APPENDIX H. HUMAN HEALTH RISK ASSESSMENT

H.1 BACKGROUND COMPARISON

The background comparison was conducted to identify chemicals of potential concern (COPCs) for the risk assessment. The background comparison was conducted only for inorganic substances because background concentrations of organic compounds are assumed to be zero.

The background comparison used in the selection of COPCs was conducted for inorganic analytes in accordance with EPA Region 4 guidance (EPA 1995a). The background criterion for a given analyte was equal to two times (2x) the mean background concentration. If the maximum detected value in an exposure unit exceeded the background criterion, the analyte was designated as site related for that exposure unit. Analytes with maximum detected concentrations below the background criterion were screened out.

The facility-wide work plan (IT 1998) suggests that the 2x background screen may be followed with a nonparametric analysis of variance (ANOVA) using the Wilcoxon Rank Sum test (*Statistical Analysis of Ground-Water Monitoring at RCRA Facilities, Addendum to Interim Final Guidance.* Office of Solid Waste, Permits and State Programs Division, U.S. EPA. July, 1992. EPA 1992b). For this report, this additional analysis is conducted after calculating hazards and risks; the results are presented in conjunction with the results presented in Section 6.1.4.3.

Interpreting the Results of the Wilcoxon Rank-Sum Test: Two outcomes of the comparison are possible, as expressed by the following two hypotheses:

H_O = Null hypothesis (there is no statistical difference between site and background)

H_A = Alternate hypothesis (there is a statistical difference between site and background).

There is always some chance of making an error (selecting the wrong hypothesis). In recognition of this, a decision regarding an acceptable error rate must be selected. This background comparison uses a type I error rate of 5 percent, which means that the maximum allowable probability of erroneously rejecting the null hypothesis (thereby, wrongly selecting the alternate hypothesis) is 1 event in 20. The result of the Wilcoxon Rank-Sum is expressed as the probability of this occurring (type I error). If the probability is below 5 percent, we can confidently reject the null hypothesis and conclude that there is a difference between data sets. Conversely, if the probability of type I error is above 5 percent, we accept the null hypothesis and

conclude that there is no difference between the data sets. Therefore, for the background comparison:

- A p-value above 0.05 indicates no statistical difference between the site and background data sets
- A p-value below 0.05 indicates a statistical difference between the site and background data sets.

The Wilcoxon Rank-Sum test only detects a difference between the data sets. Therefore, for a given analyte, it is only possible for a test to show a statistical difference between the data sets when the background concentrations actually exceed the site concentrations. In order to evaluate the difference, an effort was made to identify the direction of the difference between site and background central tendencies. For the instances in which the Wilcoxon Rank-Sum test indicated a difference between site and background, the arithmetic mean concentration of the site data set was compared to the arithmetic mean of the background data set. For a given analyte, if the background mean was equal to or greater than the mean for the site, that analyte was determined to be at higher levels in the background than at the site.

If the p-value for a given inorganic analyte is above 0.05 (indicating concentrations that are consistent with background), the analyte was screened from the risk assessment and eliminated as a COPC. Inorganic analytes with p-values below 0.05 (and the site mean was equal to or greater than the background mean) and all organic analytes were designated as COPCs.

Determining Sample Distribution— The Shapiro-Wilk goodness-of-fit test was used to support inferences regarding the nature of the distribution of data required for statistical tests.

The Shapiro-Wilk Test of Normality (n<= 50)

The Shapiro-Wilk test was used if the data set contained 50 samples or fewer. The Shapiro-Wilk test is based on the premise that the ordered values should be highly correlated with corresponding quantiles taken from a normal distribution if a set of data are normally distributed (Shapiro and Wilk 1965).

The Shapiro-Wilk test statistic (W) will tend to be large when a probability plot (i.e., p-plot) of the data indicates a nearly straight line. Only when the plotted data show significant bends or curves will the test statistic be small. The test statistic W was calculated using the following formula:

$$W = \left[\frac{b}{SD\sqrt{n-1}}\right]^2$$

where:

$$b = \sum_{i=1}^{k} a_{n-i+1}\left(x_{(n-i+1)} - x_{(i)}\right) = \sum_{i=1}^{k} b_i$$

where:

SD = standard deviation

n = number of samples.

The Shapiro-Wilk test statistic (W) was compared to the 5% critical value for the sample size in Table A-2 of Appendix A of the report *Statistical Analysis of Ground-Water Monitoring at RCRA Facilities, Addendum to Interim Final Guidance.* Office of Solid Waste, Permits and State Programs Division, U.S. EPA. July, 1992 (EPA 1992b).

The Shapiro-Francia Test of Normality (n> 50)

When the sample size is larger than 50, a slight modification of the procedure called the Shapiro-Francia test (Shapiro and Francia 1972) can be used instead. Like the Shapiro-Wilk test, the Shapiro-Francia test statistic (W') will tend to be large when a probability plot of the data indicates a nearly straight line. Only when the plotted data show significant bends or curves will the test statistic be small.

The test statistic W' was calculated using the following formula:

$$W' = \frac{\left[\sum_i m_i x_{(i)}\right]^2}{(n-1)SD^2 \sum_i m_i^2}$$

where:

$x_{(i)}$ = i^{th} ordered value of the sample

m_i ~ expected value of the i^{th} ordered normal quantile

$$m_i = \Phi^{-1}\left(\frac{i}{n+1}\right)$$

where

Φ^{-1} = inverse of the standard normal distribution with zero mean and unit variance.

The sample data set was tested for normality and lognormality. If the normal goodness-of-fit test coefficient was greater than the critical value, the distribution was assumed to be normal. If the lognormal goodness-of-fit test coefficient was greater than the critical value, the distribution was assumed to be lognormal. If neither of the goodness-of-fit test coefficients were greater than the critical value, no distribution was determined and nonparametric methods were used in the calculation of EPCs. If both normal and lognormal goodness-of-fit test coefficients were greater than the critical value, the distribution that provided the best fit was chosen. If fewer than four samples were available, the distribution was not determined.

H.2 CHEMICAL INTAKE EQUATIONS

Exposure assumptions for each receptor and their pathway specific intake equations are presented in tables appearing later in this appendix. These assumptions are consistent with those in the facility-wide work plan (IT 1998).

Exposure to Soil

Direct soil contact exposure pathways include ingestion, dermal contact, and inhalation of fugitive dust. Potential receptors that have been evaluated include industrial workers, construction workers, recreational site users, residents, and hunters. The following sections describe the methods that were used to quantify exposures resulting from direct soil contact.

Soil Ingestion

For the residential pathway, exposures have been evaluated separately for noncarcinogenic and carcinogenic effects. Therefore, two different equations are presented. Note that intakes were calculated for all chemicals and for both toxicological endpoints. Children ages 1 through 6 (i.e., 15 kg) have been evaluated for noncarcinogenic effects. For the integrated receptor, age-adjusted intake factors have been used to generate excess lifetime cancer risk estimates that are considered to be more protective than adult-only risks. These risks are calculated and account for the differences in the age-specific contact rates, exposure durations, and body weights for children and adults over the expected duration of 30 year of exposure.

Bioavailability is a function of both compound-specific physical/chemical properties and the properties of the soil matrix itself. When soil is inadvertently ingested, not all of the contaminants in the ingested soil are available to be absorbed across the gut lining. In

accordance with EPA Region IV guidance (EPA 1995a), a default value of 1.0 was used in the risk assessment. Use of an oral bioavailability factor (BAF) of 1.0 for chemicals in soil may result in an inaccurate estimate of dose if there are differences in the uptake levels under the laboratory study conditions versus environmental exposure conditions. Because chemical-specific data are not available to support the use of a bioavailability factor other than 1, the Region IV default value was used.

Soil Dermal Contact

Dermal exposure is assumed to occur simultaneously with soil ingestion exposure.

Soil Inhalation of Fugitive Dust

The inhalation of fugitive dust has been evaluated only for the construction and industrial workers. Receptor-specific particulate emission factors have been adopted per the facility-wide work plan (IT 1998).

Exposure to Sediment

Ingestion and dermal contact exposure to sediment has been evaluated for the recreational site user. Estimates of dermal exposure to sediments require information on sediment adherence and percent absorption. Unfortunately, site-specific data for adherence of sediments to human skin are not available, nor are EPA default values for sediment adherence. However, EPA indicates that adherence factors for some sediments are likely to be "much less" than for soils because contact with water may wash the sediments off the skin (EPA 1989a). In the absence of sediment adherence data, the same adherence factors used for soil exposures also were used for sediment exposures.

Exposure to Water

Direct water contact exposure pathways include ingestion, dermal contact, and inhalation of volatiles while showering. Potential receptors that have been evaluated include industrial workers, residents, and recreational site users. The following sections describe the methods that were used to quantify exposures resulting from direct water contact.

Exposure to Groundwater

In the future, residents are assumed to be exposed to unfiltered groundwater in the home (e.g., as a result of drinking or showering). Furthermore, in accordance with EPA Region IV

guidance (EPA 1995a), it was assumed that exposure to volatile organic compounds (VOCs) while showering is equivalent to exposure from ingestion of two liters of contaminated water per day. The only difference between exposure to VOCs while showering and ingestion of groundwater is that inhalation toxicity values were used to evaluate exposures while showering. The industrial worker scenario (groundskeeper) has also been evaluated for groundwater exposure via ingestion and dermal contact (facility-wide work plan, IT 1998).

Exposure to Surface Water

The creeks and ponds associated with the RI sites from which the samples were collected are not considered conducive to swimming (e.g., they are shallow and in some cases swampy). Therefore, exposure to surface water is limited to a wading rather than a swimming scenario. Incidental ingestion of surface water was not included in the risk assessment because this pathway is more of a concern while swimming rather than wading. Therefore, only dermal contact associated with wading was evaluated for the recreational site user.

Foodchain Exposures

Soil to plant to venison biotransfer has been evaluated via the hunting scenario. Direct measurement of site-related constituents in biota or other food chain items has not been conducted. In order to evaluate the potential effect of chemical releases on the food chain, ingestion of browse by deer and subsequent ingestion of venison by humans has been evaluated in the risk assessment. The derivation of soil to venison transfer factors is described in detail in the facility-wide work plan (IT 1998).

H.3 TOXICITY ASSESSMENT—EVALUATING NONCANCER AND CANCER HEALTH EFFECTS

EPA recommends two different approaches for evaluating noncancer and cancer health effects. The two approaches reflect a fundamental difference in the proposed mechanism of toxic action.

In assessing the potential for noncancer health effects, EPA assumes that there is a toxicologic threshold below which no adverse health effects occur. These toxicologic thresholds are represented by reference doses (RfDs) for oral exposures and reference concentrations (RfCs) for inhalation exposures. The RfDs and RfCs are levels (with uncertainty spanning an order of

magnitude or greater) of daily human exposures below which adverse health effects are not anticipated, even for the most sensitive members of a population (EPA 1989a). EPA derives RfDs and RfCs based on estimates of the no-observable-adverse-effect level (NOAEL) or lowest-observable-adverse-effect level (LOAEL) in humans or test animals.

