			Dioxin									
			Dioxin TEQ	6.2E-06	NA	1.7E-06	8.0E-06	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	8.1E-03	NA	NA	8.1E-03
			Antimony	NA	NA	NA	NA	Whole Body/Blood	9.3E-03	NA	NA	9.3E-03
			Arsenic	9.7E-06	NA	8.9E-06	1.9E-05	Skin	1.7E-01	NA	1.5E-01	3.2E-01
			Cadmium	NA	NA	NA	NA	Kidney	2.0E-03	NA	7.4E-04	2.8E-03
			Chromium	NA	NA	NA	NA	GI Tract	3.3E-03	NA	NA	3.3E-03
			Iron	NA	NA	NA	NA	GI Tract/Liver	1.6E-02	NA	NA	1.6E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	2.5E-03	NA	NA	2.5E-03
			Mercury	NA	NA	NA	NA	Immune System	3.7E-03	NA	NA	3.7E-03
			Vanadium	NA	NA	NA	NA	Metabolic	1.7E-02	NA	NA	1.7E-02
			Chemical Total	1.9E-05	NA	1.6E-05	3.5E-05		1.1E+00	NA	1.7E+00	2.8E+00
		Exposure Point Total					3.5E-05					2.8E+00
	Exposure Medium Total						3.5E-05					2.8E+00
Surface Soil Total							3.5E-05					2.8E+00
Air	Ambient Air	Ambient Air	**P/PCBs**									
		Facility Area	PCBs, Total	NA	3.4E-07	NA	3.4E-07	NA	NA	NA	NA	NA
			Chemical Total	NA	3.4E-07	NA	3.4E-07		NA	NA	NA	NA
		Exposure Point Total					3.4E-07					NA
	Exposure Medium Total						3.4E-07					NA
Air Total							3.4E-07					NA
Receptor Total							3.6E-05					2.8E+00

Total Risk Across All Media =	4E-05
Total Hazard Across All Media =	3
Total Liver HI Across All Media =	0.03
Total Eye HI Across All Media =	2
Total GI Tract HI Across All Media =	0.03
Total Nails HI Across All Media =	2
Total Blood HI Across All Media =	0.01
Total Whole Body HI Across All Media =	0.01
Total Skin HI Across All Media =	3
Total Kidney HI Across All Media =	0.003
Total CNS HI Across All Media =	0.01
Total Immune System HI Across All Media =	2
Total Metabolic HI Across All Media =	0.02

TABLE E-9.2
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Operations Area Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		Facility Area	Benzo(a)anthracene	6.7E-08	NA	5.7E-08	1.2E-07	NA	NA	NA	NA	NA
			Benzo(a)pyrene	1.5E-06	NA	1.3E-06	2.8E-06	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	1.7E-07	NA	1.4E-07	3.1E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	5.0E-07	NA	4.3E-07	9.3E-07	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	1.0E-07	NA	9.0E-08	1.9E-07	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	6.7E-04	NA	2.6E-04	9.3E-04	Eye/Skin/Nails/Immune System	2.6E+02	NA	1.0E+02	3.6E+02
			Heptachlor epoxide	3.8E-07	NA	NA	3.8E-07	Liver	2.5E-02	NA	NA	2.5E-02
			Dioxin									
			Dioxin TEQ	1.2E-05	NA	2.5E-06	1.5E-05	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	1.6E-02	NA	NA	1.6E-02
			Antimony	NA	NA	NA	NA	Whole Body/Blood	1.9E-02	NA	NA	1.9E-02
			Arsenic	6.4E-05	NA	1.3E-05	7.7E-05	Skin	1.1E+00	NA	2.2E-01	1.3E+00
			Cadmium	NA	NA	NA	NA	Kidney	4.0E-03	NA	1.1E-03	5.1E-03
			Chromium	NA	NA	NA	NA	GI Tract	6.6E-03	NA	NA	6.6E-03
			Iron	NA	NA	NA	NA	GI Tract/Liver	3.2E-02	NA	NA	3.2E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	5.1E-03	NA	NA	5.1E-03
			Mercury	NA	NA	NA	NA	Immune System	7.4E-03	NA	NA	7.4E-03
			Vanadium	NA	NA	NA	NA	Metabolic	3.4E-02	NA	NA	3.4E-02
			Chemical Total	7.5E-04	NA	2.8E-04	1.0E-03		2.6E+02	NA	1.0E+02	3.6E+02
		Exposure Point Total					1.0E-03					3.6E+02
	Exposure Medium Total						1.0E-03					3.6E+02
Surface Soil Total							1.0E-03					3.6E+02
Air	Ambient Air	Ambient Air	**P/PCBs**									
		Facility Area	PCBs, Total	NA	3.4E-07	NA	3.4E-07	NA	NA	NA	NA	NA
			Chemical Total	NA	3.4E-07	NA	3.4E-07		NA	NA	NA	NA
		Exposure Point Total					3.4E-07					NA
	Exposure Medium Total						3.4E-07					NA
Air Total							3.4E-07					NA
Receptor Total							1.0E-03					3.6E+02

Total Risk Across All Media =	1E-03
Total Hazard Across All Media =	364
Total Liver HI Across All Media =	0.06
Total Eye HI Across All Media =	363
Total GI Tract HI Across All Media =	0.05
Total Nails HI Across All Media =	363
Total Blood HI Across All Media =	0.02
Total Whole Body HI Across All Media =	0.02
Total Skin HI Across All Media =	364
Total Kidney HI Across All Media =	0.005
Total CNS HI Across All Media =	0.02
Total Immune System HI Across All Media =	363
Total Metabolic HI Across All Media =	0.03

TABLE E-9.3
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil Facility Area	**SVOCs**									
			Benzo(a)anthracene	3.7E-09	NA	3.1E-09	6.8E-09	NA	NA	NA	NA	NA
			Benzo(a)pyrene	8.4E-08	NA	7.2E-08	1.6E-07	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	9.3E-09	NA	7.9E-09	1.7E-08	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	2.7E-08	NA	2.3E-08	5.1E-08	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	5.7E-09	NA	4.9E-09	1.1E-08	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	2.3E-06	NA	8.9E-07	3.2E-06	Eye/Skin/Nails/Immune System	8.8E-01	NA	3.5E-01	1.2E+00
			Heptachlor epoxide	2.1E-08	NA	NA	2.1E-08	Liver	1.4E-03	NA	NA	1.4E-03
			Dioxin									
			Dioxin TEQ	6.8E-07	NA	1.4E-07	8.2E-07	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	8.9E-04	NA	NA	8.9E-04
			Antimony	NA	NA	NA	NA	Whole Body/Blood	1.0E-03	NA	NA	1.0E-03
			Arsenic	3.5E-06	NA	7.0E-07	4.2E-06	Skin	6.1E-02	NA	1.2E-02	7.3E-02
			Cadmium	NA	NA	NA	NA	Kidney	2.2E-04	NA	5.8E-05	2.8E-04
			Chromium	NA	NA	NA	NA	GI Tract	3.6E-04	NA	NA	3.6E-04
			Iron	NA	NA	NA	NA	GI Tract/Liver	1.7E-03	NA	NA	1.7E-03
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	2.8E-04	NA	NA	2.8E-04
			Mercury	NA	NA	NA	NA	Immune System	4.1E-04	NA	NA	4.1E-04
			Vanadium	NA	NA	NA	NA	Metabolic	1.9E-03	NA	NA	1.9E-03
			Chemical Total	6.6E-06	NA	1.8E-06	8.5E-06		9.5E-01	NA	3.6E-01	1.3E+00
		Exposure Point Total					8.5E-06					1.3E+00
	Exposure Medium Total						8.5E-06					1.3E+00
Surface Soil Total							8.5E-06					1.3E+00
Air	Ambient Air	Ambient Air Facility Area	**P/PCBs**									
			PCBs, Total	NA	1.8E-08	NA	1.8E-08	NA	NA	NA	NA	NA
			Chemical Total	NA	1.8E-08	NA	1.8E-08		NA	NA	NA	NA
		Exposure Point Total					1.8E-08					NA
	Exposure Medium Total						1.8E-08					NA
Air Total							1.8E-08					NA
Receptor Total							8.5E-06					1.3E+00

Total Risk Across All Media =	8E-06
Total Hazard Across All Media =	1
Total Liver HI Across All Media =	0.003
Total Eye HI Across All Media =	1
Total GI Tract HI Across All Media =	0.003
Total Nails HI Across All Media =	1
Total Blood HI Across All Media =	0.001
Total Whole Body HI Across All Media =	0.001
Total Skin HI Across All Media =	1
Total Kidney HI Across All Media =	0.0003
Total CNS HI Across All Media =	0.001
Total Immune System HI Across All Media =	1
Total Metabolic HI Across All Media =	0.002

TABLE E-9.4
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil Facility Area	**SVOCs**									
			Benzo(a)anthracene	3.7E-09	NA	3.1E-09	6.8E-09	NA	NA	NA	NA	NA
			Benzo(a)pyrene	8.4E-08	NA	7.2E-08	1.6E-07	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	9.3E-09	NA	7.9E-09	1.7E-08	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	2.7E-08	NA	2.3E-08	5.1E-08	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	5.7E-09	NA	4.9E-09	1.1E-08	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	3.7E-05	NA	1.4E-05	5.1E-05	Eye/Skin/Nails/Immune System	1.4E+01	NA	5.6E+00	2.0E+01
			Heptachlor epoxide	2.1E-08	NA	NA	2.1E-08	Liver	1.4E-03	NA	NA	1.4E-03
			Dioxin									
			Dioxin TEQ	6.8E-07	NA	1.4E-07	8.2E-07	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	8.9E-04	NA	NA	8.9E-04
			Antimony	NA	NA	NA	NA	Whole Body/Blood	1.0E-03	NA	NA	1.0E-03
			Arsenic	3.5E-06	NA	7.0E-07	4.2E-06	Skin	6.1E-02	NA	1.2E-02	7.3E-02
			Cadmium	NA	NA	NA	NA	Kidney	2.2E-04	NA	5.8E-05	2.8E-04
			Chromium	NA	NA	NA	NA	GI Tract	3.6E-04	NA	NA	3.6E-04
			Iron	NA	NA	NA	NA	GI Tract/Liver	1.7E-03	NA	NA	1.7E-03
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	2.8E-04	NA	NA	2.8E-04
			Mercury	NA	NA	NA	NA	Immune System	4.1E-04	NA	NA	4.1E-04
			Vanadium	NA	NA	NA	NA	Metabolic	1.9E-03	NA	NA	1.9E-03
			Chemical Total	4.1E-05	NA	1.5E-05	5.6E-05		1.4E+01	NA	5.6E+00	2.0E+01
		Exposure Point Total					5.6E-05					2.0E+01
	Exposure Medium Total						5.6E-05					2.0E+01
Surface Soil Total							5.6E-05					2.0E+01
Air	Ambient Air	Ambient Air Facility Area	**P/PCBs**									
			PCBs, Total	NA	1.8E-08	NA	1.8E-08	NA	NA	NA	NA	NA
			Chemical Total	NA	1.8E-08	NA	1.8E-08		NA	NA	NA	NA
		Exposure Point Total					1.8E-08					NA
	Exposure Medium Total						1.8E-08					NA
Air Total							1.8E-08					NA
Receptor Total							5.6E-05					2.0E+01

Total Risk Across All Media =	6E-05
Total Hazard Across All Media =	20
Total Liver HI Across All Media =	0.003
Total Eye HI Across All Media =	20
Total GI Tract HI Across All Media =	0.003
Total Nails HI Across All Media =	20
Total Blood HI Across All Media =	0.001
Total Whole Body HI Across All Media =	0.001
Total Skin HI Across All Media =	20
Total Kidney HI Across All Media =	0.0003
Total CNS HI Across All Media =	0.001
Total Immune System HI Across All Media =	20
Total Metabolic HI Across All Media =	0.002

TABLE E-9.5
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	Trespasser
Receptor:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		Facility Area	Benzo(a)anthracene	5.3E-09	NA	7.7E-10	6.0E-09	NA	NA	NA	NA	NA
			Benzo(a)pyrene	1.2E-07	NA	1.8E-08	1.4E-07	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	1.3E-08	NA	1.9E-09	1.5E-08	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	3.9E-08	NA	5.7E-09	4.5E-08	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	8.3E-09	NA	1.2E-09	9.5E-09	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	3.3E-06	NA	2.2E-07	3.5E-06	Eye/Skin/Nails/Immune System	1.1E+00	NA	7.6E-02	1.2E+00
			Heptachlor epoxide	3.0E-08	NA	NA	3.0E-08	Liver	1.8E-03	NA	NA	1.8E-03
			Dioxin									
			Dioxin TEQ	9.9E-07	NA	3.3E-08	1.0E-06	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	1.2E-03	NA	NA	1.2E-03
			Antimony	NA	NA	NA	NA	Whole Body/Blood	1.3E-03	NA	NA	1.3E-03
			Arsenic	5.1E-06	NA	1.7E-07	5.3E-06	Skin	7.9E-02	NA	2.7E-03	8.2E-02
			Cadmium	NA	NA	NA	NA	Kidney	2.9E-04	NA	1.3E-05	3.0E-04
			Chromium	NA	NA	NA	NA	GI Tract	4.7E-04	NA	NA	4.7E-04
			Iron	NA	NA	NA	NA	GI Tract/Liver	2.3E-03	NA	NA	2.3E-03
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	3.6E-04	NA	NA	3.6E-04
			Mercury	NA	NA	NA	NA	Immune System	5.3E-04	NA	NA	5.3E-04
			Vanadium	NA	NA	NA	NA	Metabolic	2.4E-03	NA	NA	2.4E-03
			Chemical Total	9.5E-06	NA	4.5E-07	1.0E-05		1.2E+00	NA	7.9E-02	1.3E+00
		Exposure Point Total					1.0E-05					1.3E+00
	Exposure Medium Total						1.0E-05					1.3E+00
Surface Soil Total							1.0E-05					1.3E+00
Air	Ambient Air	Ambient Air	**P/PCBs**									
		Facility Area	PCBs, Total	NA	4.7E-09	NA	4.7E-09	NA	NA	NA	NA	NA
			Chemical Total	NA	4.7E-09	NA	4.7E-09		NA	NA	NA	NA
		Exposure Point Total					4.7E-09					NA
	Exposure Medium Total						4.7E-09					NA
Air Total							4.7E-09					NA
Receptor Total							1.0E-05					1.3E+00

Total Risk Across All Media =	1E-05
Total Hazard Across All Media =	1
Total Liver HI Across All Media =	0.004
Total Eye HI Across All Media =	1
Total GI Tract HI Across All Media =	0.004
Total Nails HI Across All Media =	1
Total Blood HI Across All Media =	0.001
Total Whole Body HI Across All Media =	0.001
Total Skin HI Across All Media =	1
Total Kidney HI Across All Media =	0.0003
Total CNS HI Across All Media =	0.002
Total Immune System HI Across All Media =	1
Total Metabolic HI Across All Media =	0.002

TABLE E-9.6
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Trespasser
Receptor:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		Facility Area	Benzo(a)anthracene	5.3E-09	NA	7.7E-10	6.0E-09	NA	NA	NA	NA	NA
			Benzo(a)pyrene	1.2E-07	NA	1.8E-08	1.4E-07	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	1.3E-08	NA	1.9E-09	1.5E-08	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	3.9E-08	NA	5.7E-09	4.5E-08	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	8.3E-09	NA	1.2E-09	9.5E-09	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	5.3E-05	NA	3.5E-06	5.6E-05	Eye/Skin/Nails/Immune System	1.8E+01	NA	1.2E+00	2.0E+01
			Heptachlor epoxide	3.0E-08	NA	NA	3.0E-08	Liver	1.8E-03	NA	NA	1.8E-03
			Dioxin									
			Dioxin TEQ	9.9E-07	NA	3.3E-08	1.0E-06	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	1.2E-03	NA	NA	1.2E-03
			Antimony	NA	NA	NA	NA	Whole Body/Blood	1.3E-03	NA	NA	1.3E-03
			Arsenic	5.1E-06	NA	1.7E-07	5.3E-06	Skin	7.9E-02	NA	2.7E-03	8.2E-02
			Cadmium	NA	NA	NA	NA	Kidney	2.9E-04	NA	1.3E-05	3.0E-04
			Chromium	NA	NA	NA	NA	GI Tract	4.7E-04	NA	NA	4.7E-04
			Iron	NA	NA	NA	NA	GI Tract/Liver	2.3E-03	NA	NA	2.3E-03
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	3.6E-04	NA	NA	3.6E-04
			Mercury	NA	NA	NA	NA	Immune System	5.3E-04	NA	NA	5.3E-04
			Vanadium	NA	NA	NA	NA	Metabolic	2.4E-03	NA	NA	2.4E-03
			Chemical Total	5.9E-05	NA	3.8E-06	6.3E-05		1.9E+01	NA	1.2E+00	2.0E+01
		Exposure Point Total					6.3E-05					2.0E+01
	Exposure Medium Total						6.3E-05					2.0E+01
Surface Soil Total							6.3E-05					2.0E+01
Air	Ambient Air	Ambient Air	**P/PCBs**									
		Facility Area	PCBs, Total	NA	4.7E-09	NA	4.7E-09	NA	NA	NA	NA	NA
			Chemical Total	NA	4.7E-09	NA	4.7E-09		NA	NA	NA	NA
		Exposure Point Total					4.7E-09					NA
	Exposure Medium Total						4.7E-09					NA
Air Total							4.7E-09					NA
Receptor Total							6.3E-05					2.0E+01

Total Risk Across All Media =	6E-05
Total Hazard Across All Media =	20
Total Liver HI Across All Media =	0.004
Total Eye HI Across All Media =	20
Total GI Tract HI Across All Media =	0.004
Total Nails HI Across All Media =	20
Total Blood HI Across All Media =	0.001
Total Whole Body HI Across All Media =	0.001
Total Skin HI Across All Media =	20
Total Kidney HI Across All Media =	0.0003
Total CNS HI Across All Media =	0.002
Total Immune System HI Across All Media =	20
Total Metabolic HI Across All Media =	0.002

TABLE E-9.7
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	Construction Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface/ Subsurface Soil	Surface Soil Subsurface Soil	Surface Soil Subsurface Soil Facility Area	**SVOCs**									
			Benzo(a)anthracene	4.5E-09	NA	5.8E-10	5.1E-09	NA	NA	NA	NA	NA
			Benzo(a)pyrene	1.0E-07	NA	1.3E-08	1.2E-07	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	1.1E-08	NA	1.5E-09	1.3E-08	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	3.3E-08	NA	4.3E-09	3.8E-08	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	7.0E-09	NA	9.1E-10	7.9E-09	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	2.4E-05	NA	1.4E-06	2.6E-05	Eye/Skin/Nails/Immune System	8.5E+01	NA	5.1E+00	9.0E+01
			Heptachlor epoxide	2.6E-08	NA	NA	2.6E-08	Liver	1.5E-02	NA	NA	1.5E-02
			Dioxin									
			Dioxin TEQ	8.4E-07	NA	2.5E-08	8.6E-07	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	9.8E-03	NA	NA	9.8E-03
			Antimony	NA	NA	NA	NA	Whole Body/Blood	1.1E-02	NA	NA	1.1E-02
			Arsenic	1.6E-06	NA	4.9E-08	1.7E-06	Skin	2.5E-01	NA	7.6E-03	2.6E-01
			Barium	NA	NA	NA	NA	CNS	5.0E-04	NA	NA	5.0E-04
			Cadmium	NA	NA	NA	NA	Kidney	6.8E-04	NA	2.7E-05	7.1E-04
			Chromium	NA	NA	NA	NA	GI Tract	8.1E-03	NA	NA	8.1E-03
			Iron	NA	NA	NA	NA	GI Tract/Liver	1.9E-02	NA	NA	1.9E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	1.0E-02	NA	NA	1.0E-02
			Mercury	NA	NA	NA	NA	Immune System	2.6E-03	NA	NA	2.6E-03
			Nickel	NA	NA	NA	NA	Body and Organ Weight	2.3E-02	NA	NA	2.3E-02
			Vanadium	NA	NA	NA	NA	Metabolic	2.4E-02	NA	NA	2.4E-02
			Chemical Total	2.7E-05	NA	1.5E-06	2.8E-05		8.5E+01	NA	5.1E+00	9.0E+01
		Exposure Point Total					2.8E-05					9.0E+01
	Exposure Medium Total						2.8E-05					9.0E+01
Surface/Subsurface Soil Total							2.8E-05					9.0E+01
Air	Ambient Air	Ambient Air Facility Area	**P/PCBs**									
			PCBs, Total	NA	1.1E-08	NA	1.1E-08	NA	NA	NA	NA	NA
			Chemical Total	NA	1.1E-08	NA	1.1E-08		NA	NA	NA	NA
		Exposure Point Total					1.1E-08					NA
	Exposure Medium Total						1.1E-08					NA
Air Total							1.1E-08					NA
Receptor Total							2.8E-05					9.0E+01

Total Risk Across All Media =	3E-05
Total Hazard Across All Media =	90
Total Liver HI Across All Media =	0.03
Total Eye HI Across All Media =	90
Total GI Tract HI Across All Media =	0.04
Total Nails HI Across All Media =	90
Total Blood HI Across All Media =	0.01
Total Whole Body HI Across All Media =	0.01
Total Skin HI Across All Media =	90
Total Kidney HI Across All Media =	0.0007
Total CNS HI Across All Media =	0.02
Total Immune System HI Across All Media =	90
Total Body and Organ Weight HI Across All Media =	0.02
Total Metabolic HI Across All Media =	0.02

TABLE E-9.8
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		South Landfill	Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	8.2E-08	NA	3.3E-08	1.2E-07	Eye/Skin/Nails/Immune System	3.2E-02	NA	1.3E-02	4.5E-02
			Heptachlor epoxide	NA	NA	NA	NA	Liver	NA	NA	NA	NA
			Dioxin									
			Dioxin TEQ	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	NA	NA	NA	NA
			Antimony	NA	NA	NA	NA	Whole Body/Blood	NA	NA	NA	NA
			Arsenic	NA	NA	NA	NA	Skin	NA	NA	NA	NA
			Cadmium	NA	NA	NA	NA	Kidney	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	GI Tract	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	GI Tract/Liver	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	Immune System	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	Metabolic	NA	NA	NA	NA
			Chemical Total	8.2E-08	NA	3.3E-08	1.2E-07		3.2E-02	NA	1.3E-02	4.5E-02
		Exposure Point Total					1.2E-07					4.5E-02
	Exposure Medium Total						1.2E-07					4.5E-02
Surface Soil Total							1.2E-07					4.5E-02
Air	Ambient Air	Ambient Air	**P/PCBs**									
		South Landfill	PCBs, Total	NA	1.8E-09	NA	1.8E-09	NA	NA	NA	NA	NA
			Chemical Total	NA	1.8E-09	NA	1.8E-09		NA	NA	NA	NA
		Exposure Point Total					1.8E-09					NA
	Exposure Medium Total						1.8E-09					NA
Air Total							1.8E-09					NA
Receptor Total							1.2E-07					4.5E-02

Total Risk Across All Media =	1E-07
Total Hazard Across All Media =	0.04
Total Eye HI Across All Media =	0.04
Total Nails HI Across All Media =	0.04
Total Skin HI Across All Media =	0.04
Total Immune System HI Across All Media =	0.04

TABLE E-9.9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		South Landfill	Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	1.2E-07	NA	8.0E-09	1.3E-07	Eye/Skin/Nails/Immune System	4.2E-02	NA	2.8E-03	4.4E-02
			Heptachlor epoxide	NA	NA	NA	NA	Liver	NA	NA	NA	NA
			Dioxin									
			Dioxin TEQ	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	NA	NA	NA	NA
			Antimony	NA	NA	NA	NA	Whole Body/Blood	NA	NA	NA	NA
			Arsenic	NA	NA	NA	NA	Skin	NA	NA	NA	NA
			Cadmium	NA	NA	NA	NA	Kidney	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	GI Tract	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	GI Tract/Liver	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	Immune System	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	Metabolic	NA	NA	NA	NA
			Chemical Total	1.2E-07	NA	8.0E-09	1.3E-07		4.2E-02	NA	2.8E-03	4.4E-02
		Exposure Point Total					1.3E-07					4.4E-02
	Exposure Medium Total						1.3E-07					4.4E-02
Surface Soil Total							1.3E-07					4.4E-02
Air	Ambient Air	Ambient Air	**P/PCBs**									
		South Landfill	PCBs, Total	NA	4.5E-10	NA	4.5E-10	NA	NA	NA	NA	NA
			Chemical Total	NA	4.5E-10	NA	4.5E-10		NA	NA	NA	NA
		Exposure Point Total					4.5E-10					NA
	Exposure Medium Total						4.5E-10					NA
Air Total							4.5E-10					NA
Receptor Total							1.3E-07					4.4E-02

Total Risk Across All Media = 1E-07

Total Hazard Across All Media = 0.04

Total Eye HI Across All Media = 0.04
Total Nails HI Across All Media = 0.04
Total Skin HI Across All Media = 0.04
Total Immune System HI Across All Media = 0.04

TABLE E-9.10
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		West End Landfill	Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	NA	NA	NA	NA	Eye/Skin/Nails/Immune System	NA	NA	NA	NA
			Heptachlor epoxide	NA	NA	NA	NA	Liver	NA	NA	NA	NA
			Dioxin									
			Dioxin TEQ	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	NA	NA	NA	NA
			Antimony	NA	NA	NA	NA	Whole Body/Blood	NA	NA	NA	NA
			Arsenic	NA	NA	NA	NA	Skin	NA	NA	NA	NA
			Cadmium	NA	NA	NA	NA	Kidney	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	GI Tract	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	GI Tract/Liver	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	Immune System	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	Metabolic	NA	NA	NA	NA
			Chemical Total	NA	NA	NA	NA		NA	NA	NA	NA
		Exposure Point Total					NA					NA
	Exposure Medium Total						NA					NA
Surface Soil Total							NA					NA
Air	Ambient Air	Ambient Air	**P/PCBs**									
		West End Landfill	PCBs, Total	NA	2.6E-09	NA	2.6E-09	NA	NA	NA	NA	NA
			Chemical Total	NA	2.6E-09	NA	2.6E-09		NA	NA	NA	NA
		Exposure Point Total					2.6E-09					NA
	Exposure Medium Total						2.6E-09					NA
Air Total							2.6E-09					NA
Receptor Total							2.6E-09					NA

Total Risk Across All Media = 3E-09

Total Hazard Across All Media = NA

TABLE E-9.11
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		West End Landfill	Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	NA	NA	NA	NA	Eye/Skin/Nails/Immune System	NA	NA	NA	NA
			Heptachlor epoxide	NA	NA	NA	NA	Liver	NA	NA	NA	NA
			Dioxin									
			Dioxin TEQ	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	NA	NA	NA	NA
			Antimony	NA	NA	NA	NA	Whole Body/Blood	NA	NA	NA	NA
			Arsenic	NA	NA	NA	NA	Skin	NA	NA	NA	NA
			Cadmium	NA	NA	NA	NA	Kidney	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	GI Tract	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	GI Tract/Liver	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	Immune System	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	Metabolic	NA	NA	NA	NA
			Chemical Total	NA	NA	NA	NA		NA	NA	NA	NA
		Exposure Point Total					NA					NA
	Exposure Medium Total						NA					NA
Surface Soil Total							NA					NA
Air	Ambient Air	Ambient Air	**P/PCBs**									
		West End Landfill	PCBs, Total	NA	6.6E-10	NA	6.6E-10	NA	NA	NA	NA	NA
			Chemical Total	NA	6.6E-10	NA	6.6E-10		NA	NA	NA	NA
		Exposure Point Total					6.6E-10					NA
	Exposure Medium Total						6.6E-10					NA
Air Total							6.6E-10					NA
Receptor Total							6.6E-10					NA

Total Risk Across All Media = 7E-10

Total Hazard Across All Media = NA

TABLE E-9.12
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Operations Area Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic-Hazard Quotient					
				Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water	**VOCs**											
			1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	Adrenals	3.4E-03	NA	NA	NA	3.4E-03
			1,4-Dichlorobenzene	6.5E-08	NA	NA	NA	6.5E-08	NA	2.5E-04	NA	NA	NA	2.5E-04
			Chlorobenzene	NA	NA	NA	NA	NA	Liver	7.9E-04	NA	NA	NA	7.9E-04
			cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	Blood	3.1E-03	NA	NA	NA	3.1E-03
			Pentachlorophenol	2.6E-06	NA	NA	NA	2.6E-06	Liver/Kidney	2.0E-03	NA	NA	NA	2.0E-03
			Trichloroethylene	1.5E-06	NA	NA	NA	1.5E-06	Liver/Kidney/Fetus	3.5E-02	NA	NA	NA	3.5E-02
			SVOCs											
			2,4,6-Trichlorophenol	1.8E-07	NA	NA	NA	1.8E-07	NA	4.6E-01	NA	NA	NA	4.6E-01
			Indeno(1,2,3-cd)pyrene	5.9E-07	NA	NA	NA	5.9E-07	NA	NA	NA	NA	NA	NA
			P/PCBs											
			PCBs, Total	3.0E-03	NA	NA	NA	3.0E-03	Eye/Skin/Nails/Immune System	4.3E+02	NA	NA	NA	4.3E+02
			gamma-BHC	7.9E-07	NA	NA	NA	7.9E-07	Liver/Kidney	5.7E-03	NA	NA	NA	5.7E-03
			Methyl parathion	NA	NA	NA	NA	NA	Blood	9.1E-01	NA	NA	NA	9.1E-01
			Parathion	NA	NA	NA	NA	NA	NA	4.8E+00	NA	NA	NA	4.8E+00
			Dioxin											
			Dioxin TEQ	6.0E-07	NA	NA	NA	6.0E-07	NA	NA	NA	NA	NA	NA
			Inorganics											
			Antimony	NA	NA	NA	NA	NA	Whole Body/Blood	3.9E-02	NA	NA	NA	3.9E-02
			Arsenic	1.0E-05	NA	NA	NA	1.0E-05	Skin	6.3E-02	NA	NA	NA	6.3E-02
			Manganese	NA	NA	NA	NA	NA	CNS	2.9E-02	NA	NA	NA	2.9E-02
			Mercury	NA	NA	NA	NA	NA	Immune System	1.8E-02	NA	NA	NA	1.8E-02
			Chemical Total	3.1E-03	NA	NA	NA	3.1E-03		4.3E+02	NA	NA	NA	4.3E+02
		Exposure Point Total						3.1E-03						4.3E+02
	Exposure Medium Total							3.1E-03						4.3E+02
Groundwater Total								3.1E-03						4.3E+02
Receptor Total								3.1E-03						4.3E+02

Total Risk Across All Media =	3E-03
Total Hazard Across All Media =	432
Total Liver HI Across All Media =	0.04
Total Eye HI Across All Media =	426
Total Adrenals HI Across All Media =	0.003
Total Nails HI Across All Media =	426
Total Blood HI Across All Media =	1
Total Whole Body HI Across All Media =	0.04
Total Skin HI Across All Media =	426
Total Kidney HI Across All Media =	0.04
Total CNS HI Across All Media =	0.03
Total Immune System HI Across All Media =	426