For carcinogens, however, EPA believes that assumption of a threshold is inappropriate (EPA 1989a). An extremely low level of exposure to a carcinogen may result in chromosomal or enzyme changes leading to cancer. Therefore, EPA does not estimate a threshold for carcinogens. Instead, EPA uses a two-part evaluation in which: (1) a chemical is assigned a weight-of-evidence classification, and (2) a cancer slope factor (CSF) is calculated for the chemical. In risk assessment, the CSF is used to estimate the probability of a cancer effect occurring in an exposed receptor over a lifetime.

The weight-of-evidence classification evaluates the evidence that a given chemical is a carcinogen to humans and animals. These ratings are as follows:

- A: Human carcinogen
- B1: Probable human carcinogen—limited human data are available
- B2: Probable human carcinogen—sufficient data in animals, and inadequate or no evidence in humans
- C: Possible human carcinogen
- D: Not classifiable as to human carcinogenicity.

EPA develops CSFs for carcinogens that have been classified as A, B1, and B2 and for many that have been classified as C. The CSFs are in units of inverse dose: $(mg/kg/day)^{-1}$.

H.4 EPA METHODS FOR RISK CHARACTERIZATION

EPA methods for risk characterization distinguish cancer from noncancer effects because organisms typically respond differently following exposure to noncarcinogenic or carcinogenic agents. The cancer risk is the probability of excess (incremental) lifetime cancer risk (ELCR) for an individual that can be attributed to long-term exposure to chemicals. The terms excess and incremental imply risk that may be attributable to the site. This means that health effects resulting from exposure to chemicals at other sites unrelated to the sites under investigation have been excluded.

The procedure for calculating risk associated with exposure to carcinogenic compounds has been established by EPA (1989a). A nonthreshold, dose-response model is used to calculate a cancer slope (potency) factor (which mathematically is the slope of the dose-response curve)

for each chemical. To derive an estimate of risk, the CSF is then multiplied by the estimated chronic daily dose (intake) experienced by the exposed individual:

$$\text{Risk} = \text{CDI} \times \text{CSF}$$

where:

Risk = Estimate of the excess lifetime cancer risk to an individual (unitless probability)

CDI = Chronic daily intake averaged over a 70-year period (mg/kg body weight/day)

CSF = Cancer slope factor, which is the 95 percent upper confidence limit of the slope of the dose-response curve $(\text{mg/kg body weight/day})^{-1}$.

This equation assumes that the slope factor is constant and that risk is directly proportional to intake. In evaluating risk of exposure to more than one carcinogen, the risk measure for each compound may be summed to provide an overall estimate of total risk of cancer effects (EPA 1989a).

This assumes that the chemicals have independent actions (no chemical interactions that may increase or decrease an individual chemical's toxicity) and that all of the chemicals produce the same effect (i.e., cancer). The summation of risks is conducted for each source of environmental release, each associated exposure pathway, and each receptor group at risk of exposure.

The traditionally accepted practice of evaluating exposure to noncarcinogenic compounds has been to experimentally determine a NOAEL and to divide it by a safety factor to establish an acceptable human dose (e.g., acceptable daily intake or RfD). The RfD is then compared to the average daily dose experienced by the exposed population to obtain a measure of concern for adverse noncancer effects:

$$\text{HQ} = \frac{\text{Dose}}{\text{RfD}}$$

where:

HQ = Hazard quotient, which is a measure of the potential for adverse noncancer effects

Dose = Average daily dose for subchronic or chronic exposure (mg/kg body

weight/day)

RfD = Reference dose, which is an acceptable intake for subchronic or chronic exposure (mg/kg body weight/day).

Dose and the RfD are expressed in the same units and are based upon common exposure periods (i.e., chronic [long-term], subchronic, or shorter-term). Guidelines for evaluating exposure to mixtures of noncarcinogens are presented by EPA (1989a). Essentially, the EPA-recommended approach involves summing the HQs (ratio of daily dose/RfD) for all chemicals under evaluation to obtain the hazard index (HI).

After individual pathway risks are calculated, risks or HIs may be combined for a receptor. The risk assessor must exercise judgment in identifying "reasonable exposure pathway combinations" and in determining "whether it is likely that the same individuals would consistently face the RME by more than one pathway" (EPA 1989a).

H.5 RISK CHARACTERIZATION OF LEAD

Health effects associated with low-level lead exposures include reproductive effects, nervous system effects, and learning disorders. At the present time, toxicological studies indicate that there may be no threshold of exposure to lead below which adverse effects do not occur. Given the uncertainty surrounding an acceptable exposure below which there would be no adverse effects for lead, EPA has withdrawn the RfD for lead from IRIS and HEAST. Lead also is classified as a B2 carcinogen (probable human carcinogen), but has no EPA-verified CSF.

Risk Characterization for lead is based on the use of models used to estimate blood levels of lead in human receptors. Measured soil and groundwater concentrations are used to run the models. Two different uptake models are currently used: one for children and one for adults. Modeling is necessary in situations where blood lead levels in exposed populations are not directly measured.

EPA currently recommends the use of uptake models for evaluating lead exposures if the exposure point concentrations for lead exceed either a 400 mg/kg screening level in soil or the 15 mg/L action level in drinking water. Lead was not detected in soil at levels exceeding the 400 mg/kg levels at any of the sites under investigation. For this reason lead is not identified as a COC for soil.

For groundwater, mean lead concentrations exceeded the 15 µg/L action level at Landfills

#2 and #3. Models were used to estimate blood levels of lead in human receptors exposed to these concentrations.

The analysis for children was conducted using a biokinetic model developed by EPA for this purpose. This model, LEAD 0.99d (*A PC Software Application of the Uptake/Biokinetic Model for Lead, Version 0.99d.* March 8. EPA 1994c), is used to estimate blood lead levels in groups of children (e.g., 12 to 24 months) ranging in age from 0 to 6 years. This model is not applicable to adults (*A PC Software Application of the Uptake/Biokinetic Model for Lead, Version 0.99d.* March 8.). The model estimates the uptake of lead originating from various non-site related sources in the environment. The model does not distinguish between different forms of lead. No adjustment was made to the default absorption methodology used in the model.

Table H-1. USAEC Data Validation Flagging Codes

A	Analyte found in trip blank as well as in field samples.
B	Analyte found in the method blank or QC blank as well as the sample.
C	Analysis was confirmed.
D	Duplicate analysis.
F	Sample filtered prior to analysis.
G	Analyte found in rinse blank as well as field sample.
H	Out of control but data accepted due to high recoveries.
I	Interferences in sample cause the quantitation and/or identification to be suspect.
J	Value is estimated.
K	Reported results affected by interferences or high background.
L	Out of control, data rejected due to low recoveries.
M	Duplicate (high) spike analysis not within control limits.
N	Tentatively identified compound (match greater than 70%).
P	Results less than reporting level but greater than instrumental detection limit.
Q	Samples interference obscured peak of interest.
R	Non-target compound analyzed for but not detected (GC/MS methods).
S	Non-target compound analyzed for and detected (GC/MS methods).
T	Non-target compound analyzed for but not detected (non-GC/MS methods).
U	Analysis is unconfirmed.
V	Sample was subjected to unusual storage/preservation condition.
W	Single analyte required from a multi-analyte method.
X	Analyte concentration is above the upper reporting level.
Y	Tentatively identified compound (match less than 70%).
Z	Non-target compound analyzed for and detected (non-GC/MS methods).
1	Result less than the CRL but greater than the Criteria of Detection (COD).
2	Ending calibration not within acceptable limits.
3	Internal Standard(s) not within acceptable limits.
4	Analyte quantitated on the secondary column.
7	Low spike recovery is not within control limits.
8	Analyte recovery outside of certified range but within acceptable limits.
9	Non-demonstrated/validated method performed for USAEC.

TABLE H-2.
VALUES USED FOR DAILY INTAKE CALCULATIONS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Soil
Exposure Point: Sites 1, 2, 4, 8, 11, and 12
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Concentration in Soil	mg/kg	See Table 3	See Table 3	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR	Ingestion Rate of Soil	mg/day	480	b	
	CF	Conversion Factor	kg/mg	1.00E-06	-	(CS x IR x CF x EF x ED x FI)
	FI	Fraction exposed to contaminated medium	unitless	1.00E+00	c	(BW x AT)
	EF	Exposure Frequency	days/year	10	b	
	ED	Exposure Duration	years	25	b	
	BW	Body Weight	kg	70	b	
	AT-NC	Averaging Time (Noncancer)	days	9,125	f	
	AT-C	Averaging Time (Cancer)	days	25,550	e	
Dermal	CS	Concentration in Soil	mg/kg	See Table 3	See Table 3	Chronic Daily Intake (CDI) (mg/kg-day)=
	CF	Conversion Factor	kg/mg	1.00E-06	-	
	FI	Fraction exposed to contaminated medium	unitless	1.00E+00	c	(CS x CF x SA x ABS x AF x EF x ED x FI)
	SA	Skin Surface Area	cm^2/day	5800	g	(BW x AT)
	ABS	Dermal Absorption Factor	unitless	(1)	(1)	
	AF	Adherence Factor	mg/cm^2	1.00E+00	g	
	EF	Exposure Frequency	days/year	10	b	
	ED	Exposure Duration	years	25	b	
	BW	Body Weight	kg	70	b	
	AT-NC	Averaging Time (Noncancer)	days	9,125	f	
	AT-C	Averaging Time (Cancer)	days	25,550	e	

(1) EPA Region IV Supplemental Guidance to RAGS (EPA 1995a) provides default dermal absorption factors of 1% for organics and 0.1% for inorganics

b EPA 1991a, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual Supplemental Guidance, Standard Default Exposure Factors, Interim Final, Office of Solid Waste and Emergency Response, OSWER Directive: 9285.6-03.

c Assumed; see the Facility-Wide Work Plan (IT 1998).

e Calculated as the product of 70 years (assumed human lifetime) x 365 days/year.

f Calculated as the product of ED (years) x 365 days/year.

g EPA 1998, "Risk Review Comments, Human Health Aspects, Fort McClellan, Anniston, AL" Memorandum from Ted Simon, OTS, to Bart Reedy, FFB/BRAC, EPA Region 4, Atlanta, GA, 5 August.

TABLE H-3.
VALUES USED FOR DAILY INTAKE CALCULATIONS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Air
Exposure Point: Sites 1, 2, 4, 8, 11, and 12
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CS	Concentration in Soil	mg/kg	See Table 3	See Table 3	Chronic Daily Intake (CDI) (mg/kg-day)=
	FI	Fraction exposed to contaminated medium	unitless	1	c	
	PEF	Particulate Emission Factor	m^3/kg	1.00E+07	c	(CS x VR x EF x ED x FI)
	VR	Ventilation Rate of Soil/Dust	m^3/day	24	b	BW x AT x PEF
	EF	Exposure Frequency	days/year	10	b	
	ED	Exposure Duration	years	25	b	
	BW	Body Weight	kg	70	b	
	AT-NC	Averaging Time (Noncancer)	days	9,125	f	
	AT-C	Averaging Time (Cancer)	days	25,550	e	

b EPA 1991a, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual Supplemental Guidance, Standard Default Exposure Factors, Interim Final, Office of Solid Waste and Emergency Response, OSWER Directive: 9285.6-03.
c Assumed; see the Facility-Wide Work Plan (IT 1998).
e Calculated as the product of 70 years (assumed human lifetime) x 365 days/year.
f Calculated as the product of ED (years) x 365 days/year.

TABLE H-4.
VALUES USED FOR DAILY INTAKE CALCULATIONS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Sites 1, 2, 4, 8, and 12
Receptor Population: Recreational User
Receptor Age: Adolescent

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Concentration in Soil	mg/kg	See Table 3	See Table 3	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR	Ingestion Rate of Soil	mg/day	100	b	
	CF	Conversion Factor	kg/mg	1.00E-06	-	(CS x IR x CF x EF x ED x FI)
	FI	Fraction exposed to contaminated medium	unitless	2.50E-01	c	(BW x AT)
	EF	Exposure Frequency	days/year	104	c	
	ED	Exposure Duration	years	10	d	
	BW	Body Weight	kg	45	d	
	AT-NC	Averaging Time (Noncancer)	days	3,650	f	
	AT-C	Averaging Time (Cancer)	days	25,550	e	
Dermal	CS	Concentration in Soil	mg/kg	See Table 3	See Table 3	Chronic Daily Intake (CDI) (mg/kg-day)=
	CF	Conversion Factor	kg/mg	1.00E-06	-	
	SA	Skin Surface Area	cm^2/day	5250	g	(CS x CF x SA x ABS x AF x EF x ED x FI)
	ABS	Dermal Absorption Factor	unitless	(1)	(1)	(BW x AT)
	AF	Adherence Factor	mg/cm^2	4.00E-02	g	
	FI	Fraction exposed to contaminated medium	unitless	2.50E-01	c	
	EF	Exposure Frequency	days/year	104	c	
	ED	Exposure Duration	years	10	d	
	BW	Body Weight	kg	45	d	
	AT-NC	Averaging Time (Noncancer)	days	3,650	f	
	AT-C	Averaging Time (Cancer)	days	25,550	e	

(1) EPA Region IV Supplemental Guidance to RAGS (EPA 1995a) provides default dermal absorption factors of 1% for organics and 0.1% for inorganics

b EPA 1991a, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual Supplemental Guidance, Standard Default Exposure Factors, Interim Final, Office of Solid Waste and Emergency Response, OSWER Directive: 9285.6-03.

c Assumed; see the Facility-Wide Work Plan (IT 1998).

d EPA 1995a, Supplemental Guidance to RAGS: Region IV Bulletins, Human Health Risk Assessment, EPA Region IV, Atlanta, GA, November.

e Calculated as the product of 70 years (assumed human lifetime) x 365 days/year.

f Calculated as the product of ED (years) x 365 days/year.

g EPA 1998d, "Risk Review Comments, Human Health Aspects, Fort McClellan, Anniston, AL" Memorandum from Ted Simon, OTS, to Bart Reedy, FFB/BRAC, EPA Region 4, Atlanta, GA, 5 August.

TABLE H-5.
VALUES USED FOR DAILY INTAKE CALCULATIONS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Tissue
Exposure Point: Sites 1, 2, 4, 8, 11, and 12
Receptor Population: Hunter
Receptor Age: Adolescent

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion (VENISON)	CS	Concentration in Soil	mg/kg	See Table 3	See Table 3	Chronic Daily Intake (CDI) (mg/kg-day)=
	CF	Conversion Factor	kg/mg	1.00E-06	-	
	FI	Fraction exposed to contaminated medium	unitless	1	c	(CS x CF x VC x BV x EF x ED x FI)
	VC	Venison consumption rate	g/day	30	c	BW x AT
	BV	Soil to Venison BioTransfer Factor	mg/g	(1)	(1)	
	EF	Exposure Frequency	days/year	350	b	
	ED	Exposure Duration	years	10	d	
	BW	Body Weight	kg	45	d	
	AT-NC	Averaging Time (Noncancer)	days	3,650	f	
	AT-C	Averaging Time (Cancer)	days	25,550	e	

(1) Overall soil to venison biotransfer factors calculated as described in IT work plan.

b EPA 1991a, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual Supplemental Guidance, Standard Default Exposure Factors, Interim Final, Office of Solid Waste and Emergency Response, OSWER Directive: 9285.6-03.

c Assumed; see the Facility-Wide Work Plan (IT 1998).

d EPA 1995a, Supplemental Guidance to RAGS: Region IV Bulletins, Human Health Risk Assessment, EPA Region IV, Atlanta, GA, November.

e Calculated as the product of 70 years (assumed human lifetime) x 365 days/year.

f Calculated as the product of ED (years) x 365 days/year.

TABLE H-6.
VALUES USED FOR DAILY INTAKE CALCULATIONS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Sites 2, 3, 5, 8, 9, 10, and 11
Receptor Population: Recreational User
Receptor Age: Adolescent

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Concentration in Soil	mg/kg	See Table 3	See Table 3	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR	Ingestion Rate of Sediment	mg/day	100	b	
	CF	Conversion Factor	kg/mg	1.00E-06	-	(CS x IR x CF x EF x ED x FI)
	FI	Fraction exposed to contaminated medium	unitless	1.30E-01	c	BW x AT
	EF	Exposure Frequency	days/year	104	c	
	ED	Exposure Duration	years	10	d	
	BW	Body Weight	kg	45	d	
	AT-NC	Averaging Time (Noncancer)	days	3,650	f	
	AT-C	Averaging Time (Cancer)	days	25,550	e	
Dermal	CS	Concentration in Soil	mg/kg	See Table 3	See Table 3	Chronic Daily Intake (CDI) (mg/kg-day)=
	CF	Conversion Factor	kg/mg	1.00E-06	-	
	FI	Fraction exposed to contaminated medium	unitless	1.30E-01	c	(CS x CF x SA x ABS x AF x EF x ED x FI)
	SA	Skin Surface Area	cm^2/day	5250	g	(BW x AT)
	ABS	Dermal absorption factor	unitless	(1)	(1)	
	AF	Adherence Factor	mg/cm^2	2.9E-01	g	
	EF	Exposure Frequency	days/year	104	c	
	ED	Exposure Duration	years	10	d	
	BW	Body Weight	kg	45	d	
	AT-NC	Averaging Time (Noncancer)	days	3,650	f	
	AT-C	Averaging Time (Cancer)	days	25,550	e	

(1) EPA Region IV Supplemental Guidance to RAGS (EPA 1995a) provides default dermal absorption factors of 1% for organics and 0.1% for inorganics

b EPA 1991a, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual Supplemental Guidance, Standard Default Exposure Factors, Interim Final, Office of Solid Waste and Emergency Response, OSWER Directive: 9285.6-03.

c Assumed; see the Facility-Wide Work Plan (IT 1998).

d EPA 1995a, Supplemental Guidance to RAGS: Region IV Bulletins, Human Health Risk Assessment, EPA Region IV, Atlanta, GA, November.

e Calculated as the product of 70 years (assumed human lifetime) x 365 days/year.

f Calculated as the product of ED (years) x 365 days/year.

g EPA 1998d, "Risk Review Comments, Human Health Aspects, Fort McClellan, Anniston, AL" Memorandum from Ted Simon, OTS, to Bart Reedy, FFB/BRAC, EPA Region 4, Atlanta, GA, 5 August.

TABLE H-7.
VALUES USED FOR DAILY INTAKE CALCULATIONS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Sites 2, 3, 8, 9, 10, and 11
Receptor Population: Recreational User
Receptor Age: Adolescent

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	Concentration in Water	µg/L	Not evaluated		Chronic Daily Intake (CDI) (mg/kg-day)=
	CF	Conversion Factor	mg/µg	Not evaluated		
	IR	Ingestion Rate of Water	L/day	Not evaluated		(CW x IR x CF x EF x ED x FI)
	FI	Fraction exposed to contaminated medium	unitless	Not evaluated		BW x AT
	EF	Exposure Frequency	days/year	Not evaluated		
	ED	Exposure Duration	years	Not evaluated		
	BW	Body Weight	kg	Not evaluated		
	AT-NC	Averaging Time (Noncancer)	days	Not evaluated		
	AT-C	Averaging Time (Cancer)	days	Not evaluated		
Dermal	CW	Concentration in Water	µg/L	See Table 3	See Table 3	Chronic Daily Intake (CDI) (mg/kg-day)=
	CF1	Conversion Factor	L/cm^3	1.00E-03	-	
	CF2	Conversion Factor	mg/µg	1.00E-03	-	(CW x CF1 x CF2 x SA x PC x ET x EF x ED x FI)
	FI	Fraction exposed to contaminated medium	unitless	1	c	BW x AT
	SA	Skin Surface Area	cm^2	4000	h	
	PC	Permeability Coefficient	cm/hour	(1)	(1)	
	ET	Exposure Time	hours/day	2	c	
	EF	Exposure Frequency	days/year	104	c	
	ED	Exposure Duration	years	10	d	
	BW	Body Weight	kg	45	d	
	AT-NC	Averaging Time (Noncancer)	days	3,650	f	
	AT-C	Averaging Time (Cancer)	days	25,550	e	

(1) Permeability coefficients taken from Table 5-7 in *Dermal Exposure Assessment: Principles and Applications* (EPA 1992a)

c Assumed; see the Facility-Wide Work Plan (IT 1998).

d EPA 1995a, Supplemental Guidance to RAGS: Region IV Bulletins, Human Health Risk Assessment, EPA Region IV, Atlanta, GA, November.

e Calculated as the product of 70 years (assumed human lifetime) x 365 days/year.

f Calculated as the product of ED (years) x 365 days/year.

h EPA 1992a, Dermal Exposure Assessment: Principles and Applications, Interim Report, Office of Research and Development, Washington, DC, EPA/600/8-91/011B, including Supplemental Guidance dated August 18, 1992.

TABLE H-8.
VALUES USED FOR DAILY INTAKE CALCULATIONS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Sites 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, and 12
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Concentration in Soil	mg/kg	See Table 3	See Table 3	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR	Ingestion Rate of Soil	mg/day	100	b	
	CF	Conversion Factor	kg/mg	1.00E-06	-	(CS x IR x CF x EF x ED x FI)
	FI	Fraction exposed to contaminated medium	unitless	1.00E+00	c	(BW x AT)
	EF	Exposure Frequency	days/year	250	b	
	ED	Exposure Duration	years	25	b	
	BW	Body Weight	kg	70	b	
	AT-NC	Averaging Time (Noncancer)	days	9,125	f	
	AT-C	Averaging Time (Cancer)	days	25,550	e	
Dermal	CS	Concentration in Soil	mg/kg	See Table 3	See Table 3	Chronic Daily Intake (CDI) (mg/kg-day)=
	CF	Conversion Factor	kg/mg	1.00E-06	-	
	FI	Fraction exposed to contaminated medium	unitless	1.00E+00	c	(CS x CF x SA x ABS x AF x EF x ED x FI)
	SA	Skin Surface Area	cm^2/day	5250	g	(BW x AT)
	ABS	Dermal Absorption Factor	unitless	(1)	(1)	
	AF	Adherence Factor	mg/cm^2	1.00E-02	g	
	EF	Exposure Frequency	days/year	250	b	
	ED	Exposure Duration	years	25	b	
	BW	Body Weight	kg	70	b	
	AT-NC	Averaging Time (Noncancer)	days	9,125	f	
	AT-C	Averaging Time (Cancer)	days	25,550	e	

(1) EPA Region IV Supplemental Guidance to RAGS (EPA 1995a) provides default dermal absorption factors of 1% for organics and 0.1% for inorganics

b EPA 1991a, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual Supplemental Guidance, Standard Default Exposure Factors, Interim Final, Office of Solid Waste and Emergency Response, OSWER Directive: 9285.6-03.

c Assumed; see the Facility-Wide Work Plan (IT 1998).

e Calculated as the product of 70 years (assumed human lifetime) x 365 days/year.

f Calculated as the product of ED (years) x 365 days/year.

g EPA 1998d, "Risk Review Comments, Human Health Aspects, Fort McClellan, Anniston, AL" Memorandum from Ted Simon, OTS, to Bart Reedy, FFB/BRAC, EPA Region 4, Atlanta, GA, 5 August.