TABLE E-9.13
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic-Hazard Quotient					
				Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water	**VOCs**											
			1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	Adrenals	5.2E-04	NA	NA	NA	5.2E-04
			1,4-Dichlorobenzene	3.5E-09	NA	NA	NA	3.5E-09	NA	3.8E-05	NA	NA	NA	3.8E-05
			Chlorobenzene	NA	NA	NA	NA	NA	Liver	1.2E-04	NA	NA	NA	1.2E-04
			cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	Blood	4.7E-04	NA	NA	NA	4.7E-04
			Pentachlorophenol	1.4E-07	NA	NA	NA	1.4E-07	Liver/Kidney	3.1E-04	NA	NA	NA	3.1E-04
			Trichloroethylene	8.2E-08	NA	NA	NA	8.2E-08	Liver/Kidney/Fetus	5.3E-03	NA	NA	NA	5.3E-03
			SVOCs											
			2,4,6-Trichlorophenol	1.0E-08	NA	NA	NA	1.0E-08	NA	7.0E-02	NA	NA	NA	7.0E-02
			Indeno(1,2,3-cd)pyrene	3.2E-08	NA	NA	NA	3.2E-08	NA	NA	NA	NA	NA	NA
			P/PCBs											
			PCBs, Total	1.7E-04	NA	NA	NA	1.7E-04	Eye/Skin/Nails/Immune System	6.5E+01	NA	NA	NA	6.5E+01
			gamma-BHC	4.3E-08	NA	NA	NA	4.3E-08	Liver/Kidney	8.6E-04	NA	NA	NA	8.6E-04
			Methyl parathion	NA	NA	NA	NA	NA	Blood	1.4E-01	NA	NA	NA	1.4E-01
			Parathion	NA	NA	NA	NA	NA	NA	7.3E-01	NA	NA	NA	7.3E-01
			Dioxin											
			Dioxin TEQ	3.3E-08	NA	NA	NA	3.3E-08	NA	NA	NA	NA	NA	NA
			Inorganics											
			Antimony	NA	NA	NA	NA	NA	Whole Body/Blood	6.0E-03	NA	NA	NA	6.0E-03
			Arsenic	5.5E-07	NA	NA	NA	5.5E-07	Skin	9.5E-03	NA	NA	NA	9.5E-03
			Manganese	NA	NA	NA	NA	NA	CNS	4.4E-03	NA	NA	NA	4.4E-03
			Mercury	NA	NA	NA	NA	NA	Immune System	2.8E-03	NA	NA	NA	2.8E-03
			Chemical Total	1.7E-04	NA	NA	NA	1.7E-04		6.6E+01	NA	NA	NA	6.6E+01
		Exposure Point Total						1.7E-04						6.6E+01
	Exposure Medium Total							1.7E-04						6.6E+01
Groundwater Total								1.7E-04						6.6E+01
Receptor Total								1.7E-04						6.6E+01

Total Risk Across All Media =	2E-04
Total Hazard Across All Media =	66
Total Liver HI Across All Media =	0.007
Total Eye HI Across All Media =	65
Total Adrenals HI Across All Media =	0.0005
Total Nails HI Across All Media =	65
Total Blood HI Across All Media =	0.1
Total Whole Body HI Across All Media =	0.006
Total Skin HI Across All Media =	65
Total Kidney HI Across All Media =	0.006
Total CNS HI Across All Media =	0.004
Total Immune System HI Across All Media =	65

TABLE E-10.1
RISK SUMMARY
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	Operations Area Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil Facility Area	**SVOCs**									
			Benzo(a)pyrene	7.6E-07	NA	9.1E-07	1.7E-06	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	2.2E-06	NA	4.0E-06	6.2E-06	Eye/Skin/Nails/Immune System	8.5E-01	NA	1.6E+00	2.4E+00
			Dioxin									
			Dioxin TEQ	6.2E-06	NA	1.7E-06	8.0E-06	NA	NA	NA	NA	NA
			Inorganics									
			Arsenic	9.7E-06	NA	8.9E-06	1.9E-05	Skin	1.7E-01	NA	1.5E-01	3.2E-01
			Chemical Total	1.9E-05	NA	1.6E-05	3.5E-05		1.1E+00	NA	1.7E+00	2.8E+00
		Exposure Point Total					3.5E-05					2.8E+00
	Exposure Medium Total						3.5E-05					2.8E+00
Surface Soil Total							3.5E-05					2.8E+00
Air Facility Area	Ambient Air	Ambient Air	Chemical Total	NA	3.4E-07	NA	3.4E-07		NA	NA	NA	NA
		Exposure Point Total					3.4E-07					NA
	Exposure Medium Total						3.4E-07					NA
Air Total							3.4E-07					NA
Receptor Total							3.6E-05					2.8E+00

Total Risk Across All Media =	4E-05
Total Hazard Across All Media =	3
Total Liver HI Across All Media =	0.03
Total Eye HI Across All Media =	2
Total GI Tract HI Across All Media =	0.03
Total Nails HI Across All Media =	2
Total Blood HI Across All Media =	0.01
Total Whole Body HI Across All Media =	0.01
Total Skin HI Across All Media =	3
Total Kidney HI Across All Media =	0.003
Total CNS HI Across All Media =	0.01
Total Immune System HI Across All Media =	2
Total Metabolic HI Across All Media =	0.02

TABLE E-10.2
RISK SUMMARY
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Operations Area Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil Facility Area	**SVOCs**									
			Benzo(a)pyrene	1.5E-06	NA	1.3E-06	2.8E-06	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	6.7E-04	NA	2.6E-04	9.3E-04	Eye/Skin/Nails/Immune System	2.6E+02	NA	1.0E+02	3.6E+02
			Dioxin									
			Dioxin TEQ	1.2E-05	NA	2.5E-06	1.5E-05	NA	NA	NA	NA	NA
			Inorganics									
			Arsenic	6.4E-05	NA	1.3E-05	7.7E-05	Skin	1.1E+00	NA	2.2E-01	1.3E+00
			Chemical Total	7.5E-04	NA	2.8E-04	1.0E-03		2.6E+02	NA	1.0E+02	3.6E+02
		Exposure Point Total					1.0E-03					3.6E+02
	Exposure Medium Total						1.0E-03					3.6E+02
Surface Soil Total							1.0E-03					3.6E+02
Air Facility Area	Ambient Air	Ambient Air	Chemical Total	NA	3.4E-07	NA	3.4E-07		NA	NA	NA	NA
		Exposure Point Total					3.4E-07					NA
	Exposure Medium Total						3.4E-07					NA
Air Total							3.4E-07					NA
Receptor Total							1.0E-03					3.6E+02

Total Risk Across All Media = 1E-03

Total Hazard Across All Media = 364

Total Liver HI Across All Media =	0.06
Total Eye HI Across All Media =	363
Total GI Tract HI Across All Media =	0.05
Total Nails HI Across All Media =	363
Total Blood HI Across All Media =	0.02
Total Whole Body HI Across All Media =	0.02
Total Skin HI Across All Media =	364
Total Kidney HI Across All Media =	0.005
Total CNS HI Across All Media =	0.02
Total Immune System HI Across All Media =	363
Total Metabolic HI Across All Media =	0.03

TABLE E-10.3
RISK SUMMARY
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil Facility Area	**P/PCBs**									
			PCBs, Total	2.3E-06	NA	8.9E-07	3.2E-06	Eye/Skin/Nails/Immune System	8.8E-01	NA	3.5E-01	1.2E+00
			Inorganics									
			Arsenic	3.5E-06	NA	7.0E-07	4.2E-06	Skin	6.1E-02	NA	1.2E-02	7.3E-02
			Chemical Total	6.6E-06	NA	1.8E-06	8.5E-06		9.5E-01	NA	3.6E-01	1.3E+00
		Exposure Point Total					8.5E-06					1.3E+00
	Exposure Medium Total						8.5E-06					1.3E+00
Surface Soil Total							8.5E-06					1.3E+00
Air Facility Area	Ambient Air	Ambient Air	Chemical Total	NA	1.8E-08	NA	1.8E-08		NA	NA	NA	NA
		Exposure Point Total					1.8E-08					NA
	Exposure Medium Total						1.8E-08					NA
Air Total							1.8E-08					NA
Receptor Total							8.5E-06					1.3E+00

Total Risk Across All Media =	8E-06
Total Hazard Across All Media =	1
Total Liver HI Across All Media =	0.003
Total Eye HI Across All Media =	1
Total GI Tract HI Across All Media =	0.003
Total Nails HI Across All Media =	1
Total Blood HI Across All Media =	0.001
Total Whole Body HI Across All Media =	0.001
Total Skin HI Across All Media =	1
Total Kidney HI Across All Media =	0.0003
Total CNS HI Across All Media =	0.001
Total Immune System HI Across All Media =	1
Total Metabolic HI Across All Media =	0.002

TABLE E-10.4
RISK SUMMARY
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil Facility Area	**P/PCBs**									
			PCBs, Total	3.7E-05	NA	1.4E-05	5.1E-05	Eye/Skin/Nails/Immune System	1.4E+01	NA	5.6E+00	2.0E+01
			Inorganics									
			Arsenic	3.5E-06	NA	7.0E-07	4.2E-06	Skin	6.1E-02	NA	1.2E-02	7.3E-02
			Chemical Total	4.1E-05	NA	1.5E-05	5.6E-05		1.4E+01	NA	5.6E+00	2.0E+01
		Exposure Point Total					5.6E-05					2.0E+01
	Exposure Medium Total						5.6E-05					2.0E+01
Surface Soil Total							5.6E-05					2.0E+01
Air Facility Area	Ambient Air	Ambient Air	Chemical Total	NA	1.8E-08	NA	1.8E-08		NA	NA	NA	NA
		Exposure Point Total					1.8E-08					NA
	Exposure Medium Total						1.8E-08					NA
Air Total							1.8E-08					NA
Receptor Total							5.6E-05					2.0E+01

Total Risk Across All Media =	6E-05
Total Hazard Across All Media =	20
Total Liver HI Across All Media =	0.003
Total Eye HI Across All Media =	20
Total GI Tract HI Across All Media =	0.003
Total Nails HI Across All Media =	20
Total Blood HI Across All Media =	0.001
Total Whole Body HI Across All Media =	0.001
Total Skin HI Across All Media =	20
Total Kidney HI Across All Media =	0.0003
Total CNS HI Across All Media =	0.001
Total Immune System HI Across All Media =	20
Total Metabolic HI Across All Media =	0.002

TABLE E-10.5
RISK SUMMARY
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	Trespasser
Receptor:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**P/PCBs**									
		Facility Area	PCBs, Total	3.3E-06	NA	2.2E-07	3.5E-06	Eye/Skin/Nails/Immune System	1.1E+00	NA	7.6E-02	1.2E+00
			Dioxin									
			Dioxin TEQ	9.9E-07	NA	3.3E-08	1.0E-06	NA	NA	NA	NA	NA
			Inorganics									
			Arsenic	5.1E-06	NA	1.7E-07	5.3E-06	Skin	7.9E-02	NA	2.7E-03	8.2E-02
			Chemical Total	9.5E-06	NA	4.5E-07	1.0E-05		1.2E+00	NA	7.9E-02	1.3E+00
		Exposure Point Total					1.0E-05					1.3E+00
	Exposure Medium Total						1.0E-05					1.3E+00
Surface Soil Total							1.0E-05					1.3E+00
Air Facility Area	Ambient Air	Ambient Air	Chemical Total	NA	4.7E-09	NA	4.7E-09		NA	NA	NA	NA
		Exposure Point Total					4.7E-09					NA
	Exposure Medium Total						4.7E-09					NA
Air Total							4.7E-09					NA
Receptor Total							1.0E-05					1.3E+00

Total Risk Across All Media =	1E-05
Total Hazard Across All Media =	1
Total Liver HI Across All Media =	0.004
Total Eye HI Across All Media =	1
Total GI Tract HI Across All Media =	0.004
Total Nails HI Across All Media =	1
Total Blood HI Across All Media =	0.001
Total Whole Body HI Across All Media =	0.001
Total Skin HI Across All Media =	1
Total Kidney HI Across All Media =	0.0003
Total CNS HI Across All Media =	0.002
Total Immune System HI Across All Media =	1
Total Metabolic HI Across All Media =	0.002

TABLE E-10.6
RISK SUMMARY
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Trespasser
Receptor:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil Facility Area	**P/PCBs**									
			PCBs, Total	5.3E-05	NA	3.5E-06	5.6E-05	Eye/Skin/Nails/Immune System	1.8E+01	NA	1.2E+00	2.0E+01
			Dioxin									
			Dioxin TEQ	9.9E-07	NA	3.3E-08	1.0E-06	NA	NA	NA	NA	NA
			Inorganics									
			Arsenic	5.1E-06	NA	1.7E-07	5.3E-06	Skin	7.9E-02	NA	2.7E-03	8.2E-02
			Chemical Total	5.9E-05	NA	3.8E-06	6.3E-05		1.9E+01	NA	1.2E+00	2.0E+01
		Exposure Point Total					6.3E-05					2.0E+01
	Exposure Medium Total						6.3E-05					2.0E+01
Surface Soil Total							6.3E-05					2.0E+01
Air Facility Area	Ambient Air	Ambient Air	Chemical Total	NA	4.7E-09	NA	4.7E-09		NA	NA	NA	NA
		Exposure Point Total					4.7E-09					NA
	Exposure Medium Total						4.7E-09					NA
Air Total							4.7E-09					NA
Receptor Total							6.3E-05					2.0E+01

Total Risk Across All Media =	6E-05
Total Hazard Across All Media =	20
Total Liver HI Across All Media =	0.004
Total Eye HI Across All Media =	20
Total GI Tract HI Across All Media =	0.004
Total Nails HI Across All Media =	20
Total Blood HI Across All Media =	0.001
Total Whole Body HI Across All Media =	0.001
Total Skin HI Across All Media =	20
Total Kidney HI Across All Media =	0.0003
Total CNS HI Across All Media =	0.002
Total Immune System HI Across All Media =	20
Total Metabolic HI Across All Media =	0.002

TABLE E-10.7
RISK SUMMARY
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	Construction Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface/ Subsurface Soil	Surface Soil Subsurface Soil	Surface Soil Subsurface Soil Facility Area	**P/PCBs**									
			PCBs, Total	2.4E-05	NA	1.4E-06	2.6E-05	Eye/Skin/Nails/Immune System	8.5E+01	NA	5.1E+00	9.0E+01
			Inorganics									
			Arsenic	1.6E-06	NA	4.9E-08	1.7E-06	Skin	2.5E-01	NA	7.6E-03	2.6E-01
			Chemical Total	2.7E-05	NA	1.5E-06	2.8E-05		8.5E+01	NA	5.1E+00	9.0E+01
		Exposure Point Total					2.8E-05					9.0E+01
	Exposure Medium Total						2.8E-05					9.0E+01
Surface/Subsurface Soil Total							2.8E-05					9.0E+01
Air Facility Area	Ambient Air	Ambient Air	Chemical Total	NA	1.1E-08	NA	1.1E-08		NA	NA	NA	NA
		Exposure Point Total					1.1E-08					NA
	Exposure Medium Total						1.1E-08					NA
Air Total							1.1E-08					NA
Receptor Total							2.8E-05					9.0E+01