TABLE H-9.
VALUES USED FOR DAILY INTAKE CALCULATIONS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Sites 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, and 12
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Concentration in Soil	mg/kg	See Table 3	See Table 3	Noncarcinogenic Chronic Daily Intake (CDI) (mg/kg-day)=
	IF-adj	Age adjusted soil ingestion factor	mg-years/kg-day	114	a	
	IR	Ingestion Rate of Soil	mg/day	200	b	(CS x IR x CF x EF x ED x FI)
	CF	Conversion Factor	kg/mg	1.00E-06	-	(BW x AT)
	FI	Fraction exposed to contaminated medium	unitless	1.00E+00	c	
	EF	Exposure Frequency	days/year	350	b	Carcinogenic CDI (mg/kg-day)=
	ED	Exposure Duration	years	6	d	
	BW	Body Weight	kg	15	d	(CS x CF x IF-adj x EF x FI)
	AT-NC	Averaging Time (Noncancer)	days	2,190	f	AT
	AT-C	Averaging Time (Cancer)	days	25,550	e	
Dermal	CS	Concentration in Soil	mg/kg	See Table 3	See Table 3	Noncarcinogenic Chronic Daily Intake (CDI) (mg/kg-day)=
	CF	Conversion Factor	kg/mg	1.00E-06	-	
	FI	Fraction exposed to contaminated medium	unitless	1.00E+00	c	(CS x CF x SA x ABS x AF x EF x ED x FI)
	SA-adj	Age adjusted body surface area-soil factor	cm^2-years/kg-day	2520	g	(BW x AT)
	SA	Skin Surface Area	cm^2/day	1800	g	
	ABS	Dermal Absorption Factor	unitless	(1)	(1)	Carcinogenic CDI (mg/kg-day)=
	AF	Adherence Factor	mg/cm^2	7.00E-02	g	
	EF	Exposure Frequency	days/year	350	b	(CS x CF x SA-adj x ABS x AF x EF x FI)
	ED	Exposure Duration	years	6	d	AT
	BW	Body Weight	kg	15	d	
	AT-NC	Averaging Time (Noncancer)	days	2,190	f	
	AT-C	Averaging Time (Cancer)	days	25,550	e	

(1) EPA Region IV Supplemental Guidance to RAGS (EPA 1995a) provides default dermal absorption factors of 1% for organics and 0.1% for inorganics

a EPA 1991b, Risk Assessment Guidance for Superfund: Volume I - Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals), Including Revisions to Chapter 4 (November 1992), and Appendix D: "Correction Sections 3.3.1 and 3.3.2 (April 1993), " Office of Emergency and Remedial Response, Washington, DC. Publication 9285.7-01B.

b EPA 1991a, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual Supplemental Guidance, Standard Default Exposure Factors, Interim Final, Office of Solid Waste and Emergency Response, OSWER Directive: 9285.6-03.

c Assumed; see the Facility-Wide Work Plan (IT 1998).

d EPA 1995a, Supplemental Guidance to RAGS: Region IV Bulletins, Human Health Risk Assessment, EPA Region IV, Atlanta, GA, November.

e Calculated as the product of 70 years (assumed human lifetime) x 365 days/year.

f Calculated as the product of ED (years) x 365 days/year.

g EPA 1998d, "Risk Review Comments, Human Health Aspects, Fort McClellan, Anniston, AL" Memorandum from Ted Simon, OTS, to Bart Reedy, FFB/BRAC, EPA Region 4, Atlanta, GA, 5 August.

TABLE H-10.
VALUES USED FOR DAILY INTAKE CALCULATIONS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Sites 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, and 12
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Concentration in Soil	mg/kg	See Table 3	See Table 3	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR	Ingestion Rate of Soil	mg/day	200	c	
	CF	Conversion Factor	kg/mg	1.00E-06	-	(CS x IR x CF x EF x ED x FI)
	FI	Fraction exposed to contaminated medium	unitless	1.00E+00	c	(BW x AT)
	EF	Exposure Frequency	days/year	250	b	
	ED	Exposure Duration	years	1	c	
	BW	Body Weight	kg	70	b	
	AT-NC	Averaging Time (Noncancer)	days	365	f	
	AT-C	Averaging Time (Cancer)	days	25,550	e	
Dermal	CS	Concentration in Soil	mg/kg	See Table 3	See Table 3	Chronic Daily Intake (CDI) (mg/kg-day)=
	CF	Conversion Factor	kg/mg	1.00E-06	-	
	FI	Fraction exposed to contaminated medium	unitless	1.00E+00	c	(CS x CF x SA x ABS x AF x EF x ED x FI)
	SA	Skin Surface Area	cm^2/day	5250	g	(BW x AT)
	ABS	Dermal Absorption Factor	unitless	(1)	(1)	
	AF	Adherence Factor	mg/cm^2	1.00E-01	g	
	EF	Exposure Frequency	days/year	250	b	
	ED	Exposure Duration	years	1	c	
	BW	Body Weight	kg	70	b	
	AT-NC	Averaging Time (Noncancer)	days	365	f	
	AT-C	Averaging Time (Cancer)	days	25,550	e	

(1) EPA Region IV Supplemental Guidance to RAGS (EPA 1995a) provides default dermal absorption factors of 1% for organics and 0.1% for inorganics

b EPA 1991a, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual Supplemental Guidance, Standard Default Exposure Factors, Interim Final, Office of Solid Waste and Emergency Response, OSWER Directive: 9285.6-03.

c Assumed; see the Facility-Wide Work Plan (IT 1998).

e Calculated as the product of 70 years (assumed human lifetime) x 365 days/year.

f Calculated as the product of ED (years) x 365 days/year.

g EPA 1998d, "Risk Review Comments, Human Health Aspects, Fort McClellan, Anniston, AL" Memorandum from Ted Simon, OTS, to Bart Reedy, FFB/BRAC, EPA Region 4, Atlanta, GA, 5 August.

TABLE H-11.
VALUES USED FOR DAILY INTAKE CALCULATIONS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Air
Exposure Point: Sites 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, and 12
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CS	Concentration in Soil	mg/kg	See Table 3	See Table 3	Chronic Daily Intake (CDI) (mg/kg-day)=
	FI	Fraction exposed to contaminated medium	unitless	1	c	
	PEF	Particulate Emission Factor	m^3/kg	1.00E+07	c	(CS x VR x EF x ED x FI)
	VR	Ventilation Rate of Soil/Dust	m^3/day	20	b	BW x AT x PEF
	EF	Exposure Frequency	days/year	250	b	
	ED	Exposure Duration	years	25	b	
	BW	Body Weight	kg	70	b	
	AT-NC	Averaging Time (Noncancer)	days	9,125	f	
	AT-C	Averaging Time (Cancer)	days	25,550	e	

b EPA 1991a, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual Supplemental Guidance, Standard Default Exposure Factors, Interim Final, Office of Solid Waste and Emergency Response, OSWER Directive: 9285.6-03.
c Assumed; see the Facility-Wide Work Plan (IT 1998).
e Calculated as the product of 70 years (assumed human lifetime) x 365 days/year.
f Calculated as the product of ED (years) x 365 days/year.

TABLE H-12.
VALUES USED FOR DAILY INTAKE CALCULATIONS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Air
Exposure Point: Sites 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, and 12
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CS	Concentration in Soil	mg/kg	See Table 3	See Table 3	Chronic Daily Intake (CDI) (mg/kg-day)=
	FI-so	Fraction exposed to contaminated medium	unitless	1	c	
	PEF	Particulate Emission Factor	m^3/kg	5.00E+06	c	(CS x VR x EF x ED x FI)
	VR-S	Ventilation Rate of Soil/Dust	m^3/day	20	b	BW x AT x PEF
	EF	Exposure Frequency	days/year	250	b	
	ED	Exposure Duration	years	1	c	
	BW	Body Weight	kg	70	b	
	AT-NC	Averaging Time (Noncancer)	days	365	f	
	AT-C	Averaging Time (Cancer)	days	25,550	e	

b EPA 1991a, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual Supplemental Guidance, Standard Default Exposure Factors, Interim Final, Office of Solid Waste and Emergency Response, OSWER Directive: 9285.6-03.
c Assumed; see the Facility-Wide Work Plan (IT 1998).
e Calculated as the product of 70 years (assumed human lifetime) x 365 days/year.
f Calculated as the product of ED (years) x 365 days/year.

TABLE H-13.
VALUES USED FOR DAILY INTAKE CALCULATIONS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Sites 3, 4, 6, 8, 9, 10, 11, and 12
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	Concentration in Water	µg/L	See Table 3	See Table 3	Chronic Daily Intake (CDI) (mg/kg-day)=
	FI	Fraction exposed to contaminated medium	unitless	1	c	
	IR	Ingestion Rate of Water	L/day	1	b	(CW x IR x CF x EF x ED x FI)
	CF	Conversion Factor	mg/µg	1.00E-03	-	BW x AT
	EF	Exposure Frequency	days/year	250	b	
	ED	Exposure Duration	years	25	b	
	BW	Body Weight	kg	70	b	
	AT-NC	Averaging Time (Noncancer)	days	9,125	f	
	AT-C	Averaging Time (Cancer)	days	25,550	e	
Dermal	CW	Concentration in Water	µg/L	See Table 3	See Table 3	Chronic Daily Intake (CDI) (mg/kg-day)=
	CF1	Conversion Factor	L/cm^3	1.00E-03	-	
	CF2	Conversion Factor	mg/µg	1.00E-03	-	(CW x CF1 x CF2 x SA x PC x ET x EF x ED x FI)
	FI	Fraction exposed to contaminated medium	unitless	1	c	BW x AT
	SA	Skin Surface Area	cm^2	4100	h	
	PC	Permeability Coefficient	cm/hour	(1)	(1)	
	ET	Exposure Time	hours/day	1	c	
	EF	Exposure Frequency	days/year	250	b	
	ED	Exposure Duration	years	25	b	
	BW	Body Weight	kg	70	b	
	AT-NC	Averaging Time (Noncancer)	days	9,125	f	
	AT-C	Averaging Time (Cancer)	days	25,550	e	

(1) Permeability coefficients taken from Table 5-7 in *Dermal Exposure Assessment: Principles and Applications* (EPA 1992a)

b EPA 1991a, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual Supplemental Guidance, Standard Default Exposure Factors, Interim Final, Office of Solid Waste and Emergency Response, OSWER Directive: 9285.6-03.

c Assumed; see the Facility-Wide Work Plan (IT 1998).

e Calculated as the product of 70 years (assumed human lifetime) x 365 days/year.

f Calculated as the product of ED (years) x 365 days/year.

h EPA 1992a, Dermal Exposure Assessment: Principles and Applications, Interim Report, Office of Research and Development, Washington, DC, EPA/600/8-91/011B, including Supplemental Guidance dated August 18, 1992.