Total Risk Across All Media =	3E-05
Total Hazard Across All Media =	90
Total Liver HI Across All Media =	0.03
Total Eye HI Across All Media =	90
Total GI Tract HI Across All Media =	0.04
Total Nails HI Across All Media =	90
Total Blood HI Across All Media =	0.01
Total Whole Body HI Across All Media =	0.01
Total Skin HI Across All Media =	90
Total Kidney HI Across All Media =	0.0007
Total CNS HI Across All Media =	0.02
Total Immune System HI Across All Media =	90
Total Body and Organ Weight HI Across All Media =	0.02
Total Metabolic HI Across All Media =	0.02

TABLE E-10.8
RISK SUMMARY
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil South Landfill	Surface Soil	Surface Soil	Chemical Total	8.2E-08	NA	3.3E-08	1.2E-07		3.2E-02	NA	1.3E-02	4.5E-02
		Exposure Point Total					1.2E-07					4.5E-02
	Exposure Medium Total						1.2E-07					4.5E-02
Surface Soil Total							1.2E-07					4.5E-02
Air South Landfill	Ambient Air	Ambient Air	Chemical Total	NA	1.8E-09	NA	1.8E-09		NA	NA	NA	NA
		Exposure Point Total					1.8E-09					NA
	Exposure Medium Total						1.8E-09					NA
Air Total							1.8E-09					NA
Receptor Total							1.2E-07					4.5E-02

Total Risk Across All Media =	1E-07
Total Hazard Across All Media =	0.04
Total Eye HI Across All Media =	0.04
Total Nails HI Across All Media =	0.04
Total Skin HI Across All Media =	0.04
Total Immune System HI Across All Media =	0.04

TABLE E-10.9
RISK SUMMARY
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil South Landfill	Surface Soil	Surface Soil	Chemical Total	1.2E-07	NA	8.0E-09	1.3E-07		4.2E-02	NA	2.8E-03	4.4E-02
		Exposure Point Total					1.3E-07					4.4E-02
	Exposure Medium Total						1.3E-07					4.4E-02
Surface Soil Total							1.3E-07					4.4E-02
Air South Landfill	Ambient Air	Ambient Air	Chemical Total	NA	4.5E-10	NA	4.5E-10		NA	NA	NA	NA
		Exposure Point Total					4.5E-10					NA
	Exposure Medium Total						4.5E-10					NA
Air Total							4.5E-10					NA
Receptor Total							1.3E-07					4.4E-02

Total Risk Across All Media = 1E-07

Total Hazard Across All Media = 0.04

Total Eye HI Across All Media = 0.04
Total Nails HI Across All Media = 0.04
Total Skin HI Across All Media = 0.04
Total Immune System HI Across All Media = 0.04

TABLE E-10.10
RISK SUMMARY
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil West End Landfill	Surface Soil	Surface Soil	Chemical Total	NA	NA	NA	NA		NA	NA	NA	NA
		Exposure Point Total					NA					NA
	Exposure Medium Total						NA					NA
Surface Soil Total							NA					NA
Air West End Landfill	Ambient Air	Ambient Air	Chemical Total	NA	2.6E-09	NA	2.6E-09		NA	NA	NA	NA
		Exposure Point Total					2.6E-09					NA
	Exposure Medium Total						2.6E-09					NA
Air Total							2.6E-09					NA
Receptor Total							2.6E-09					NA

Total Risk Across All Media = 3E-09

Total Hazard Across All Media = NA

TABLE E-10.11
RISK SUMMARY
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		West End Landfill	Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	NA	NA	NA	NA	Eye/Skin/Nails/Immune System	NA	NA	NA	NA
			Heptachlor epoxide	NA	NA	NA	NA	Liver	NA	NA	NA	NA
			Dioxin									
			Dioxin TEQ	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	NA	NA	NA	NA
			Antimony	NA	NA	NA	NA	Whole Body/Blood	NA	NA	NA	NA
			Arsenic	NA	NA	NA	NA	Skin	NA	NA	NA	NA
			Cadmium	NA	NA	NA	NA	Kidney	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	GI Tract	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	GI Tract/Liver	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	Immune System	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	Metabolic	NA	NA	NA	NA
Surface Soil	Surface Soil	Surface Soil	Chemical Total	NA	NA	NA	NA		NA	NA	NA	NA
West End Landfill		Exposure Point Total					NA					NA
	Exposure Medium Total						NA					NA
Surface Soil Total							NA					NA
Air	Ambient Air	Ambient Air	**P/PCBs**									
		West End Landfill	PCBs, Total	NA	6.6E-10	NA	6.6E-10	NA	NA	NA	NA	NA
Air	Ambient Air	Ambient Air	Chemical Total	NA	6.6E-10	NA	6.6E-10		NA	NA	NA	NA
West End Landfill		Exposure Point Total					6.6E-10					NA
	Exposure Medium Total						6.6E-10					NA
Air Total							6.6E-10					NA
Receptor Total							6.6E-10					NA

Total Risk Across All Media = 7E-10

Total Hazard Across All Media = NA

TABLE E-10.12
RISK SUMMARY
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Operations Area Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic-Hazard Quotient					
				Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water	**VOCs**											
			Pentachlorophenol	2.6E-06	NA	NA	NA	2.6E-06	Liver/Kidney	2.0E-03	NA	NA	NA	2.0E-03
			Trichloroethylene	1.5E-06	NA	NA	NA	1.5E-06	Liver/Kidney/Fetus	3.5E-02	NA	NA	NA	3.5E-02
			P/PCBs											
			PCBs, Total	3.0E-03	NA	NA	NA	3.0E-03	Eye/Skin/Nails/Immune System	4.3E+02	NA	NA	NA	4.3E+02
			Parathion	NA	NA	NA	NA	NA	NA	4.8E+00	NA	NA	NA	4.8E+00
			Inorganics											
			Arsenic	1.0E-05	NA	NA	NA	1.0E-05	Skin	6.3E-02	NA	NA	NA	6.3E-02
			Chemical Total	3.1E-03	NA	NA	NA	3.1E-03		4.3E+02	NA	NA	NA	4.3E+02
		Exposure Point Total						3.1E-03						4.3E+02
	Exposure Medium Total							3.1E-03						4.3E+02
Groundwater Total								3.1E-03						4.3E+02
Receptor Total								3.1E-03						4.3E+02

Total Risk Across All Media = 3E-03

Total Hazard Across All Media = 432

Total Liver HI Across All Media =	0.04
Total Eye HI Across All Media =	426
Total Adrenals HI Across All Media =	0.003
Total Nails HI Across All Media =	426
Total Blood HI Across All Media =	1
Total Whole Body HI Across All Media =	0.04
Total Skin HI Across All Media =	426
Total Kidney HI Across All Media =	0.04
Total CNS HI Across All Media =	0.03
Total Immune System HI Across All Media =	426

TABLE E-10.13
RISK SUMMARY
CENTRAL TENDENCY EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic-Hazard Quotient					
				Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Vapors in Bath	Inhalation Ambient Air	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water	**P/PCBs**											
			PCBs, Total	1.7E-04	NA	NA	NA	1.7E-04	Eye/Skin/Nails/Immune System	6.5E+01	NA	NA	NA	6.5E+01
			Chemical Total	1.7E-04	NA	NA	NA	1.7E-04		6.6E+01	NA	NA	NA	6.6E+01
		Exposure Point Total						1.7E-04						6.6E+01
	Exposure Medium Total							1.7E-04						6.6E+01
Groundwater Total								1.7E-04						6.6E+01
Receptor Total								1.7E-04						6.6E+01

Total Risk Across All Media =	2E-04
Total Hazard Across All Media =	66
Total Liver HI Across All Media =	0.007
Total Eye HI Across All Media =	65
Total Adrenals HI Across All Media =	0.0005
Total Nails HI Across All Media =	65
Total Blood HI Across All Media =	0.1
Total Whole Body HI Across All Media =	0.006
Total Skin HI Across All Media =	65
Total Kidney HI Across All Media =	0.006
Total CNS HI Across All Media =	0.004
Total Immune System HI Across All Media =	65

Appendix F

RAGS D Standard Tables – Site-Specific Assumptions

List of Tables Included in Appendix F
Anniston PCB Site, Operable Unit 3

TABLES

TABLE F-7.1

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

MODIFIED EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	O&M Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil Facility Area	Incidental Ingestion	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	2.9E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	2.1E-08	8.1E-08	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	6.6E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	4.8E-07	1.9E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	7.3E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	5.4E-08	2.1E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	2.2E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	1.6E-07	6.1E-08	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	4.5E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	3.3E-08	1.3E-07	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	3.7E+02	mg/kg	3.9E-06	mg/kg/day	2.0E+00	(mg/kg-day)-1	7.8E-06	1.1E-05	mg/kg/day	2.0E-05	mg/kg-day	5.5E-01
				Heptachlor epoxide	3.8E-01	mg/kg	1.3E-08	mg/kg/day	9.1E+00	(mg/kg-day)-1	1.2E-07	3.7E-08	mg/kg/day	1.3E-05	mg/kg-day	2.9E-03
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	2.6E-11	mg/kg/day	1.5E+05	(mg/kg-day)-1	4.0E-06	7.4E-11	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	6.6E-04	mg/kg/day	NA	NA	NA	1.9E-03	mg/kg/day	1.0E+00	mg/kg-day	1.9E-03
				Antimony	8.7E+00	mg/kg	3.0E-07	mg/kg/day	NA	NA	NA	8.5E-07	mg/kg/day	4.0E-04	mg/kg-day	2.1E-03
				Arsenic	3.9E+02	mg/kg	4.1E-06	mg/kg/day	1.5E+00	(mg/kg-day)-1	6.1E-06	1.1E-05	mg/kg/day	3.0E-04	mg/kg-day	3.8E-02
				Cadmium	4.7E+00	mg/kg	1.6E-07	mg/kg/day	NA	NA	NA	4.6E-07	mg/kg/day	1.0E-03	mg/kg-day	4.6E-04
				Chromium	2.3E+01	mg/kg	8.0E-07	mg/kg/day	NA	NA	NA	2.3E-06	mg/kg/day	3.0E-03	mg/kg-day	7.5E-04
				Iron	2.6E+04	mg/kg	9.1E-04	mg/kg/day	NA	NA	NA	2.5E-03	mg/kg/day	7.0E-01	mg/kg-day	3.6E-03
				Lead	4.7E+03	mg/kg	1.6E-04	mg/kg/day	NA	NA	NA	4.6E-04	mg/kg/day	NA	NA	NA
				Manganese	8.3E+02	mg/kg	2.9E-05	mg/kg/day	NA	NA	NA	8.1E-05	mg/kg/day	1.4E-01	mg/kg-day	5.8E-04
				Mercury	2.6E+00	mg/kg	9.1E-08	mg/kg/day	NA	NA	NA	2.5E-07	mg/kg/day	3.0E-04	mg/kg-day	8.5E-04
				Vanadium	4.0E+01	mg/kg	1.4E-06	mg/kg/day	NA	NA	NA	3.9E-06	mg/kg/day	1.0E-03	mg/kg-day	3.9E-03
			Exp. Route Total								1.9E-05					6.0E-01
Surface Soil	Surface Soil	Surface Soil Facility Area	Dermal Contact	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	3.8E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	2.8E-09	1.1E-08	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	8.8E-09	mg/kg/day	7.3E+00	(mg/kg-day)-1	6.4E-08	2.5E-08	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	9.7E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	7.1E-09	2.7E-08	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	2.9E-09	mg/kg/day	7.3E+00	(mg/kg-day)-1	2.1E-08	8.0E-09	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	6.0E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	4.4E-09	1.7E-08	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	3.7E+02	mg/kg	8.0E-07	mg/kg/day	2.0E+00	(mg/kg-day)-1	1.6E-06	2.2E-06	mg/kg/day	2.0E-05	mg/kg-day	1.1E-01
				Heptachlor epoxide	3.8E-01	mg/kg	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	8.0E-13	mg/kg/day	1.5E+05	(mg/kg-day)-1	1.2E-07	2.3E-12	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	8.7E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	3.9E+02	mg/kg	4.1E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	6.2E-07	1.2E-06	mg/kg/day	3.0E-04	mg/kg-day	3.9E-03
				Cadmium	4.7E+00	mg/kg	1.7E-10	mg/kg/day	NA	NA	NA	4.7E-10	mg/kg/day	2.5E-05	mg/kg-day	1.9E-05
				Chromium	2.3E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	2.6E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	4.7E+03	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	8.3E+02	mg/kg	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	2.6E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	4.0E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								2.4E-06					1.2E-01
Air	Ambient Air	Ambient Air Facility Area	Inhalation	**P/PCBs**												
				PCBs, Total	7.3E+01	ng/m3	6.1E-07	mg/kg/day	3.5E-01	(mg/kg-day)-1	2.1E-07	1.7E-06	mg/kg/day	NA	NA	NA
			Exp. Route Total								2.1E-07					NA
		Exposure Point Total									2E-05					7E-01

TABLE F-7.2

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

MODIFIED EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	O&M Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil Facility Area	Incidental Ingestion	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	2.9E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	2.1E-08	8.1E-08	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	6.6E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	4.8E-07	1.9E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	7.3E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	5.4E-08	2.1E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	2.2E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	1.6E-07	6.1E-08	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	4.5E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	3.3E-08	1.3E-07	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	6.1E+03	mg/kg	6.4E-05	mg/kg/day	2.0E+00	(mg/kg-day)-1	1.3E-04	1.8E-04	mg/kg/day	2.0E-05	mg/kg-day	8.9E+00
				Heptachlor epoxide	3.8E-01	mg/kg	1.3E-08	mg/kg/day	9.1E+00	(mg/kg-day)-1	1.2E-07	3.7E-08	mg/kg/day	1.3E-05	mg/kg-day	2.9E-03
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	2.6E-11	mg/kg/day	1.5E+05	(mg/kg-day)-1	4.0E-06	7.4E-11	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	6.6E-04	mg/kg/day	NA	NA	NA	1.9E-03	mg/kg/day	1.0E+00	mg/kg-day	1.9E-03
				Antimony	8.7E+00	mg/kg	3.0E-07	mg/kg/day	NA	NA	NA	8.5E-07	mg/kg/day	4.0E-04	mg/kg-day	2.1E-03
				Arsenic	3.9E+02	mg/kg	4.1E-06	mg/kg/day	1.5E+00	(mg/kg-day)-1	6.1E-06	1.1E-05	mg/kg/day	3.0E-04	mg/kg-day	3.8E-02
				Cadmium	4.7E+00	mg/kg	1.6E-07	mg/kg/day	NA	NA	NA	4.6E-07	mg/kg/day	1.0E-03	mg/kg-day	4.6E-04
				Chromium	2.3E+01	mg/kg	8.0E-07	mg/kg/day	NA	NA	NA	2.3E-06	mg/kg/day	3.0E-03	mg/kg-day	7.5E-04
				Iron	2.6E+04	mg/kg	9.1E-04	mg/kg/day	NA	NA	NA	2.5E-03	mg/kg/day	7.0E-01	mg/kg-day	3.6E-03
				Lead	4.7E+03	mg/kg	1.6E-04	mg/kg/day	NA	NA	NA	4.6E-04	mg/kg/day	NA	NA	NA
				Manganese	8.3E+02	mg/kg	2.9E-05	mg/kg/day	NA	NA	NA	8.1E-05	mg/kg/day	1.4E-01	mg/kg-day	5.8E-04
				Mercury	2.6E+00	mg/kg	9.1E-08	mg/kg/day	NA	NA	NA	2.5E-07	mg/kg/day	3.0E-04	mg/kg-day	8.5E-04
				Vanadium	4.0E+01	mg/kg	1.4E-06	mg/kg/day	NA	NA	NA	3.9E-06	mg/kg/day	1.0E-03	mg/kg-day	3.9E-03
			Exp. Route Total								1.4E-04					9.0E+00
Surface Soil	Surface Soil	Surface Soil Facility Area	Dermal Contact	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	3.8E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	2.8E-09	1.1E-08	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	8.8E-09	mg/kg/day	7.3E+00	(mg/kg-day)-1	6.4E-08	2.5E-08	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	9.7E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	7.1E-09	2.7E-08	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	2.9E-09	mg/kg/day	7.3E+00	(mg/kg-day)-1	2.1E-08	8.0E-09	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	6.0E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	4.4E-09	1.7E-08	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	6.1E+03	mg/kg	1.3E-05	mg/kg/day	2.0E+00	(mg/kg-day)-1	2.6E-05	3.6E-05	mg/kg/day	2.0E-05	mg/kg-day	1.8E+00
				Heptachlor epoxide	3.8E-01	mg/kg	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	8.0E-13	mg/kg/day	1.5E+05	(mg/kg-day)-1	1.2E-07	2.3E-12	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	8.7E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	3.9E+02	mg/kg	4.1E-07	mg/kg/day	1.5E+00	(mg/kg-day)-1	6.2E-07	1.2E-06	mg/kg/day	3.0E-04	mg/kg-day	3.9E-03
				Cadmium	4.7E+00	mg/kg	1.7E-10	mg/kg/day	NA	NA	NA	4.7E-10	mg/kg/day	2.5E-05	mg/kg-day	1.9E-05
				Chromium	2.3E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	2.6E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	4.7E+03	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	8.3E+02	mg/kg	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	2.6E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	4.0E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								2.7E-05					1.8E+00
Air	Ambient Air	Ambient Air Facility Area	Inhalation	**P/PCBs**												
				PCBs, Total	7.3E+01	ng/m3	6.1E-07	mg/kg/day	3.5E-01	(mg/kg-day)-1	2.1E-07	1.7E-06	mg/kg/day	NA	NA	NA
			Exp. Route Total								2.1E-07					NA
		Exposure Point Total									2E-04					1E+01

TABLE F-7.3

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

MODIFIED EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	Trespasser
Receptor Age:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil Facility Area	Incidental Ingestion	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	4.3E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	3.2E-08	3.0E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	9.9E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	7.2E-07	6.9E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	1.1E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	8.0E-08	7.7E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	3.2E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	2.4E-07	2.3E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	6.8E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	5.0E-08	4.7E-07	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	3.7E+02	mg/kg	5.9E-06	mg/kg/day	2.0E+00	(mg/kg-day)-1	1.2E-05	4.1E-05	mg/kg/day	2.0E-05	mg/kg-day	2.0E+00
				Heptachlor epoxide	3.8E-01	mg/kg	2.0E-08	mg/kg/day	9.1E+00	(mg/kg-day)-1	1.8E-07	1.4E-07	mg/kg/day	1.3E-05	mg/kg-day	1.1E-02
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	3.9E-11	mg/kg/day	1.5E+05	(mg/kg-day)-1	5.9E-06	2.8E-10	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	9.9E-04	mg/kg/day	NA	NA	NA	6.9E-03	mg/kg/day	1.0E+00	mg/kg-day	6.9E-03
				Antimony	8.7E+00	mg/kg	4.5E-07	mg/kg/day	NA	NA	NA	3.2E-06	mg/kg/day	4.0E-04	mg/kg-day	7.9E-03
				Arsenic	3.9E+02	mg/kg	6.1E-06	mg/kg/day	1.5E+00	(mg/kg-day)-1	9.2E-06	4.3E-05	mg/kg/day	3.0E-04	mg/kg-day	1.4E-01
				Cadmium	4.7E+00	mg/kg	2.5E-07	mg/kg/day	NA	NA	NA	1.7E-06	mg/kg/day	1.0E-03	mg/kg-day	1.7E-03
				Chromium	2.3E+01	mg/kg	1.2E-06	mg/kg/day	NA	NA	NA	8.4E-06	mg/kg/day	3.0E-03	mg/kg-day	2.8E-03
				Iron	2.6E+04	mg/kg	1.4E-03	mg/kg/day	NA	NA	NA	9.5E-03	mg/kg/day	7.0E-01	mg/kg-day	1.4E-02
				Lead	4.7E+03	mg/kg	2.5E-04	mg/kg/day	NA	NA	NA	1.7E-03	mg/kg/day	NA	NA	NA
				Manganese	8.3E+02	mg/kg	4.3E-05	mg/kg/day	NA	NA	NA	3.0E-04	mg/kg/day	1.4E-01	mg/kg-day	2.2E-03
				Mercury	2.6E+00	mg/kg	1.4E-07	mg/kg/day	NA	NA	NA	9.5E-07	mg/kg/day	3.0E-04	mg/kg-day	3.2E-03
				Vanadium	4.0E+01	mg/kg	2.1E-06	mg/kg/day	NA	NA	NA	1.5E-05	mg/kg/day	1.0E-03	mg/kg-day	1.5E-02
			Exp. Route Total								2.8E-05					2.3E+00
Surface Soil	Surface Soil	Surface Soil Facility Area	Dermal Contact	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	1.2E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	8.7E-09	8.4E-08	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	2.7E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	2.0E-07	1.9E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	3.0E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	2.2E-08	2.1E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	8.9E-09	mg/kg/day	7.3E+00	(mg/kg-day)-1	6.5E-08	6.2E-08	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	1.9E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.4E-08	1.3E-07	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	3.7E+02	mg/kg	2.5E-06	mg/kg/day	2.0E+00	(mg/kg-day)-1	5.0E-06	1.7E-05	mg/kg/day	2.0E-05	mg/kg-day	8.7E-01
				Heptachlor epoxide	3.8E-01	mg/kg	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	2.5E-12	mg/kg/day	1.5E+05	(mg/kg-day)-1	3.8E-07	1.8E-11	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	8.7E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	3.9E+02	mg/kg	1.3E-06	mg/kg/day	1.5E+00	(mg/kg-day)-1	1.9E-06	9.1E-06	mg/kg/day	3.0E-04	mg/kg-day	3.0E-02
				Cadmium	4.7E+00	mg/kg	5.2E-10	mg/kg/day	NA	NA	NA	3.6E-09	mg/kg/day	2.5E-05	mg/kg-day	1.5E-04
				Chromium	2.3E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	2.6E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	4.7E+03	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	8.3E+02	mg/kg	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	2.6E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	4.0E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								7.6E-06					9.0E-01
Air	Ambient Air	Ambient Air Facility Area	Inhalation	**P/PCBs**												
				PCBs, Total	7.3E+01	ng/m3	1.6E-07	mg/kg/day	3.5E-01	(mg/kg-day)-1	5.7E-08	1.1E-06	mg/kg/day	NA	NA	NA
			Exp. Route Total								5.7E-08					NA
		Exposure Point Total									4E-05					3E+00

TABLE F-7.4

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

MODIFIED EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Trespasser
Receptor Age:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil Facility Area	Incidental Ingestion	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	4.3E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	3.2E-08	3.0E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	9.9E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	7.2E-07	6.9E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	1.1E-07	mg/kg/day	7.3E-01	(mg/kg-day)-1	8.0E-08	7.7E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	3.2E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	2.4E-07	2.3E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	6.8E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	5.0E-08	4.7E-07	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	6.1E+03	mg/kg	9.5E-05	mg/kg/day	2.0E+00	(mg/kg-day)-1	1.9E-04	6.6E-04	mg/kg/day	2.0E-05	mg/kg-day	3.3E+01
				Heptachlor epoxide	3.8E-01	mg/kg	2.0E-08	mg/kg/day	9.1E+00	(mg/kg-day)-1	1.8E-07	1.4E-07	mg/kg/day	1.3E-05	mg/kg-day	1.1E-02
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	3.9E-11	mg/kg/day	1.5E+05	(mg/kg-day)-1	5.9E-06	2.8E-10	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	9.9E-04	mg/kg/day	NA	NA	NA	6.9E-03	mg/kg/day	1.0E+00	mg/kg-day	6.9E-03
				Antimony	8.7E+00	mg/kg	4.5E-07	mg/kg/day	NA	NA	NA	3.2E-06	mg/kg/day	4.0E-04	mg/kg-day	7.9E-03
				Arsenic	3.9E+02	mg/kg	6.1E-06	mg/kg/day	1.5E+00	(mg/kg-day)-1	9.2E-06	4.3E-05	mg/kg/day	3.0E-04	mg/kg-day	1.4E-01
				Cadmium	4.7E+00	mg/kg	2.5E-07	mg/kg/day	NA	NA	NA	1.7E-06	mg/kg/day	1.0E-03	mg/kg-day	1.7E-03
				Chromium	2.3E+01	mg/kg	1.2E-06	mg/kg/day	NA	NA	NA	8.4E-06	mg/kg/day	3.0E-03	mg/kg-day	2.8E-03
				Iron	2.6E+04	mg/kg	1.4E-03	mg/kg/day	NA	NA	NA	9.5E-03	mg/kg/day	7.0E-01	mg/kg-day	1.4E-02
				Lead	4.7E+03	mg/kg	2.5E-04	mg/kg/day	NA	NA	NA	1.7E-03	mg/kg/day	NA	NA	NA
				Manganese	8.3E+02	mg/kg	4.3E-05	mg/kg/day	NA	NA	NA	3.0E-04	mg/kg/day	1.4E-01	mg/kg-day	2.2E-03
				Mercury	2.6E+00	mg/kg	1.4E-07	mg/kg/day	NA	NA	NA	9.5E-07	mg/kg/day	3.0E-04	mg/kg-day	3.2E-03
				Vanadium	4.0E+01	mg/kg	2.1E-06	mg/kg/day	NA	NA	NA	1.5E-05	mg/kg/day	1.0E-03	mg/kg-day	1.5E-02
			Exp. Route Total								2.1E-04					3.3E+01
Surface Soil	Surface Soil	Surface Soil Facility Area	Dermal Contact	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	1.2E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	8.7E-09	8.4E-08	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	2.7E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	2.0E-07	1.9E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	3.0E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	2.2E-08	2.1E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	8.9E-09	mg/kg/day	7.3E+00	(mg/kg-day)-1	6.5E-08	6.2E-08	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	1.9E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.4E-08	1.3E-07	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	6.1E+03	mg/kg	4.0E-05	mg/kg/day	2.0E+00	(mg/kg-day)-1	8.0E-05	2.8E-04	mg/kg/day	2.0E-05	mg/kg-day	1.4E+01
				Heptachlor epoxide	3.8E-01	mg/kg	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	2.5E-12	mg/kg/day	1.5E+05	(mg/kg-day)-1	3.8E-07	1.8E-11	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	8.7E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	3.9E+02	mg/kg	1.3E-06	mg/kg/day	1.5E+00	(mg/kg-day)-1	1.9E-06	9.1E-06	mg/kg/day	3.0E-04	mg/kg-day	3.0E-02
				Cadmium	4.7E+00	mg/kg	5.2E-10	mg/kg/day	NA	NA	NA	3.6E-09	mg/kg/day	2.5E-05	mg/kg-day	1.5E-04
				Chromium	2.3E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	2.6E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	4.7E+03	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	8.3E+02	mg/kg	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	2.6E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	4.0E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								8.3E-05					1.4E+01
Air	Ambient Air	Ambient Air Facility Area	Inhalation	**P/PCBs**												
				PCBs, Total	7.3E+01	ng/m3	1.6E-07	mg/kg/day	3.5E-01	(mg/kg-day)-1	5.7E-08	1.1E-06	mg/kg/day	NA	NA	NA
			Exp. Route Total								5.7E-08					NA
		Exposure Point Total									3E-04					5E+01

TABLE F-7.5

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

MODIFIED EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/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				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface/ Subsurface Soil	Surface/ Subsurface Soil	Surface/ Subsurface Soil Facility Area	Incidental Ingestion	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	2.7E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	2.0E-08	1.9E-06	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	6.1E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	4.5E-07	4.3E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	6.8E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	4.9E-08	4.7E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	2.0E-08	mg/kg/day	7.3E+00	(mg/kg-day)-1	1.5E-07	1.4E-06	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	4.2E-08	mg/kg/day	7.3E-01	(mg/kg-day)-1	3.1E-08	2.9E-06	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	3.3E+03	mg/kg	3.2E-05	mg/kg/day	2.0E+00	(mg/kg-day)-1	6.3E-05	2.2E-03	mg/kg/day	2.0E-05	mg/kg-day	1.1E+02
				Heptachlor epoxide	3.8E-01	mg/kg	1.2E-08	mg/kg/day	9.1E+00	(mg/kg-day)-1	1.1E-07	8.6E-07	mg/kg/day	1.3E-05	mg/kg-day	6.6E-02
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	2.4E-11	mg/kg/day	1.5E+05	(mg/kg-day)-1	3.7E-06	1.7E-09	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	6.1E-04	mg/kg/day	NA	NA	NA	4.3E-02	mg/kg/day	1.0E+00	mg/kg-day	4.3E-02
				Antimony	8.7E+00	mg/kg	2.8E-07	mg/kg/day	NA	NA	NA	2.0E-05	mg/kg/day	4.0E-04	mg/kg-day	4.9E-02
				Arsenic	1.5E+02	mg/kg	1.4E-06	mg/kg/day	1.5E+00	(mg/kg-day)-1	2.1E-06	1.0E-04	mg/kg/day	3.0E-04	mg/kg-day	3.3E-01
				Barium	1.9E+02	mg/kg	6.2E-06	mg/kg/day	NA	NA	NA	4.3E-04	mg/kg/day	2.0E-01	mg/kg-day	2.2E-03
				Cadmium	1.3E+00	mg/kg	4.3E-08	mg/kg/day	NA	NA	NA	3.0E-06	mg/kg/day	1.0E-03	mg/kg-day	3.0E-03
				Chromium	4.7E+01	mg/kg	1.5E-06	mg/kg/day	NA	NA	NA	1.1E-04	mg/kg/day	3.0E-03	mg/kg-day	3.5E-02
				Iron	2.6E+04	mg/kg	8.4E-04	mg/kg/day	NA	NA	NA	5.9E-02	mg/kg/day	7.0E-01	mg/kg-day	8.4E-02
				Lead	2.6E+03	mg/kg	8.4E-05	mg/kg/day	NA	NA	NA	5.9E-03	mg/kg/day	NA	NA	NA
				Manganese	2.8E+03	mg/kg	9.0E-05	mg/kg/day	NA	NA	NA	6.3E-03	mg/kg/day	1.4E-01	mg/kg-day	4.5E-02
				Mercury	1.5E+00	mg/kg	4.8E-08	mg/kg/day	NA	NA	NA	3.4E-06	mg/kg/day	3.0E-04	mg/kg-day	1.1E-02
				Nickel	8.9E+02	mg/kg	2.9E-05	mg/kg/day	NA	NA	NA	2.0E-03	mg/kg/day	2.0E-02	mg/kg-day	1.0E-01
				Vanadium	4.7E+01	mg/kg	1.5E-06	mg/kg/day	NA	NA	NA	1.1E-04	mg/kg/day	1.0E-03	mg/kg-day	1.1E-01
			Exp. Route Total								7.0E-05					1.1E+02
Surface/ Subsurface Soil	Surface/ Subsurface Soil	Surface/ Subsurface Soil Facility Area	Dermal Contact	**SVOCs**												
				Benzo(a)anthracene	8.3E-01	mg/kg	2.0E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	1.5E-09	1.4E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.9E+00	mg/kg	4.6E-09	mg/kg/day	7.3E+00	(mg/kg-day)-1	3.3E-08	3.2E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.1E+00	mg/kg	5.0E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	3.7E-09	3.5E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.2E-01	mg/kg	1.5E-09	mg/kg/day	7.3E+00	(mg/kg-day)-1	1.1E-08	1.0E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	1.3E+00	mg/kg	3.1E-09	mg/kg/day	7.3E-01	(mg/kg-day)-1	2.3E-09	2.2E-07	mg/kg/day	NA	NA	NA
				P/PCBs												
				PCBs, Total	3.3E+03	mg/kg	3.6E-06	mg/kg/day	2.0E+00	(mg/kg-day)-1	7.3E-06	2.5E-04	mg/kg/day	2.0E-05	mg/kg-day	1.3E+01
				Heptachlor epoxide	3.8E-01	mg/kg	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	7.6E-04	mg/kg	4.2E-13	mg/kg/day	1.5E+05	(mg/kg-day)-1	6.3E-08	2.9E-11	mg/kg/day	NA	NA	NA
				Inorganics												
				Aluminum	1.9E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	8.7E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	1.5E+02	mg/kg	8.2E-08	mg/kg/day	1.5E+00	(mg/kg-day)-1	1.2E-07	5.7E-06	mg/kg/day	3.0E-04	mg/kg-day	1.9E-02
				Barium	1.9E+02	mg/kg	NA	NA	NA	NA	NA	NA	NA	1.4E-02	mg/kg-day	NA
				Cadmium	1.3E+00	mg/kg	2.4E-11	mg/kg/day	NA	NA	NA	1.7E-09	mg/kg/day	2.5E-05	mg/kg-day	6.8E-05
				Chromium	4.7E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	2.6E+04	mg/kg	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	2.6E+03	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	2.8E+03	mg/kg	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	1.5E+00	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Nickel	8.9E+02	mg/kg	NA	NA	NA	NA	NA	NA	NA	8.0E-04	mg/kg-day	NA
				Vanadium	4.7E+01	mg/kg	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								7.5E-06					1.3E+01
Air	Ambient Air	Ambient Air Facility Area	Inhalation	**P/PCBs**												
				PCBs, Total	7.3E+01	ng/m3	9.7E-08	mg/kg/day	3.5E-01	(mg/kg-day)-1	3.4E-08	6.8E-06	mg/kg/day	NA	NA	NA
			Exp. Route Total								3.4E-08					NA
		Exposure Point Total									8E-05					1E+02