TABLE H-14.
VALUES USED FOR DAILY INTAKE CALCULATIONS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Sites 3, 4, 6, 8, 9, 10, 11, and 12
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	Concentration in Water	µg/L	See Table 3	See Table 3	Noncarcinogenic Chronic Daily Intake (CDI) (mg/kg-day)=
	FI	Fraction exposed to contaminated medium	unitless	1	c	
	IF-adj	Age-adjusted ingestion factor	L-years/kg-day	1.09	i	(CW x IR x CF x EF x ED x FI)
	IR	Ingestion Rate of Water	L/day	2	d	BW x AT
	CF	Conversion Factor	mg/µg	1.00E-03	-	
	EF	Exposure Frequency	days/year	350	b	Carcinogenic CDI (mg/kg-day)=
	ED	Exposure Duration	years	24	d	
	BW	Body Weight	kg	70	d	(CW x CF x IF-adj x EF x FI)
	AT-NC	Averaging Time (Noncancer)	days	8,760	f	AT
	AT-C	Averaging Time (Cancer)	days	25,550	e	
Dermal	CW	Concentration in Water	µg/L	See Table 3	See Table 3	Noncarcinogenic Chronic Daily Intake (CDI) (mg/kg-day)=
	CF1	Conversion Factor	L/cm^3	1.00E-03	-	
	CF2	Conversion Factor	mg/µg	1.00E-03	-	(CW x CF1 x CF2 x SA x PC x ET x EF x ED x FI)
	FI	Fraction exposed to contaminated medium	unitless	1	c	BW x AT
	SA-adj	Age-adjusted surface area factor	cm^2-years/kg-day	9140	c	
	SA	Skin Surface Area	cm^2	18150	h	
	PC	Permeability Coefficient	cm/hour	(1)	(1)	Carcinogenic CDI (mg/kg-day)=
	ET	Exposure Time	hours/day	0.2	h	
	EF	Exposure Frequency	days/year	350	b	(CW x CF1 x CF2 x SA-adj x PC x ET x EF x FI)
	ED	Exposure Duration	years	24	d	AT
	BW	Body Weight	kg	70	d	
	AT-NC	Averaging Time (Noncancer)	days	8,760	f	
	AT-C	Averaging Time (Cancer)	days	25,550	e	

(1) Permeability coefficients taken from Table 5-7 in *Dermal Exposure Assessment: Principles and Applications* (EPA 1992a)

b EPA 1991a, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual Supplemental Guidance, Standard Default Exposure Factors, Interim Final, Office of Solid Waste and Emergency Response, OSWER Directive: 9285.6-03.

c Assumed; see the Facility-Wide Work Plan (IT 1998).

d EPA 1995a, Supplemental Guidance to RAGS: Region IV Bulletins, Human Health Risk Assessment, EPA Region IV, Atlanta, GA, November.

e Calculated as the product of 70 years (assumed human lifetime) x 365 days/year.

f Calculated as the product of ED (years) x 365 days/year.

h EPA 1992a, Dermal Exposure Assessment: Principles and Applications, Interim Report, Office of Research and Development, Washington, DC, EPA/600/8-91/011B, including Supplemental Guidance dated August 18, 1992.

i EPA 1996c, Exposure Factors Handbook, SAB Review Draft, National Center for Environmental Assessment, Washington, DC, EPA/600/P-95/002Ba, August.

TABLE H-15.
VALUES USED FOR DAILY INTAKE CALCULATIONS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Sites 3, 4, 6, 8, 9, 10, 11, and 12
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	Concentration in Water	µg/L	See Table 3	See Table 3	Noncarcinogenic Chronic Daily Intake (CDI) (mg/kg-day)=
	FI	Fraction exposed to contaminated medium	unitless	1	c	
	IF-adj	Age-adjusted ingestion factor	L-years/kg-day	1.09	i	(CW x IR x CF x EF x ED x FI)
	IR	Ingestion Rate of Water	L/day	1	d	BW x AT
	CF	Conversion Factor	mg/µg	1.00E-03	-	
	EF	Exposure Frequency	days/year	350	b	Carcinogenic CDI (mg/kg-day)=
	ED	Exposure Duration	years	6	d	
	BW	Body Weight	kg	15	d	(CW x CF x IF-adj x EF x FI)
	AT-NC	Averaging Time (Noncancer)	days	2,190	f	AT
	AT-C	Averaging Time (Cancer)	days	25,550	e	
Dermal	CW	Concentration in Water	µg/L	See Table 3	See Table 3	Noncarcinogenic Chronic Daily Intake (CDI) (mg/kg-day)=
	CF1	Conversion Factor	L/cm^3	1.00E-03	-	
	CF2	Conversion Factor	mg/µg	1.00E-03	-	(CW x CF1 x CF2 x SA x PC x ET x EF x ED x FI)
	FI	Fraction exposed to contaminated medium	unitless	1	c	BW x AT
	SA-adj	Age-adjusted surface area factor	cm^2-years/kg-day	9140	c	
	SA	Skin Surface Area	cm^2	7300	h	
	PC	Permeability Coefficient	cm/hour	(1)	(1)	Carcinogenic CDI (mg/kg-day)=
	ET	Exposure Time	hours/day	0.2	h	
	EF	Exposure Frequency	days/year	350	b	(CW x CF1 x CF2 x SA-adj x PC x ET x EF x FI)
	ED	Exposure Duration	years	6	d	AT
	BW	Body Weight	kg	15	d	
	AT-NC	Averaging Time (Noncancer)	days	2,190	f	
	AT-C	Averaging Time (Cancer)	days	25,550	e	

(1) Permeability coefficients taken from Table 5-7 in *Dermal Exposure Assessment: Principles and Applications* (EPA 1992a)

b EPA 1991a, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual Supplemental Guidance, Standard Default Exposure Factors, Interim Final, Office of Solid Waste and Emergency Response, OSWER Directive: 9285.6-03.

c Assumed; see the Facility-Wide Work Plan (IT 1998).

d EPA 1995a, Supplemental Guidance to RAGS: Region IV Bulletins, Human Health Risk Assessment, EPA Region IV, Atlanta, GA, November.

e Calculated as the product of 70 years (assumed human lifetime) x 365 days/year.

f Calculated as the product of ED (years) x 365 days/year.

h EPA 1992a, Dermal Exposure Assessment: Principles and Applications, Interim Report, Office of Research and Development, Washington, DC, EPA/600/8-91/011B, including Supplemental Guidance dated August 18, 1992.

i EPA 1996c, Exposure Factors Handbook, SAB Review Draft, National Center for Environmental Assessment, Washington, DC, EPA/600/P-95/002Ba, August.

TABLE H-16.
VALUES USED FOR DAILY INTAKE CALCULATIONS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Sites 3, 4, 6, 8, 9, 10, 11, and 12
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CW	Concentration in Water	µg/L	See Table 3	See Table 3	Noncarcinogenic Chronic Daily Intake (CDI) (mg/kg-day)=
	FI	Fraction exposed to contaminated medium	unitless	1	c	
	IF-adj	Age-adjusted ingestion factor	L-years/kg-day	0.7	i	(CW x IR x CF x EF x ED x FI)
	IR	Ingestion Rate of Water	L/day	2	d	BW x AT
	CF	Conversion Factor	mg/µg	1.00E-03	-	
	EF	Exposure Frequency	days/year	350	b	Carcinogenic CDI (mg/kg-day)=
	ED	Exposure Duration	years	24	d	
	BW	Body Weight	kg	70	d	(CW x CF x IF-adj x EF x FI)
	AT-NC	Averaging Time (Noncancer)	days	8,760	f	AT
	AT-C	Averaging Time (Cancer)	days	25,550	e	

b EPA 1991a, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual Supplemental Guidance, Standard Default Exposure Factors, Interim Final, Office of Solid Waste and Emergency Response, OSWER Directive: 9285.6-03.
c Assumed; see the Facility-Wide Work Plan (IT 1998).
d EPA 1995a, Supplemental Guidance to RAGS: Region IV Bulletins, Human Health Risk Assessment, EPA Region IV, Atlanta, GA, November.
e Calculated as the product of 70 years (assumed human lifetime) x 365 days/year.
f Calculated as the product of ED (years) x 365 days/year.
i EPA 1996c, Exposure Factors Handbook, SAB Review Draft, National Center for Environmental Assessment, Washington, DC, EPA/600/P-95/002Ba, August.

Table H-17. Blood Lead Levels of Residential Children (Surface Soil and Groundwater Exposures)

Exposure Unit	Lead Concentration in Soil[a] (mg/kg)		Lead Concentration in Groundwater[a] (µg/L)		Geometric Standard Deviation (unitless)	Geometric Mean Blood Lead Level[b] (µg/dL)	Mean Blood Lead Level at 95th Percentile (Target=10 µg/dL)	Percent Exceeding 10 µg Pb/dL[c]	Conclusion
Area T-4 Biological Simulant Test Area	0	<sl	model default	<sl	-	-	-	-	-
Area T-5 Toxic Hazards Detection and Decontamination Training Area	0	<sl	model default	<sl	-	-	-	-	-
Area T-24A Chemical Munitions Disposal Training Area	0	<sl	12	<sl	-	-	-	-	-
Area T-38 Technical Escort Reaction Area	84	<sl	6	<sl	-	-	-	-	-
Range K Agent Training Area	0	<sl	model default	<sl	-	-	-	-	-
Range J Agent Training Area	0	<sl	model default	<sl	-	-	-	-	-
Range L (Lima Pond) Chemical Munitions Disposal Area	110	<sl	3	<sl	-	-	-	-	-
Detection and Identification Area	0	<sl	model default	<sl	-	-	-	-	-
Former Landfill #1	0	<sl	3	<sl	-	-	-	-	-
Former Landfill #2	0	<sl	47		1.6	7.7	17	26.86	exceeds target
Former Landfill #3	32	<sl	35		1.6	6.9	15	19.81	exceeds target
Old Water Hole	22	<sl	5	<sl	-	-	-	-	-
Background	20	<sl	5	<sl	-	-	-	-	-

[a]The site-specific exposure point concentration is the 95% UCL or the maximum detected value if the 95% UCL exceeded the maximum; the model default values are 200 mg/kg for soil and 4 µg/L for groundwater; resident children are assumed to be exposed to the higher of the surface and subsurface soil exposure point concentrations

[b]USEPA's LEAD 0.99d model was used to project blood lead levels; the blood lead level of the most sensitive age group is reported

[c]The benchmark set by the Centers for Disease Control specifies that 95% of the blood lead levels in the sensitive population must not exceed 10 µg/dL

- Not applicable

<sl - Exposure point concentration of lead in soil does not exceed the 400 ppm screening level in soil or the 15 µg/L action level in groundwater; therefore, the LEAD 0.99d model was not used

Table H-18. Blood Lead Levels of Residential Children (Subsurface Soil and Groundwater Exposures)