TABLE F-7.6

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

MODIFIED EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	O&M Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil	Incidental Ingestion	**SVOCs**												
		South Landfill		Benzo(a)anthracene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(a)pyrene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				P/PCBs												
				PCBs, Total	1.4E+01	mg/kg	1.4E-07	mg/kg/day	2.0E+00	(mg/kg-day)-1	2.9E-07	4.0E-07	mg/kg/day	2.0E-05	mg/kg-day	2.0E-02
				Heptachlor epoxide	NA	NA	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.0E-04	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+00	(mg/kg-day)-1	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E-03	mg/kg-day	NA
				Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-03	mg/kg-day	NA
				Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.4E-01	mg/kg-day	NA
				Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E-03	mg/kg-day	NA
			Exp. Route Total								2.9E-07					2.0E-02
Surface Soil	Surface Soil	Surface Soil	Dermal Contact	**SVOCs**												
		South Landfill		Benzo(a)anthracene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(a)pyrene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				P/PCBs												
				PCBs, Total	1.4E+01	mg/kg	2.9E-08	mg/kg/day	2.0E+00	(mg/kg-day)-1	5.8E-08	8.1E-08	mg/kg/day	2.0E-05	mg/kg-day	4.1E-03
				Heptachlor epoxide	NA	NA	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+00	(mg/kg-day)-1	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5E-05	mg/kg-day	NA
				Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								5.8E-08					4.1E-03
Air	Ambien Air	Ambient Air	Inhalation	**P/PCBs**												
		South Landfill		PCBs, Total	7.0E+00	ng/m3	5.8E-08	mg/kg/day	3.5E-01	(mg/kg-day)-1	2.0E-08	1.6E-07	mg/kg/day	NA	NA	NA
			Exp. Route Total								2.0E-08					NA
		Exposure Point Total									4E-07					2E-02

TABLE F-7.7

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

MODIFIED EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor Age:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil	Incidental Ingestion	**SVOCs**												
		South Landfill		Benzo(a)anthracene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(a)pyrene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				P/PCBs												
				PCBs, Total	1.4E+01	mg/kg	2.1E-07	mg/kg/day	2.0E+00	(mg/kg-day)-1	4.3E-07	1.5E-06	mg/kg/day	2.0E-05	mg/kg-day	7.5E-02
				Heptachlor epoxide	NA	NA	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.0E-04	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+00	(mg/kg-day)-1	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E-03	mg/kg-day	NA
				Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-03	mg/kg-day	NA
				Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.4E-01	mg/kg-day	NA
				Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E-03	mg/kg-day	NA
			Exp. Route Total								4.3E-07					7.5E-02
Surface Soil	Surface Soil	Surface Soil	Dermal Contact	**SVOCs**												
		South Landfill		Benzo(a)anthracene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(a)pyrene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				P/PCBs												
				PCBs, Total	1.4E+01	mg/kg	9.1E-08	mg/kg/day	2.0E+00	(mg/kg-day)-1	1.8E-07	6.3E-07	mg/kg/day	2.0E-05	mg/kg-day	3.2E-02
				Heptachlor epoxide	NA	NA	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+00	(mg/kg-day)-1	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5E-05	mg/kg-day	NA
				Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								1.8E-07					3.2E-02
Air	Ambient Air	Ambient Air	Inhalation	**P/PCBs**												
		South Landfill		PCBs, Total	7.0E+00	ng/m3	1.6E-08	mg/kg/day	3.5E-01	(mg/kg-day)-1	5.5E-09	1.1E-07	mg/kg/day	NA	NA	NA
			Exp. Route Total								5.5E-09					NA
		Exposure Point Total									6E-07					1E-01

TABLE F-7.8

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

MODIFIED EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	O&M Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil	Incidental Ingestion	**SVOCs**												
		West End Landfill		Benzo(a)anthracene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(a)pyrene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				P/PCBs												
				PCBs, Total	NA	NA	NA	NA	2.0E+00	(mg/kg-day)-1	NA	NA	NA	2.0E-05	mg/kg-day	NA
				Heptachlor epoxide	NA	NA	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.0E-04	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+00	(mg/kg-day)-1	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E-03	mg/kg-day	NA
				Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-03	mg/kg-day	NA
				Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.4E-01	mg/kg-day	NA
				Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E-03	mg/kg-day	NA
			Exp. Route Total								NA					NA
Surface Soil	Surface Soil	Surface Soil	Dermal Contact	**SVOCs**												
		West End Landfill		Benzo(a)anthracene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(a)pyrene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				P/PCBs												
				PCBs, Total	NA	NA	NA	NA	2.0E+00	(mg/kg-day)-1	NA	NA	NA	2.0E-05	mg/kg-day	NA
				Heptachlor epoxide	NA	NA	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+00	(mg/kg-day)-1	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5E-05	mg/kg-day	NA
				Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								NA					NA
Air	Ambient Air	Ambient Air West Landfill	Inhalation	**P/PCBs** PCBs, Total	1.0E+01	ng/m3	8.5E-08	mg/kg/day	3.5E-01	(mg/kg-day)-1	3.0E-08	2.4E-07	mg/kg/day	NA	NA	NA
			Exp. Route Total								3.0E-08					NA
		Exposure Point Total									3E-08					NA

TABLE F-7.9

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

MODIFIED EXPOSURE

Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor Age:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/ Exposure Concentration		CSF/Unit Risk		Cancer	Intake/ Exposure Concentration		RfD/RfC		Hazard
					Value	Unit	Value	Unit	Value	Unit	Risk	Value	Unit	Value	Unit	Quotient
Surface Soil	Surface Soil	Surface Soil	Incidental Ingestion	**SVOCs**												
		West End Landfill		Benzo(a)anthracene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(a)pyrene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				P/PCBs												
				PCBs, Total	NA	NA	NA	NA	2.0E+00	(mg/kg-day)-1	NA	NA	NA	2.0E-05	mg/kg-day	NA
				Heptachlor epoxide	NA	NA	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.0E-04	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+00	(mg/kg-day)-1	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E-03	mg/kg-day	NA
				Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-03	mg/kg-day	NA
				Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.4E-01	mg/kg-day	NA
				Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E-03	mg/kg-day	NA
			Exp. Route Total								NA					NA
Surface Soil	Surface Soil	Surface Soil	Dermal Contact	**SVOCs**												
		West End Landfill		Benzo(a)anthracene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(a)pyrene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	NA	NA	NA	NA	7.3E+00	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.3E-01	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				P/PCBs												
				PCBs, Total	NA	NA	NA	NA	2.0E+00	(mg/kg-day)-1	NA	NA	NA	2.0E-05	mg/kg-day	NA
				Heptachlor epoxide	NA	NA	NA	NA	9.1E+00	(mg/kg-day)-1	NA	NA	NA	1.3E-05	mg/kg-day	NA
				Dioxin												
				Dioxin TEQ	NA	NA	NA	NA	1.5E+05	(mg/kg-day)-1	NA	NA	NA	NA	NA	NA
				Inorganics												
				Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0E+00	mg/kg-day	NA
				Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.0E-05	mg/kg-day	NA
				Arsenic	NA	NA	NA	NA	1.5E+00	(mg/kg-day)-1	NA	NA	NA	3.0E-04	mg/kg-day	NA
				Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5E-05	mg/kg-day	NA
				Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.5E-05	mg/kg-day	NA
				Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0E-01	mg/kg-day	NA
				Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.6E-03	mg/kg-day	NA
				Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.9E-04	mg/kg-day	NA
				Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.6E-05	mg/kg-day	NA
			Exp. Route Total								NA					NA
Air	Ambient Air	Ambient Air	Inhalation	**P/PCBs**												
		West Landfill		PCBs, Total	1.0E+01	ng/m3	2.3E-08	mg/kg/day	3.5E-01	(mg/kg-day)-1	7.9E-09	1.6E-07	mg/kg/day	NA	NA	NA
			Exp. Route Total								7.9E-09					NA
		Exposure Point Total									8E-09					NA

TABLE F-8.1
CALCULATION OF RADIATION CANCER RISKS
MODIFIED EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	NA
Receptor Population:	NA
Receptor Age:	NA

Medium	Exposure Medium	Exposure Point	Exposure Route	Radionuclide of Potential Concern	EPC		Risk Calculation Approach	Cancer Risk Calculations				
								Intake/Activity		CSF		Cancer Risk
					Value	Units		Value	Units	Value	Units	
				NOT APPLICABLE TO THIS SITE								
			Exp. Route Total									
		Exposure Point Total										
												Total of Receptor Risks Across All Media

TABLE F-9.1
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
MODIFIED EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil Facility Area	**SVOCs**									
			Benzo(a)anthracene	2.1E-08	NA	2.8E-09	2.4E-08	NA	NA	NA	NA	NA
			Benzo(a)pyrene	4.8E-07	NA	6.4E-08	5.5E-07	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	5.4E-08	NA	7.1E-09	6.1E-08	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	1.6E-07	NA	2.1E-08	1.8E-07	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	3.3E-08	NA	4.4E-09	3.8E-08	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	7.8E-06	NA	1.6E-06	9.4E-06	Eye/Skin/Nails/Immune System	5.5E-01	NA	1.1E-01	6.6E-01
			Heptachlor epoxide	1.2E-07	NA	NA	1.2E-07	Liver	2.9E-03	NA	NA	2.9E-03
			Dioxin									
			Dioxin TEQ	4.0E-06	NA	1.2E-07	4.1E-06	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	1.9E-03	NA	NA	1.9E-03
			Antimony	NA	NA	NA	NA	Whole Body/Blood	2.1E-03	NA	NA	2.1E-03
			Arsenic	6.1E-06	NA	6.2E-07	6.8E-06	Skin	3.8E-02	NA	3.9E-03	4.2E-02
			Cadmium	NA	NA	NA	NA	Kidney	4.6E-04	NA	1.9E-05	4.8E-04
			Chromium	NA	NA	NA	NA	GI Tract	7.5E-04	NA	NA	7.5E-04
			Iron	NA	NA	NA	NA	GI Tract/Liver	3.6E-03	NA	NA	3.6E-03
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	5.8E-04	NA	NA	5.8E-04
			Mercury	NA	NA	NA	NA	Immune System	8.5E-04	NA	NA	8.5E-04
			Vanadium	NA	NA	NA	NA	Metabolic	3.9E-03	NA	NA	3.9E-03
			Chemical Total	1.9E-05	NA	2.4E-06	2.1E-05		6.0E-01	NA	1.2E-01	7.2E-01
		Exposure Point Total					2.1E-05					7.2E-01
	Exposure Medium Total						2.1E-05					7.2E-01
Surface Soil Total							2.1E-05					7.2E-01
Air	Ambient Air	Ambient Air Facility Area	**P/PCBs**									
			PCBs, Total	NA	2.1E-07	NA	2.1E-07	NA	NA	NA	NA	NA
			Chemical Total	NA	2.1E-07	NA	2.1E-07		NA	NA	NA	NA
		Exposure Point Total					2.1E-07					NA
	Exposure Medium Total						2.1E-07					NA
Air Total							2.1E-07					NA
Receptor Total							2.1E-05					7.2E-01

Total Risk Across All Media =	2E-05
Total Hazard Across All Media =	1
Total Liver HI Across All Media =	0.006
Total Eye HI Across All Media =	1
Total GI Tract HI Across All Media =	0.006
Total Nails HI Across All Media =	1
Total Blood HI Across All Media =	0.002
Total Whole Body HI Across All Media =	0.002
Total Skin HI Across All Media =	1
Total Kidney HI Across All Media =	0.0005
Total CNS HI Across All Media =	0.002
Total Immune System HI Across All Media =	1
Total Metabolic HI Across All Media =	0.004

TABLE F-9.2
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
MODIFIED EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		Facility Area	Benzo(a)anthracene	2.1E-08	NA	2.8E-09	2.4E-08	NA	NA	NA	NA	NA
			Benzo(a)pyrene	4.8E-07	NA	6.4E-08	5.5E-07	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	5.4E-08	NA	7.1E-09	6.1E-08	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	1.6E-07	NA	2.1E-08	1.8E-07	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	3.3E-08	NA	4.4E-09	3.8E-08	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	1.3E-04	NA	2.6E-05	1.5E-04	Eye/Skin/Nails/Immune System	8.9E+00	NA	1.8E+00	1.1E+01
			Heptachlor epoxide	1.2E-07	NA	NA	1.2E-07	Liver	2.9E-03	NA	NA	2.9E-03
			Dioxin									
			Dioxin TEQ	4.0E-06	NA	1.2E-07	4.1E-06	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	1.9E-03	NA	NA	1.9E-03
			Antimony	NA	NA	NA	NA	Whole Body/Blood	2.1E-03	NA	NA	2.1E-03
			Arsenic	6.1E-06	NA	6.2E-07	6.8E-06	Skin	3.8E-02	NA	3.9E-03	4.2E-02
			Cadmium	NA	NA	NA	NA	Kidney	4.6E-04	NA	1.9E-05	4.8E-04
			Chromium	NA	NA	NA	NA	GI Tract	7.5E-04	NA	NA	7.5E-04
			Iron	NA	NA	NA	NA	GI Tract/Liver	3.6E-03	NA	NA	3.6E-03
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	5.8E-04	NA	NA	5.8E-04
			Mercury	NA	NA	NA	NA	Immune System	8.5E-04	NA	NA	8.5E-04
			Vanadium	NA	NA	NA	NA	Metabolic	3.9E-03	NA	NA	3.9E-03
			Chemical Total	1.4E-04	NA	2.7E-05	1.6E-04		9.0E+00	NA	1.8E+00	1.1E+01
		Exposure Point Total					1.6E-04					1.1E+01
	Exposure Medium Total						1.6E-04					1.1E+01
Surface Soil Total							1.6E-04					1.1E+01
Air	Ambient Air	Ambient Air	**P/PCBs**									
		Facility Area	PCBs, Total	NA	2.1E-07	NA	2.1E-07	NA	NA	NA	NA	NA
Air	Ambient Air	Ambient Air	Chemical Total	NA	2.1E-07	NA	2.1E-07		NA	NA	NA	NA
Facility Area		Exposure Point Total					2.1E-07					NA
	Exposure Medium Total						2.1E-07					NA
Air Total							2.1E-07					NA
Receptor Total							1.6E-04					1.1E+01