Exposure Unit	Lead Concentration in Soil[a] (mg/kg)		Lead Concentration in Groundwater[a] (µg/L)		Geometric Standard Deviation (unitless)	Geometric Mean Blood Lead Level[b] (µg/dL)	Mean Blood Lead Level at 95th Percentile (Target=10 µg/dL)	Percent Exceeding 10 µg Pb/dL[c]	Conclusion
Area T-4 Biological Simulant Test Area	0	<sl	model default	<sl	-	-	-	-	-
Area T-5 Toxic Hazards Detection and Decontamination Training Area	0	<sl	model default	<sl	-	-	-	-	-
Area T-24A Chemical Munitions Disposal Training Area	96	<sl	12	<sl	-	-	-	-	-
Area T-38 Technical Escort Reaction Area	17	<sl	6	<sl	-	-	-	-	-
Range K Agent Training Area	0	<sl	model default	<sl	-	-	-	-	-
Range J Agent Training Area	0	<sl	model default	<sl	-	-	-	-	-
Range L (Lima Pond) Chemical Munitions Disposal Area	52	<sl	3	<sl	-	-	-	-	-
Detection and Identification Area	52	<sl	model default	<sl	-	-	-	-	-
Former Landfill #1	22	<sl	3	<sl	-	-	-	-	-
Former Landfill #2	0	<sl	47		1.6	7.7	17	26.86	exceeds target
Former Landfill #3	12	<sl	35		1.6	6.9	15	19.81	exceeds target
Old Water Hole	8	<sl	5	<sl	-	-	-	-	-
Background	22	<sl	5	<sl	-	-	-	-	-

[a]The site-specific exposure point concentration is the 95% UCL or the maximum detected value if the 95% UCL exceeded the maximum; the model default values are 200 mg/kg for soil and 4 µg/L for groundwater; resident children are assumed to be exposed to the higher of the surface and subsurface soil exposure point concentrations

[b]USEPA's LEAD 0.99d model was used to project blood lead levels; the blood lead level of the most sensitive age group is reported

[c]The benchmark set by the Centers for Disease Control specifies that 95% of the blood lead levels in the sensitive population must not exceed 10 µg/dL

- Not applicable

<sl - Exposure point concentration of lead in soil does not exceed the 400 ppm screening level in soil or the 15 µg/L action level in groundwater; therefore, the LEAD 0.99d model was not used

Table H.19. Blood Lead Levels of Groundskeepers (Surface Soil Exposures)

Exposure Unit	Site Pb Conc. (mg/kg)		$PbB_{adult,0}$ (µg/dL)	BKSF µg/dL per µg/day	IR_S (g/day)	AF_S (unitless)	EF_S (day/yr)	AT (day)	$PbB_{adult,central}$ (µg/dL)	$GSD_{i,adult}$ (unitless)	$R_{fetal/maternal}$ (unitless)	(Target=10 µg/dL) $PbB_{fetal,0.95}$ (µg/dL)	Conclusion
Area T-4 Biological Simulant Test Area	0	<sl	2.2	0.4	100	0.01	250	9125	2.2	2.1	0.9	-	-
Area T-5 Toxic Hazards Detection and Decontamination Training Area	0	<sl	2.2	0.4	100	0.01	250	9125	2.2	2.1	0.9	-	-
Area T-24A Chemical Munitions Disposal Training Area	0	<sl	2.2	0.4	100	0.01	250	9125	2.2	2.1	0.9	-	-
Area T-38 Technical Escort Reaction Area	84	<sl	2.2	0.4	100	0.01	250	9125	3.1	2.1	0.9	-	-
Range K Agent Training Area	0	<sl	2.2	0.4	100	0.01	250	9125	2.2	2.1	0.9	-	-
Range J Agent Training Area	0	<sl	2.2	0.4	100	0.01	250	9125	2.2	2.1	0.9	-	-
Range L (Lima Pond) Chemical Munitions Disposal Area	110	<sl	2.2	0.4	100	0.01	250	9125	3.4	2.1	0.9	-	-
Detection and Identification Area	0	<sl	2.2	0.4	100	0.01	250	9125	2.2	2.1	0.9	-	-
Former Landfill #1	0	<sl	2.2	0.4	100	0.01	250	9125	2.2	2.1	0.9	-	-
Former Landfill #2	0	<sl	2.2	0.4	100	0.01	250	9125	2.2	2.1	0.9	-	-
Former Landfill #3	32	<sl	2.2	0.4	100	0.01	250	9125	2.5	2.1	0.9	-	-
Old Water Hole	22	<sl	2.2	0.4	100	0.01	250	9125	2.4	2.1	0.9	-	-
Background	20	<sl	2.2	0.4	100	0.01	250	9125	2.4	2.1	0.9	-	-

-- Not applicable/not evaluated

<sl - the exposure point concentration is below the 400 ppm screening level in soil or the 15 ppb action level in drinking water; therefore, blood lead levels were not evaluated

Model default values were used for all parameters except the site lead concentration. The most conservative baseline blood lead level and geometric standard deviation were selected.

Site Pb Conc. - the 95% UCL or the maximum detected value whichever is the smaller number

$PbB_{adult,0}$ - Baseline blood lead level

BKSF - biokinetic slope factor

IR_S - ingestion rate

AF - adherence factor

EF - exposure frequency

AT - averaging time

$PbB_{adult,central}$ - mean blood lead level

GSD - geometric standard deviation

$R_{fetal/maternal}$ - factor that converts blood lead level in mother to blood lead level in fetus

$PbB_{fetal,0.95}$ - mean blood lead level in fetus at 95th percentile

Table H-20. Blood Lead Levels of Groundskeepers (Subsurface Soil Exposures)

Exposure Unit	Site Pb Conc. (mg/kg)		$PbB_{adult,0}$ (µg/dL)	BKSF µg/dL per µg/day	IR_S (g/day)	AF_S (unitless)	EF_S (day/yr)	AT (day)	$PbB_{adult,central}$ (µg/dL)	$GSD_{i,adult}$ (unitless)	$R_{fetal/maternal}$ (unitless)	$PbB_{fetal,0.95}$ (µg/dL) (Target=10 µg/dL)	Conclusion
Area T-4 Biological Simulant Test Area	0	<sl	2.2	0.4	100	0.01	250	9125	2.2	2.1	0.9	-	-
Area T-5 Toxic Hazards Detection and Decontamination Training Area	0	<sl	2.2	0.4	100	0.01	250	9125	2.2	2.1	0.9	-	-
Area T-24A Chemical Munitions Disposal Training Area	96	<sl	2.2	0.4	100	0.01	250	9125	3.2	2.1	0.9	-	-
Area T-38 Technical Escort Reaction Area	17	<sl	2.2	0.4	100	0.01	250	9125	2.4	2.1	0.9	-	-
Range K Agent Training Area	0	<sl	2.2	0.4	100	0.01	250	9125	2.2	2.1	0.9	-	-
Range J Agent Training Area	0	<sl	2.2	0.4	100	0.01	250	9125	2.2	2.1	0.9	-	-
Range L (Lima Pond) Chemical Munitions Disposal Area	52	<sl	2.2	0.4	100	0.01	250	9125	2.8	2.1	0.9	-	-
Detection and Identification Area	52	<sl	2.2	0.4	100	0.01	250	9125	2.8	2.1	0.9	-	-
Former Landfill #1	22	<sl	2.2	0.4	100	0.01	250	9125	2.4	2.1	0.9	-	-
Former Landfill #2	0	<sl	2.2	0.4	100	0.01	250	9125	2.2	2.1	0.9	-	-
Former Landfill #3	12	<sl	2.2	0.4	100	0.01	250	9125	2.3	2.1	0.9	-	-
Old Water Hole	8	<sl	2.2	0.4	100	0.01	250	9125	2.3	2.1	0.9	-	-
Background	22	<sl	2.2	0.4	100	0.01	250	9125	2.4	2.1	0.9	-	-

– Not applicable/not evaluated
<sl - the exposure point concentration is below the 400 ppm screening level in soil or the 15 ppb action level in drinking water; therefore, blood lead levels were not evaluated
Model default values were used for all parameters except the site lead concentration. The most conservative baseline blood lead level and geometric standard deviation were selected.
Site Pb Conc. - the 95% UCL or the maximum detected value whichever is the smaller number
$PbB_{adult,0}$ - Baseline blood lead level
BKSF - biokinetic slope factor
IR_s - ingestion rate
AF - adherence factor
EF - exposure frequency
AT - averaging time
$PbB_{adult,central}$ - mean blood lead level
GSD - geometric standard deviation
$R_{fetal/maternal}$ - factor that converts blood lead level in mother to blood lead level in fetus
$PbB_{fetal,0.95}$ - mean blood lead level in fetus at 95th percentile

Table H-21. Blood Lead Levels of Construction Workers (Surface Soil Exposures)

Exposure Unit	Site Pb Conc. (mg/kg)		$PbB_{adult,0}$ (µg/dL)	BKSF µg/dL per µg/day	IR_S (g/day)	AF_S (unitless)	EF_S (day/yr)	AT (day)	$PbB_{adult,central}$ (µg/dL)	$GSD_{i,adult}$ (unitless)	$R_{fetal/maternal}$ (unitless)	(Target=10 µg/dL) $PbB_{fetal,0.95}$ (µg/dL)	Conclusion
Area T-4 Biological Simulant Test Area	0	<sl	2.2	0.4	200	0.1	250	365	2.2	2.1	0.9	-	-
Area T-5 Toxic Hazards Detection and Decontamination Training Area	0	<sl	2.2	0.4	200	0.1	250	365	2.2	2.1	0.9	-	-
Area T-24A Chemical Munitions Disposal Training Area	0	<sl	2.2	0.4	200	0.1	250	365	2.2	2.1	0.9	-	-
Area T-38 Technical Escort Reaction Area	84	<sl	2.2	0.4	200	0.1	250	365	462.5	2.1	0.9	-	-
Range K Agent Training Area	0	<sl	2.2	0.4	200	0.1	250	365	2.2	2.1	0.9	-	-
Range J Agent Training Area	0	<sl	2.2	0.4	200	0.1	250	365	2.2	2.1	0.9	-	-
Range L (Lima Pond) Chemical Munitions Disposal Area	110	<sl	2.2	0.4	200	0.1	250	365	604.9	2.1	0.9	-	-
Detection and Identification Area	0	<sl	2.2	0.4	200	0.1	250	365	2.2	2.1	0.9	-	-
Former Landfill #1	0	<sl	2.2	0.4	200	0.1	250	365	2.2	2.1	0.9	-	-
Former Landfill #2	0	<sl	2.2	0.4	200	0.1	250	365	2.2	2.1	0.9	-	-
Former Landfill #3	32	<sl	2.2	0.4	200	0.1	250	365	176.2	2.1	0.9	-	-
Old Water Hole	22	<sl	2.2	0.4	200	0.1	250	365	121.1	2.1	0.9	-	-
Background	20	<sl	2.2	0.4	200	0.1	250	365	110.4	2.1	0.9	-	-

-- Not applicable/not evaluated

<sl - the exposure point concentration is below the 400 ppm screening level in soil or the 15 ppb action level in drinking water; therefore, blood lead levels were not evaluated

Model default values were used for all parameters except the site lead concentration. The most conservative baseline blood lead level and geometric standard deviation were selected.