Total Risk Across All Media =	2E-04
Total Hazard Across All Media =	11
Total Liver HI Across All Media =	0.006
Total Eye HI Across All Media =	11
Total GI Tract HI Across All Media =	0.006
Total Nails HI Across All Media =	11
Total Blood HI Across All Media =	0.002
Total Whole Body HI Across All Media =	0.002
Total Skin HI Across All Media =	11
Total Kidney HI Across All Media =	0.000
Total CNS HI Across All Media =	0.002
Total Immune System HI Across All Media =	11
Total Metabolic HI Across All Media =	0.004

TABLE F-9.3
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
MODIFIED EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	Trespasser
Receptor:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		Facility Area	Benzo(a)anthracene	3.2E-08	NA	8.7E-09	4.0E-08	NA	NA	NA	NA	NA
			Benzo(a)pyrene	7.2E-07	NA	2.0E-07	9.2E-07	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	8.0E-08	NA	2.2E-08	1.0E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	2.4E-07	NA	6.5E-08	3.0E-07	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	5.0E-08	NA	1.4E-08	6.3E-08	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	1.2E-05	NA	5.0E-06	1.7E-05	Eye/Skin/Nails/Immune System	2.0E+00	NA	8.7E-01	2.9E+00
			Heptachlor epoxide	1.8E-07	NA	NA	1.8E-07	Liver	1.1E-02	NA	NA	1.1E-02
			Dioxin									
			Dioxin TEQ	5.9E-06	NA	3.8E-07	6.3E-06	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	6.9E-03	NA	NA	6.9E-03
			Antimony	NA	NA	NA	NA	Whole Body/Blood	7.9E-03	NA	NA	7.9E-03
			Arsenic	9.2E-06	NA	1.9E-06	1.1E-05	Skin	1.4E-01	NA	3.0E-02	1.7E-01
			Cadmium	NA	NA	NA	NA	Kidney	1.7E-03	NA	1.5E-04	1.9E-03
			Chromium	NA	NA	NA	NA	GI Tract	2.8E-03	NA	NA	2.8E-03
			Iron	NA	NA	NA	NA	GI Tract/Liver	1.4E-02	NA	NA	1.4E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	2.2E-03	NA	NA	2.2E-03
			Mercury	NA	NA	NA	NA	Immune System	3.2E-03	NA	NA	3.2E-03
			Vanadium	NA	NA	NA	NA	Metabolic	1.5E-02	NA	NA	1.5E-02
			Chemical Total	2.8E-05	NA	7.6E-06	3.6E-05		2.3E+00	NA	9.0E-01	3.2E+00
		Exposure Point Total					3.6E-05					3.2E+00
	Exposure Medium Total						3.6E-05					3.2E+00
Surface Soil Total							3.6E-05					3.2E+00
Air	Ambient Air	Ambient Air	**P/PCBs**									
		Facility Area	PCBs, Total	NA	5.7E-08	NA	5.7E-08	NA	NA	NA	NA	NA
			Chemical Total	NA	5.7E-08	NA	5.7E-08		NA	NA	NA	NA
		Exposure Point Total					5.7E-08					NA
	Exposure Medium Total						5.7E-08					NA
Air Total							5.7E-08					NA
Receptor Total							3.6E-05					3.2E+00

Total Risk Across All Media =	4E-05
Total Hazard Across All Media =	3
Total Liver HI Across All Media =	0.02
Total Eye HI Across All Media =	3
Total GI Tract HI Across All Media =	0.02
Total Nails HI Across All Media =	3
Total Blood HI Across All Media =	0.008
Total Whole Body HI Across All Media =	0.008
Total Skin HI Across All Media =	3
Total Kidney HI Across All Media =	0.002
Total CNS HI Across All Media =	0.009
Total Immune System HI Across All Media =	3
Total Metabolic HI Across All Media =	0.01

TABLE F-9.4
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
MODIFIED EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Trespasser
Receptor:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		Facility Area	Benzo(a)anthracene	3.2E-08	NA	8.7E-09	4.0E-08	NA	NA	NA	NA	NA
			Benzo(a)pyrene	7.2E-07	NA	2.0E-07	9.2E-07	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	8.0E-08	NA	2.2E-08	1.0E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	2.4E-07	NA	6.5E-08	3.0E-07	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	5.0E-08	NA	1.4E-08	6.3E-08	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	1.9E-04	NA	8.0E-05	2.7E-04	Eye/Skin/Nails/Immune System	3.3E+01	NA	1.4E+01	4.7E+01
			Heptachlor epoxide	1.8E-07	NA	NA	1.8E-07	Liver	1.1E-02	NA	NA	1.1E-02
			Dioxin									
			Dioxin TEQ	5.9E-06	NA	3.8E-07	6.3E-06	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	6.9E-03	NA	NA	6.9E-03
			Antimony	NA	NA	NA	NA	Whole Body/Blood	7.9E-03	NA	NA	7.9E-03
			Arsenic	9.2E-06	NA	1.9E-06	1.1E-05	Skin	1.4E-01	NA	3.0E-02	1.7E-01
			Cadmium	NA	NA	NA	NA	Kidney	1.7E-03	NA	1.5E-04	1.9E-03
			Chromium	NA	NA	NA	NA	GI Tract	2.8E-03	NA	NA	2.8E-03
			Iron	NA	NA	NA	NA	GI Tract/Liver	1.4E-02	NA	NA	1.4E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	2.2E-03	NA	NA	2.2E-03
			Mercury	NA	NA	NA	NA	Immune System	3.2E-03	NA	NA	3.2E-03
			Vanadium	NA	NA	NA	NA	Metabolic	1.5E-02	NA	NA	1.5E-02
			Chemical Total	2.1E-04	NA	8.3E-05	2.9E-04		3.3E+01	NA	1.4E+01	4.8E+01
		Exposure Point Total					2.9E-04					4.8E+01
	Exposure Medium Total						2.9E-04					4.8E+01
Surface Soil Total							2.9E-04					4.8E+01
Air	Ambient Air	Ambient Air	**P/PCBs**									
		Facility Area	PCBs, Total	NA	5.7E-08	NA	5.7E-08	NA	NA	NA	NA	NA
			Chemical Total	NA	5.7E-08	NA	5.7E-08		NA	NA	NA	NA
		Exposure Point Total					5.7E-08					NA
	Exposure Medium Total						5.7E-08					NA
Air Total							5.7E-08					NA
Receptor Total							2.9E-04					4.8E+01

Total Risk Across All Media =	3E-04
Total Hazard Across All Media =	48
Total Liver HI Across All Media =	0.02
Total Eye HI Across All Media =	47
Total GI Tract HI Across All Media =	0.02
Total Nails HI Across All Media =	47
Total Blood HI Across All Media =	0.008
Total Whole Body HI Across All Media =	0.008
Total Skin HI Across All Media =	47
Total Kidney HI Across All Media =	0.002
Total CNS HI Across All Media =	0.009
Total Immune System HI Across All Media =	47
Total Metabolic HI Across All Media =	0.01

TABLE F-9.5
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
MODIFIED EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	Construction Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface/	Surface Soil	Surface Soil	**SVOCs**									
Subsurface Soil	Subsurface Soil	Subsurface Soil	Benzo(a)anthracene	2.0E-08	NA	1.5E-09	2.1E-08	NA	NA	NA	NA	NA
		Facility Area	Benzo(a)pyrene	4.5E-07	NA	3.3E-08	4.8E-07	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	4.9E-08	NA	3.7E-09	5.3E-08	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	1.5E-07	NA	1.1E-08	1.6E-07	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	3.1E-08	NA	2.3E-09	3.3E-08	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	6.3E-05	NA	7.3E-06	7.0E-05	Eye/Skin/Nails/Immune System	1.1E+02	NA	1.3E+01	1.2E+02
			Heptachlor epoxide	1.1E-07	NA	NA	1.1E-07	Liver	6.6E-02	NA	NA	6.6E-02
			Dioxin									
			Dioxin TEQ	3.7E-06	NA	6.3E-08	3.7E-06	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	4.3E-02	NA	NA	4.3E-02
			Antimony	NA	NA	NA	NA	Whole Body/Blood	4.9E-02	NA	NA	4.9E-02
			Arsenic	2.1E-06	NA	1.2E-07	2.3E-06	Skin	3.3E-01	NA	1.9E-02	3.5E-01
			Barium	NA	NA	NA	NA	CNS	2.2E-03	NA	NA	2.2E-03
			Cadmium	NA	NA	NA	NA	Kidney	3.0E-03	NA	6.8E-05	3.0E-03
			Chromium	NA	NA	NA	NA	GI Tract	3.5E-02	NA	NA	3.5E-02
			Iron	NA	NA	NA	NA	GI Tract/Liver	8.4E-02	NA	NA	8.4E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	4.5E-02	NA	NA	4.5E-02
			Mercury	NA	NA	NA	NA	Immune System	1.1E-02	NA	NA	1.1E-02
			Nickel	NA	NA	NA	NA	Body and Organ Weight	1.0E-01	NA	NA	1.0E-01
			Vanadium	NA	NA	NA	NA	Metabolic	1.1E-01	NA	NA	1.1E-01
			Chemical Total	7.0E-05	NA	7.5E-06	7.7E-05		1.1E+02	NA	1.3E+01	1.2E+02
		Exposure Point Total					7.7E-05					1.2E+02
	Exposure Medium Total						7.7E-05					1.2E+02
Surface/Subsurface Soil Total							7.7E-05					1.2E+02
Air	Ambient Air	Ambient Air	**P/PCBs**									
		Facility Area	PCBs, Total	NA	3.4E-08	NA	3.4E-08	NA	NA	NA	NA	NA
			Chemical Total	NA	3.4E-08	NA	3.4E-08		NA	NA	NA	NA
		Exposure Point Total					3.4E-08					NA
	Exposure Medium Total						3.4E-08					NA
Air Total							3.4E-08					NA
Receptor Total							7.7E-05					1.2E+02

Total Risk Across All Media =	8E-05
Total Hazard Across All Media =	124
Total Liver HI Across All Media =	0.1
Total Eye HI Across All Media =	123
Total GI Tract HI Across All Media =	0.2
Total Nails HI Across All Media =	123
Total Blood HI Across All Media =	0.05
Total Whole Body HI Across All Media =	0.05
Total Skin HI Across All Media =	124
Total Kidney HI Across All Media =	0.003
Total CNS HI Across All Media =	0.09
Total Immune System HI Across All Media =	123
Total Body and Organ Weight HI Across All Media =	0.1
Total Metabolic HI Across All Media =	0.1

TABLE F-9.6
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
MODIFIED EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		South Landfill	Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	2.9E-07	NA	5.8E-08	3.4E-07	Eye/Skin/Nails/Immune System	2.0E-02	NA	4.1E-03	2.4E-02
			Heptachlor epoxide	NA	NA	NA	NA	Liver	NA	NA	NA	NA
			Dioxin									
			Dioxin TEQ	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	NA	NA	NA	NA
			Antimony	NA	NA	NA	NA	Whole Body/Blood	NA	NA	NA	NA
			Arsenic	NA	NA	NA	NA	Skin	NA	NA	NA	NA
			Cadmium	NA	NA	NA	NA	Kidney	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	GI Tract	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	GI Tract/Liver	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	Immune System	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	Metabolic	NA	NA	NA	NA
			Chemical Total	2.9E-07	NA	5.8E-08	3.4E-07		2.0E-02	NA	4.1E-03	2.4E-02
		Exposure Point Total					3.4E-07					2.4E-02
	Exposure Medium Total						3.4E-07					2.4E-02
Surface Soil Total							3.4E-07					2.4E-02
Air	Ambient Air	Ambient Air	**P/PCBs**									
		South Landfill	PCBs, Total	NA	2.0E-08	NA	2.0E-08	NA	NA	NA	NA	NA
			Chemical Total	NA	2.0E-08	NA	2.0E-08		NA	NA	NA	NA
		Exposure Point Total					2.0E-08					NA
	Exposure Medium Total						2.0E-08					NA
Air Total							2.0E-08					NA
Receptor Total							3.6E-07					2.4E-02

Total Risk Across All Media = 4E-07

Total Hazard Across All Media = 0.02

Total Eye HI Across All Media = 0.02
Total Nails HI Across All Media = 0.02
Total Skin HI Across All Media = 0.02
Total Immune System HI Across All Media = 0.02

TABLE F-9.7
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
MODIFIED EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		South Landfill	Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	4.3E-07	NA	1.8E-07	6.1E-07	Eye/Skin/Nails/Immune System	7.5E-02	NA	3.2E-02	1.1E-01
			Heptachlor epoxide	NA	NA	NA	NA	Liver	NA	NA	NA	NA
			Dioxin									
			Dioxin TEQ	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	NA	NA	NA	NA
			Antimony	NA	NA	NA	NA	Whole Body/Blood	NA	NA	NA	NA
			Arsenic	NA	NA	NA	NA	Skin	NA	NA	NA	NA
			Cadmium	NA	NA	NA	NA	Kidney	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	GI Tract	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	GI Tract/Liver	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	Immune System	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	Metabolic	NA	NA	NA	NA
			Chemical Total	4.3E-07	NA	1.8E-07	6.1E-07		7.5E-02	NA	3.2E-02	1.1E-01
		Exposure Point Total					6.1E-07					1.1E-01
	Exposure Medium Total						6.1E-07					1.1E-01
Surface Soil Total							6.1E-07					1.1E-01
Air	Ambient Air	Ambient Air	**P/PCBs**									
		South Landfill	PCBs, Total	NA	5.5E-09	NA	5.5E-09	NA	NA	NA	NA	NA
			Chemical Total	NA	5.5E-09	NA	5.5E-09		NA	NA	NA	NA
		Exposure Point Total					5.5E-09					NA
	Exposure Medium Total						5.5E-09					NA
Air Total							5.5E-09					NA
Receptor Total							6.1E-07					1.1E-01

Total Risk Across All Media =	6E-07
Total Hazard Across All Media =	0.1
Total Eye HI Across All Media =	0.1
Total Nails HI Across All Media =	0.1
Total Skin HI Across All Media =	0.1
Total Immune System HI Across All Media =	0.1