Site Pb Conc. - the 95% UCL or the maximum detected value whichever is the smaller number

$PbB_{adult,0}$ - Baseline blood lead level

BKSF - biokinetic slope factor

IR_S - ingestion rate

AF - adherence factor

EF - exposure frequency

AT - averaging time

$PbB_{adult,central}$ - mean blood lead level

GSD - geometric standard deviation

$R_{fetal/maternal}$ - factor that converts blood lead level in mother to blood lead level in fetus

$PbB_{fetal,0.95}$ - mean blood lead level in fetus at 95th percentile

Table H-22. Blood Lead Levels of Construction Workers (Subsurface Soil Exposures)

Exposure Unit	Site Pb Conc. (mg/kg)		$PbB_{adult,0}$ (µg/dL)	BKSF µg/dL per µg/day	IR_S (g/day)	AF_S (unitless)	EF_S (day/yr)	AT (day)	$PbB_{adult,central}$ (µg/dL)	$GSD_{i,adult}$ (unitless)	$R_{fetal/maternal}$ (unitless)	$PbB_{fetal,0.95}$ (µg/dL) (Target=10 µg/dL)	Conclusion
Area T-4 Biological Simulant Test Area	0	<sl	2.2	0.4	200	0.1	250	365	2.2	2.1	0.9	-	-
Area T-5 Toxic Hazards Detection and Decontamination Training Area	0	<sl	2.2	0.4	200	0.1	250	365	2.2	2.1	0.9	-	-
Area T-24A Chemical Munitions Disposal Training Area	96	<sl	2.2	0.4	200	0.1	250	365	526.7	2.1	0.9	-	-
Area T-38 Technical Escort Reaction Area	17	<sl	2.2	0.4	200	0.1	250	365	97.5	2.1	0.9	-	-
Range K Agent Training Area	0	<sl	2.2	0.4	200	0.1	250	365	2.2	2.1	0.9	-	-
Range J Agent Training Area	0	<sl	2.2	0.4	200	0.1	250	365	2.2	2.1	0.9	-	-
Range L (Lima Pond) Chemical Munitions Disposal Area	52	<sl	2.2	0.4	200	0.1	250	365	287.1	2.1	0.9	-	-
Detection and Identification Area	52	<sl	2.2	0.4	200	0.1	250	365	287.7	2.1	0.9	-	-
Former Landfill #1	22	<sl	2.2	0.4	200	0.1	250	365	120.3	2.1	0.9	-	-
Former Landfill #2	0	<sl	2.2	0.4	200	0.1	250	365	2.2	2.1	0.9	-	-
Former Landfill #3	12	<sl	2.2	0.4	200	0.1	250	365	69.6	2.1	0.9	-	-
Old Water Hole	8	<sl	2.2	0.4	200	0.1	250	365	48.7	2.1	0.9	-	-
Background	22	<sl	2.2	0.4	200	0.1	250	365	120.5	2.1	0.9	-	-

– Not applicable/not evaluated

<sl - the exposure point concentration is below the 400 ppm screening level in soil or the 15 ppb action level in drinking water; therefore, blood lead levels were not evaluated

Model default values were used for all parameters except the site lead concentration. The most conservative baseline blood lead level and geometric standard deviation were selected.

Site Pb Conc. - the 95% UCL or the maximum detected value whichever is the smaller number

$PbB_{adult,0}$ - Baseline blood lead level

BKSF - biokinetic slope factor

IR_s - ingestion rate

AF - adherence factor

EF - exposure frequency

AT - averaging time

$PbB_{adult,central}$ - mean blood lead level

GSD - geometric standard deviation

$R_{fetal/maternal}$ - factor that converts blood lead level in mother to blood lead level in fetus

$PbB_{fetal,0.95}$ - mean blood lead level in fetus at 95th percentile

Table H-23. LEAD 0.99d Model Output for Landfill #1 Groundwater
Fort McClellan RI, Anniston, Alabama

AIR CONCENTRATION: 0.100µg Pb/m3 DEFAULT
Indoor AIR Pb Conc: 30.0 percent of outdoor.
Other AIR Parameters:

Age	Time Outdoors (hr)	Vent. Rate (m3/day)	Lung Abs. (%)
0-1	1.0	2.0	32.0
1-2	2.0	3.0	32.0
2-3	3.0	5.0	32.0
3-4	4.0	5.0	32.0
4-5	4.0	5.0	32.0
5-6	4.0	7.0	32.0
6-7	4.0	7.0	32.0

DIET: DEFAULT

DRINKING WATER Conc: 3.15 µg Pb/L
WATER Consumption: DEFAULT

SOIL & DUST:
Soil:constant conc.
Dust:constant conc.

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
0-1	200	200
1-2	200	200
2-3	200	200
3-4	200	200
4-5	200	200
5-6	200	200
6-7	200	200

Additional Dust Sources: None DEFAULT

PAINT Intake: 0.00 µg Pb/day DEFAULT

MATERNAL CONTRIBUTION: Infant Model
Maternal Blood Conc:2.50 µg Pb/dL

CALCULATED BLOOD Pb and Pb UPTAKES:

YEAR	Blood Level (ug/dL)	Total Uptake (ug/day)	Soil+Dust Uptake (µg/day)
0.5-1:	4.1	7.53	4.68
1-2:	4.5	10.75	7.37
2-3:	4.2	11.25	7.45
3-4:	4	11.29	7.54
4-5:	3.3	9.44	5.7
5-6:	2.9	9.17	5.17
6-7:	2.6	9.24	4.9

YEAR	Diet Uptake (ug/day)	Water Uptake (ug/day)	Paint Uptake (µg/day)	Air Uptake (ug/day)
0.5-1:	2.54	0.29	0	0.02
1-2:	2.63	0.72	0	0.03
2-3:	2.98	0.75	0	0.06
3-4:	2.9	0.78	0	0.07
4-5:	2.85	0.82	0	0.07
5-6:	3.03	0.87	0	0.09
6-7:	3.36	0.89	0	0.09

Table H-24. LEAD 0.99d Model Output for Landfill #2 Groundwater
Fort McClellan RI, Anniston, Alabama

AIR CONCENTRATION: 0.100µg Pb/m3 DEFAULT
Indoor AIR Pb Conc: 30.0 percent of outdoor.
Other AIR Parameters:

Age	Time Outdoors (hr)	Vent. Rate (m3/day)	Lung Abs. (%)
0-1	1.0	2.0	32.0
1-2	2.0	3.0	32.0
2-3	3.0	5.0	32.0
3-4	4.0	5.0	32.0
4-5	4.0	5.0	32.0
5-6	4.0	7.0	32.0
6-7	4.0	7.0	32.0

DIET: DEFAULT

DRINKING WATER Conc: 46.90 µg Pb/L
WATER Consumption: DEFAULT

SOIL & DUST:
Soil:constant conc.
Dust:constant conc.

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
0-1	200	200
1-2	200	200
2-3	200	200
3-4	200	200
4-5	200	200
5-6	200	200
6-7	200	200

Additional Dust Sources: None DEFAULT

PAINT Intake: 0.00 µg Pb/day DEFAULT

MATERNAL CONTRIBUTION: Infant Model
Maternal Blood Conc:2.50 µg Pb/dL

CALCULATED BLOOD Pb and Pb UPTAKES:

YEAR	Blood Level (ug/dL)	Total Uptake (ug/day)	Soil+Dust Uptake (µg/day)
1-2:	7.7	19.17	6.82
2-3:	7.4	20.26	6.95
3-4:	7.2	20.76	7.09
4-5:	6.6	19.71	5.38
5-6:	6.2	20.18	4.89
6-7:	5.8	20.55	4.65

YEAR	Diet Uptake (ug/day)	Water Uptake (ug/day)	Paint Uptake (µg/day)	Air Uptake (ug/day)
0.5-1:	2.43	4.13	0	0.02
1-2:	2.43	9.88	0	0.03
2-3:	2.78	10.46	0	0.06
3-4:	2.73	10.87	0	0.07
4-5:	2.69	11.56	0	0.07
5-6:	2.87	12.32	0	0.09
6-7:	3.19	12.62	0	0.09

Table H-25. LEAD 0.99d Model Output for Landfill #3 Groundwater
Fort McClellan RI, Anniston, Alabama

AIR CONCENTRATION: 0.100µg Pb/m3 DEFAULT
Indoor AIR Pb Conc: 30.0 percent of outdoor.
Other AIR Parameters:

Age	Time Outdoors (hr)	Vent. Rate (m3/day)	Lung Abs. (%)
0-1	1.0	2.0	32.0
1-2	2.0	3.0	32.0
2-3	3.0	5.0	32.0
3-4	4.0	5.0	32.0
4-5	4.0	5.0	32.0
5-6	4.0	7.0	32.0
6-7	4.0	7.0	32.0

DIET: DEFAULT

DRINKING WATER Conc: 35.35 µg Pb/L
WATER Consumption: DEFAULT

SOIL & DUST:
Soil:constant conc.
Dust:constant conc.

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
0-1	200	200
1-2	200	200
2-3	200	200
3-4	200	200
4-5	200	200
5-6	200	200
6-7	200	200

Additional Dust Sources: None DEFAULT

PAINT Intake: 0.00 µg Pb/day DEFAULT

MATERNAL CONTRIBUTION: Infant Model
Maternal Blood Conc:2.50 µg Pb/dL

CALCULATED BLOOD Pb and Pb UPTAKES:

YEAR	Blood Level (ug/dL)	Total Uptake (ug/day)	Soil+Dust Uptake (µg/day)
1-2:	6.9	17.07	6.96
2-3:	6.6	17.99	7.07
3-4:	6.4	18.37	7.2
4-5:	5.8	17.11	5.46
5-6:	5.3	17.38	4.96
6-7:	5	17.68	4.71

YEAR	Diet Uptake (ug/day)	Water Uptake (ug/day)	Paint Uptake (µg/day)	Air Uptake (ug/day)
0.5-1:	2.46	3.15	0	0.02
1-2:	2.48	7.59	0	0.03
2-3:	2.83	8.03	0	0.06
3-4:	2.77	8.33	0	0.07
4-5:	2.73	8.85	0	0.07
5-6:	2.91	9.42	0	0.09
6-7:	3.23	9.64	0	0.09

Table H-26. LEAD 0.99d Model Output for Background Groundwater
Fort McClellan RI, Anniston, Alabama

AIR CONCENTRATION: 0.100µg Pb/m3 DEFAULT
Indoor AIR Pb Conc: 30.0 percent of outdoor.
Other AIR Parameters:

Age	Time Outdoors (hr)	Vent. Rate (m3/day)	Lung Abs. (%)
0-1	1.0	2.0	32.0
1-2	2.0	3.0	32.0
2-3	3.0	5.0	32.0
3-4	4.0	5.0	32.0
4-5	4.0	5.0	32.0
5-6	4.0	7.0	32.0
6-7	4.0	7.0	32.0

DIET: DEFAULT

DRINKING WATER Conc: 4.72 µg Pb/L
WATER Consumption: DEFAULT

SOIL & DUST:
Soil:constant conc.
Dust:constant conc.