TABLE F-9.8
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
MODIFIED EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		West End Landfill	Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	NA	NA	NA	NA	Eye/Skin/Nails/Immune System	NA	NA	NA	NA
			Heptachlor epoxide	NA	NA	NA	NA	Liver	NA	NA	NA	NA
			Dioxin									
			Dioxin TEQ	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	NA	NA	NA	NA
			Antimony	NA	NA	NA	NA	Whole Body/Blood	NA	NA	NA	NA
			Arsenic	NA	NA	NA	NA	Skin	NA	NA	NA	NA
			Cadmium	NA	NA	NA	NA	Kidney	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	GI Tract	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	GI Tract/Liver	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	Immune System	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	Metabolic	NA	NA	NA	NA
			Chemical Total	NA	NA	NA	NA		NA	NA	NA	NA
		Exposure Point Total					NA					NA
	Exposure Medium Total						NA					NA
Surface Soil Total							NA					NA
Air	Ambient Air	Ambient Air	**P/PCBs**									
		West End Landfill	PCBs, Total	NA	3.0E-08	NA	3.0E-08	NA	NA	NA	NA	NA
			Chemical Total	NA	3.0E-08	NA	3.0E-08		NA	NA	NA	NA
		Exposure Point Total					3.0E-08					NA
	Exposure Medium Total						3.0E-08					NA
Air Total							3.0E-08					NA
Receptor Total							3.0E-08					NA

Total Risk Across All Media = 3E-08

Total Hazard Across All Media = NA

TABLE F-9.9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
MODIFIED EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**SVOCs**									
		West End Landfill	Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			P/PCBs									
			PCBs, Total	NA	NA	NA	NA	Eye/Skin/Nails/Immune System	NA	NA	NA	NA
			Heptachlor epoxide	NA	NA	NA	NA	Liver	NA	NA	NA	NA
			Dioxin									
			Dioxin TEQ	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Inorganics									
			Aluminum	NA	NA	NA	NA	GI Tract/CNS	NA	NA	NA	NA
			Antimony	NA	NA	NA	NA	Whole Body/Blood	NA	NA	NA	NA
			Arsenic	NA	NA	NA	NA	Skin	NA	NA	NA	NA
			Cadmium	NA	NA	NA	NA	Kidney	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	GI Tract	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	GI Tract/Liver	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	Immune System	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	Metabolic	NA	NA	NA	NA
			Chemical Total	NA	NA	NA	NA		NA	NA	NA	NA
		Exposure Point Total					NA					NA
	Exposure Medium Total						NA					NA
Surface Soil Total							NA					NA
Air	Ambient Air	Ambient Air	**P/PCBs**									
		West End Landfill	PCBs, Total	NA	7.9E-09	NA	7.9E-09	NA	NA	NA	NA	NA
			Chemical Total	NA	7.9E-09	NA	7.9E-09		NA	NA	NA	NA
		Exposure Point Total					7.9E-09					NA
	Exposure Medium Total						7.9E-09					NA
Air Total							7.9E-09					NA
Receptor Total							7.9E-09					NA

Total Risk Across All Media = 8E-09

Total Hazard Across All Media = NA

TABLE F-10.1
RISK SUMMARY
MODIFIED EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil Facility Area	**P/PCBs**									
			PCBs, Total	7.8E-06	NA	1.6E-06	9.4E-06	Eye/Skin/Nails/Immune System	5.5E-01	NA	1.1E-01	6.6E-01
			Dioxin									
			Dioxin TEQ	4.0E-06	NA	1.2E-07	4.1E-06	NA	NA	NA	NA	NA
			Inorganics									
			Arsenic	6.1E-06	NA	6.2E-07	6.8E-06	Skin	3.8E-02	NA	3.9E-03	4.2E-02
			Chemical Total	1.9E-05	NA	2.4E-06	2.1E-05		6.0E-01	NA	1.2E-01	7.2E-01
		Exposure Point Total					2.1E-05					7.2E-01
	Exposure Medium Total						2.1E-05					7.2E-01
Surface Soil Total							2.1E-05					7.2E-01
Air Facility Area	Ambient Air	Ambient Air	Chemical Total	NA	2.1E-07	NA	2.1E-07		NA	NA	NA	NA
		Exposure Point Total					2.1E-07					NA
	Exposure Medium Total						2.1E-07					NA
Air Total							2.1E-07					NA
Receptor Total							2.1E-05					7.2E-01

Total Risk Across All Media =	2E-05
Total Hazard Across All Media =	1
Total Liver HI Across All Media =	0.006
Total Eye HI Across All Media =	1
Total GI Tract HI Across All Media =	0.006
Total Nails HI Across All Media =	1
Total Blood HI Across All Media =	0.002
Total Whole Body HI Across All Media =	0.002
Total Skin HI Across All Media =	1
Total Kidney HI Across All Media =	0.0005
Total CNS HI Across All Media =	0.002
Total Immune System HI Across All Media =	1
Total Metabolic HI Across All Media =	0.004

TABLE F-10.2
RISK SUMMARY
MODIFIED EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil Facility Area	**P/PCBs**									
			PCBs, Total	1.3E-04	NA	2.6E-05	1.5E-04	Eye/Skin/Nails/Immune System	8.9E+00	NA	1.8E+00	1.1E+01
			Dioxin									
			Dioxin TEQ	4.0E-06	NA	1.2E-07	4.1E-06	NA	NA	NA	NA	NA
			Inorganics									
			Arsenic	6.1E-06	NA	6.2E-07	6.8E-06	Skin	3.8E-02	NA	3.9E-03	4.2E-02
			Chemical Total	1.4E-04	NA	2.7E-05	1.6E-04		9.0E+00	NA	1.8E+00	1.1E+01
		Exposure Point Total					1.6E-04					1.1E+01
	Exposure Medium Total						1.6E-04					1.1E+01
Surface Soil Total							1.6E-04					1.1E+01
Air Facility Area	Ambient Air	Ambient Air	Chemical Total	NA	2.1E-07	NA	2.1E-07		NA	NA	NA	NA
		Exposure Point Total					2.1E-07					NA
	Exposure Medium Total						2.1E-07					NA
Air Total							2.1E-07					NA
Receptor Total							1.6E-04					1.1E+01

Total Risk Across All Media =	2E-04
Total Hazard Across All Media =	11
Total Liver HI Across All Media =	0.006
Total Eye HI Across All Media =	11
Total GI Tract HI Across All Media =	0.006
Total Nails HI Across All Media =	11
Total Blood HI Across All Media =	0.002
Total Whole Body HI Across All Media =	0.002
Total Skin HI Across All Media =	11
Total Kidney HI Across All Media =	0.000
Total CNS HI Across All Media =	0.002
Total Immune System HI Across All Media =	11
Total Metabolic HI Across All Media =	0.004

TABLE F-10.3
RISK SUMMARY
MODIFIED EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current
Receptor Population:	Trespasser
Receptor:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**P/PCBs**									
		Facility Area	PCBs, Total	1.2E-05	NA	5.0E-06	1.7E-05	Eye/Skin/Nails/Immune System	2.0E+00	NA	8.7E-01	2.9E+00
			Dioxin									
			Dioxin TEQ	5.9E-06	NA	3.8E-07	6.3E-06	NA	NA	NA	NA	NA
			Inorganics									
			Arsenic	9.2E-06	NA	1.9E-06	1.1E-05	Skin	1.4E-01	NA	3.0E-02	1.7E-01
			Chemical Total	2.8E-05	NA	7.6E-06	3.6E-05		2.3E+00	NA	9.0E-01	3.2E+00
		Exposure Point Total					3.6E-05					3.2E+00
	Exposure Medium Total						3.6E-05					3.2E+00
Surface Soil Total							3.6E-05					3.2E+00
Air Facility Area	Ambient Air	Ambient Air	Chemical Total	NA	5.7E-08	NA	5.7E-08		NA	NA	NA	NA
		Exposure Point Total					5.7E-08					NA
	Exposure Medium Total						5.7E-08					NA
Air Total							5.7E-08					NA
Receptor Total							3.6E-05					3.2E+00

Total Risk Across All Media =	4E-05
Total Hazard Across All Media =	3
Total Liver HI Across All Media =	0.02
Total Eye HI Across All Media =	3
Total GI Tract HI Across All Media =	0.02
Total Nails HI Across All Media =	3
Total Blood HI Across All Media =	0.008
Total Whole Body HI Across All Media =	0.008
Total Skin HI Across All Media =	3
Total Kidney HI Across All Media =	0.002
Total CNS HI Across All Media =	0.009
Total Immune System HI Across All Media =	3
Total Metabolic HI Across All Media =	0.01

TABLE F-10.4
RISK SUMMARY
MODIFIED EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Future
Receptor Population:	Trespasser
Receptor:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	Surface Soil	**P/PCBs**									
		Facility Area	PCBs, Total	1.9E-04	NA	8.0E-05	2.7E-04	Eye/Skin/Nails/Immune System	3.3E+01	NA	1.4E+01	4.7E+01
			Dioxin									
			Dioxin TEQ	5.9E-06	NA	3.8E-07	6.3E-06	NA	NA	NA	NA	NA
			Inorganics									
			Arsenic	9.2E-06	NA	1.9E-06	1.1E-05	Skin	1.4E-01	NA	3.0E-02	1.7E-01
			Chemical Total	2.1E-04	NA	8.3E-05	2.9E-04		3.3E+01	NA	1.4E+01	4.8E+01
		Exposure Point Total					2.9E-04					4.8E+01
	Exposure Medium Total						2.9E-04					4.8E+01
Surface Soil Total							2.9E-04					4.8E+01
Air Facility Area	Ambient Air	Ambient Air	Chemical Total	NA	5.7E-08	NA	5.7E-08		NA	NA	NA	NA
		Exposure Point Total					5.7E-08					NA
	Exposure Medium Total						5.7E-08					NA
Air Total							5.7E-08					NA
Receptor Total							2.9E-04					4.8E+01

Total Risk Across All Media =	3E-04
Total Hazard Across All Media =	48
Total Liver HI Across All Media =	0.02
Total Eye HI Across All Media =	47
Total GI Tract HI Across All Media =	0.02
Total Nails HI Across All Media =	47
Total Blood HI Across All Media =	0.008
Total Whole Body HI Across All Media =	0.008
Total Skin HI Across All Media =	47
Total Kidney HI Across All Media =	0.002
Total CNS HI Across All Media =	0.009
Total Immune System HI Across All Media =	47
Total Metabolic HI Across All Media =	0.01

TABLE F-10.5
RISK SUMMARY
MODIFIED EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	Construction Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface/ Subsurface Soil	Surface Soil Subsurface Soil	Surface Soil Subsurface Soil Facility Area	**P/PCBs**									
			PCBs, Total	6.3E-05	NA	7.3E-06	7.0E-05	Eye/Skin/Nails/Immune System	1.1E+02	NA	1.3E+01	1.2E+02
			Dioxin									
			Dioxin TEQ	3.7E-06	NA	6.3E-08	3.7E-06	NA	NA	NA	NA	NA
			Inorganics									
			Arsenic	2.1E-06	NA	1.2E-07	2.3E-06	Skin	3.3E-01	NA	1.9E-02	3.5E-01
			Chemical Total	7.0E-05	NA	7.5E-06	7.7E-05		1.1E+02	NA	1.3E+01	1.2E+02
		Exposure Point Total					7.7E-05					1.2E+02
	Exposure Medium Total						7.7E-05					1.2E+02
Surface/Subsurface Soil Total							7.7E-05					1.2E+02
Air Facility Area	Ambient Air	Ambient Air	Chemical Total	NA	3.4E-08	NA	3.4E-08		NA	NA	NA	NA
		Exposure Point Total					3.4E-08					NA
	Exposure Medium Total						3.4E-08					NA
Air Total							3.4E-08					NA
Receptor Total							7.7E-05					1.2E+02

Total Risk Across All Media =	8E-05
Total Hazard Across All Media =	124
Total Liver HI Across All Media =	0.1
Total Eye HI Across All Media =	123
Total GI Tract HI Across All Media =	0.2
Total Nails HI Across All Media =	123
Total Blood HI Across All Media =	0.05
Total Whole Body HI Across All Media =	0.05
Total Skin HI Across All Media =	124
Total Kidney HI Across All Media =	0.003
Total CNS HI Across All Media =	0.09
Total Immune System HI Across All Media =	123
Total Body and Organ Weight HI Across All Media =	0.1
Total Metabolic HI Across All Media =	0.1

TABLE F-10.6
RISK SUMMARY
MODIFIED EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil South Landfill	Surface Soil	Surface Soil	Chemical Total	2.9E-07	NA	5.8E-08	3.4E-07		2.0E-02	NA	4.1E-03	2.4E-02
		Exposure Point Total					3.4E-07					2.4E-02
	Exposure Medium Total						3.4E-07					2.4E-02
Surface Soil Total							3.4E-07					2.4E-02
Air South Landfill	Ambient Air	Ambient Air	Chemical Total	NA	2.0E-08	NA	2.0E-08		NA	NA	NA	NA
		Exposure Point Total					2.0E-08					NA
	Exposure Medium Total						2.0E-08					NA
Air Total							2.0E-08					NA
Receptor Total							3.6E-07					2.4E-02

Total Risk Across All Media = 4E-07

Total Hazard Across All Media = 0.02

Total Eye HI Across All Media = 0.02
Total Nails HI Across All Media = 0.02
Total Skin HI Across All Media = 0.02
Total Immune System HI Across All Media = 0.02

TABLE F-10.7
RISK SUMMARY
MODIFIED EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil South Landfill	Surface Soil	Surface Soil	Chemical Total	4.3E-07	NA	1.8E-07	6.1E-07		7.5E-02	NA	3.2E-02	1.1E-01
		Exposure Point Total					6.1E-07					1.1E-01
	Exposure Medium Total						6.1E-07					1.1E-01
Surface Soil Total							6.1E-07					1.1E-01
Air South Landfill	Ambient Air	Ambient Air	Chemical Total	NA	5.5E-09	NA	5.5E-09		NA	NA	NA	NA
		Exposure Point Total					5.5E-09					NA
	Exposure Medium Total						5.5E-09					NA
Air Total							5.5E-09					NA
Receptor Total							6.1E-07					1.1E-01

Total Risk Across All Media = 6E-07

Total Hazard Across All Media = 0.1

Total Eye HI Across All Media = 0.1
Total Nails HI Across All Media = 0.1
Total Skin HI Across All Media = 0.1
Total Immune System HI Across All Media = 0.1

TABLE F-10.8
RISK SUMMARY
MODIFIED EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	O&M Worker
Receptor:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil West End Landfill	Surface Soil	Surface Soil	Chemical Total	NA	NA	NA	NA		NA	NA	NA	NA
		Exposure Point Total					NA					NA
	Exposure Medium Total						NA					NA
Surface Soil Total							NA					NA
Air West End Landfill	Ambient Air	Ambient Air	Chemical Total	NA	3.0E-08	NA	3.0E-08		NA	NA	NA	NA
		Exposure Point Total					3.0E-08					NA
	Exposure Medium Total						3.0E-08					NA
Air Total							3.0E-08					NA
Receptor Total							3.0E-08					NA

Total Risk Across All Media = 3E-08

Total Hazard Across All Media = NA

TABLE F-10.9
RISK SUMMARY
MODIFIED EXPOSURE
Anniston PCB Site, Operable Unit 3

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor:	Adolescent (7-16 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic-Hazard Quotient				
				Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation Ambient Air	Dermal	Exposure Routes Total
Surface Soil West End Landfill	Surface Soil	Surface Soil	Chemical Total	NA	NA	NA	NA		NA	NA	NA	NA
		Exposure Point Total					NA					NA
	Exposure Medium Total						NA					NA
Surface Soil Total							NA					NA
Air West End Landfill	Ambient Air	Ambient Air	Chemical Total	NA	7.9E-09	NA	7.9E-09		NA	NA	NA	NA
		Exposure Point Total					7.9E-09					NA
	Exposure Medium Total						7.9E-09					NA
Air Total							7.9E-09					NA
Receptor Total							7.9E-09					NA

Total Risk Across All Media = 8E-09

Total Hazard Across All Media = NA