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
0-1	200	200
1-2	200	200
2-3	200	200
3-4	200	200
4-5	200	200
5-6	200	200
6-7	200	200

Additional Dust Sources: None DEFAULT

PAINT Intake: 0.00 µg Pb/day DEFAULT

MATERNAL CONTRIBUTION: Infant Model
Maternal Blood Conc:2.50 µg Pb/dL

CALCULATED BLOOD Pb and Pb UPTAKES:

YEAR	Blood Level (ug/dL)	Total Uptake (ug/day)	Soil+Dust Uptake (µg/day)
0.5-1:	4.1	7.66	4.67
1-2:	4.6	11.07	7.35
2-3:	4.3	11.59	7.43
3-4:	4.1	11.65	7.52
4-5:	3.5	9.83	5.69
5-6:	3	9.58	5.16
6-7:	2.8	9.67	4.89

YEAR	Diet Uptake (ug/day)	Water Uptake (ug/day)	Paint Uptake (µg/day)	Air Uptake (ug/day)
0.5-1:	2.53	0.43	0	0.02
1-2:	2.62	1.07	0	0.03
2-3:	2.98	1.13	0	0.06
3-4:	2.9	1.16	0	0.07
4-5:	2.85	1.23	0	0.07
5-6:	3.03	1.31	0	0.09
6-7:	3.35	1.33	0	0.09

TABLE H-T24A-1.
SELECTION OF EXPOSURE PATHWAYS
FORT McCLELLAN RI, ANNISTON, ALABAMA

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	Sediment	Sediment	Site 3 Area T-24A Chemical Munitions Disposal Training Area	Recreational	Adolescent[a]	Ingestion	On-Site	Quant	Possible exposure from recreational use of stream.
						Dermal	On-Site	Quant	Possible exposure from recreational use of stream.
	Surface Water	Surface Water		Recreational	Adolescent[a]	Dermal	On-Site	Quant	Possible exposure from recreational use of stream.
Future	Soil	Soil		Industrial Worker	Adult	Ingestion	On-Site	Quant	Potential for exposure based on future land use.
						Dermal	On-Site	Quant	Potential for exposure based on future land use.
				Resident	Child	Ingestion	On-Site	Quant	Resident could live onsite in the future.
						Dermal	On-Site	Quant	Resident could live onsite in the future.
				Construction Worker	Adult	Ingestion	On-Site	Quant	Potential for exposure based on future land use.
						Dermal	On-Site	Quant	Potential for exposure based on future land use.
		Air		Industrial Worker	Adult	Inhalation	On-Site	Quant	Potential for exposure based on future land use.
				Construction Worker	Adult	Inhalation	On-Site	Quant	Potential for exposure based on future land use.
	Groundwater	Groundwater		Industrial Worker[b]	Adult	Ingestion	On-Site	Quant	Assumes workers will ingest onsite groundwater.
						Dermal	On-Site	Quant	Workers assumed to shower onsite.
				Resident	Adult	Ingestion	On-Site	Quant	Resident could live onsite in the future.
						Dermal	On-Site	Quant	Resident could live onsite in the future.
					Child	Ingestion	On-Site	Quant	Resident could live onsite in the future.
						Dermal	On-Site	Quant	Resident could live onsite in the future.
		Air		Resident	Adult	Inhalation	On-Site	Quant	Future potential for inhalation of contaminants.

[a] Age adjusted values will be used for the adolescent receptor.
[b] Industrial worker is used to define a groundskeeper scenario.

TABLE H-T24A-3.1.
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Subsurface Soil
Exposure Medium: Soil
Exposure Point: Area T24A

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Aluminum	mg/kg	20,000	29,088	27,300		mg/kg	27,300	Max	Shapiro (2)	27,300	Max	Shapiro (2)
Antimony	mg/kg	7.95	2,011	29		mg/kg	29	Max	Shapiro (2)	29	Max	Shapiro (2)
Iron	mg/kg	41,920	48,518	53,200		mg/kg	48,518	95% UCL-N	Shapiro (3)	48,518	95% UCL-N	Shapiro (3)
Lead	mg/kg	96	196	220	D	mg/kg	196	95% UCL-N	Shapiro (3)	196	95% UCL-N	Shapiro (3)

Qualifiers: Refer to Table H-1 for supporting information on flags and qualifiers.

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

Shapiro (1) - Shapiro goodness-of-fit test determines data are lognormally distributed

Shapiro (2) - The maximum detected value was < 95% UCL; it was therefore used as the EPC rather than the 95% UCL

Shapiro (3) - Shapiro goodness-of-fit test determines data are normally distributed

TABLE H-T24A-3.2.
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Area T24A

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Aluminum	µg/L	1,138	- -	4,190		µg/L	4,190	Max	Shapiro (2)	4,190	Max	Shapiro (2)
Beryllium	µg/L	0.706	- -	1.63	D	µg/L	1.63	Max	Shapiro (2)	1.63	Max	Shapiro (2)
Iron	µg/L	10,377	- -	23,300		µg/L	23,300	Max	Shapiro (2)	23,300	Max	Shapiro (2)
Lead	µg/L	3.33	- -	12	D	µg/L	12	Max	Shapiro (2)	12	Max	Shapiro (2)
Manganese	µg/L	1,143	- -	1,690		µg/L	1,690	Max	Shapiro (2)	1,690	Max	Shapiro (2)
Selenium	µg/L	1.91	- -	5.00		µg/L	5.00	Max	Shapiro (2)	5.00	Max	Shapiro (2)
Benzene	µg/L	56	- -	200	D	µg/L	200	Max	Shapiro (2)	200	Max	Shapiro (2)
Benzo(b)fluoranthene	µg/L	0.0312	- -	0.0866	B	µg/L	0.0866	Max	Shapiro (2)	0.0866	Max	Shapiro (2)
Bicarbonate	µg/L	25,000	- -	25,000	D	µg/L	25,000	Max	Shapiro (2)	25,000	Max	Shapiro (2)
Hexachlorobenzene	µg/L	1.03	- -	0.133	ZC	µg/L	0.133	Max	Shapiro (2)	0.133	Max	Shapiro (2)
Nitrate,Nitrite	µg/L	35	- -	36	D	µg/L	36	Max	Shapiro (2)	36	Max	Shapiro (2)
Pentachlorophenol	µg/L	0.800	- -	2.00	9	µg/L	2.00	Max	Shapiro (2)	2.00	Max	Shapiro (2)
Phenol	µg/L	7.31	- -	57		µg/L	57	Max	Shapiro (2)	57	Max	Shapiro (2)
Alkalinity	µg/L	25,000	- -	25,000		µg/L	25,000	Max	Shapiro (2)	25,000	Max	Shapiro (2)
alpha-BHC	µg/L	0.00158	- -	0.00424	C	µg/L	0.00424	Max	Shapiro (2)	0.00424	Max	Shapiro (2)
bis(2-Ethylhexyl)phthalate	µg/L	8.13	- -	19		µg/L	19	Max	Shapiro (2)	19	Max	Shapiro (2)
Lindane	µg/L	0.00159	- -	0.00432	Q	µg/L	0.00432	Max	Shapiro (2)	0.00432	Max	Shapiro (2)

Qualifiers: Refer to Table H-1 for supporting information on flags and qualifiers.

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

Shapiro (1) - Shapiro goodness-of-fit test determines data are lognormally distributed

Shapiro (2) - The maximum detected value was < 95% UCL; it was therefore used as the EPC rather than the 95% UCL

Shapiro (3) - Shapiro goodness-of-fit test determines data are normally distributed

TABLE H-T24A-5.1.
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (2)	Adjusted Dermal RfD (3)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (4) (MM/DD/YY)
Aluminum	Chronic	1	mg/kg-day	0.1	0.1	mg/Kg-day	CNS	100	NCEA	08/26/96
	Subchronic	1	mg/kg-day	0.1	0.1	mg/Kg-day	CNS	--	--	--
Antimony	Chronic	0.0004	mg/kg-day	0.02	0.000008	mg/Kg-day	blood/circulatory system	1000	IRIS	02/28/00
	Subchronic	0.0004	mg/kg-day	0.02	0.000008	mg/Kg-day	blood/circulatory system	1000	HEAST	07/31/97
Iron	Chronic	--	mg/kg-day	0.15	0.045	mg/Kg-day	--	--	--	--
	Subchronic	--	mg/kg-day	0.15	0.045	mg/Kg-day	--	--	--	--
Beryllium	Chronic	0.002	mg/kg-day	0.01	0.00002	mg/Kg-day	GI system	300	IRIS	02/28/00
	Subchronic	0.005	mg/kg-day	0.01	0.00005	mg/Kg-day	GI system	100	HEAST	07/31/97
Manganese	Chronic	0.024	mg/kg-day	0.04	0.00096	mg/Kg-day	CNS	1	IRIS	02/28/00
	Subchronic	0.024	mg/kg-day	0.04	0.00096	mg/Kg-day	CNS	--	--	--
Selenium	Chronic	0.005	mg/kg-day	0.44	0.0022	mg/Kg-day	whole body	3	IRIS	02/28/00
	Subchronic	0.005	mg/kg-day	0.44	0.0022	mg/Kg-day	whole body	3	HEAST	07/31/97
Benzene	Chronic	0.003	mg/kg-day	0.97	0.00291	mg/Kg-day	--	3000	NCEA	07/02/96
	Subchronic	0.003	mg/kg-day	0.97	0.00291	mg/Kg-day	--	--	--	--
Hexachlorobenzene	Chronic	0.0008	mg/kg-day	0.5	0.0004	mg/Kg-day	liver	100	IRIS	02/28/00
	Subchronic	0.0008	mg/kg-day	0.5	0.0004	mg/Kg-day	liver	--	--	--
Nitrate,Nitrite	Chronic	0.1	mg/kg-day	0.5	0.05	mg/Kg-day	blood	10	IRIS	07/24/98
	Subchronic	0.1	mg/kg-day	0.5	0.05	mg/Kg-day	blood	10	HEAST	07/31/97
Pentachlorophenol	Chronic	0.03	mg/kg-day	1	0.03	mg/Kg-day	liver	100	IRIS	02/28/00
	Subchronic	0.03	mg/kg-day	1	0.03	mg/Kg-day	liver	100	HEAST	07/31/97
Phenol	Chronic	0.6	mg/kg-day	0.9	0.54	mg/Kg-day	reproductive system	100	IRIS	02/28/00
	Subchronic	0.6	mg/kg-day	0.9	0.54	mg/Kg-day	reproductive system	100	HEAST	07/31/97
bis(2-Ethylhexyl)phthalate	Chronic	0.02	mg/kg-day	0.19	0.0038	mg/Kg-day	liver	1000	IRIS	02/28/00
	Subchronic	0.02	mg/kg-day	0.19	0.0038	mg/Kg-day	liver	--	--	--
Lindane	Chronic	0.0003	mg/kg-day	0.97	0.000291	mg/Kg-day	liver, kidney	1000	IRIS	02/28/00
	Subchronic	0.003	mg/kg-day	0.97	0.00291	mg/Kg-day	liver, kidney	100	HEAST	07/31/97

N/A = Not Applicable

(1) This table only includes RfDs for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical was a COPC, but does not appear on this table, no toxicity values were available to evaluate noncarcinogenic effects from oral or dermal exposures.

(2) Refer to RAGS, Part A

(3) The adjusted chronic RfD for the dermal route was calculated by multiplying the chronic oral RfD by the gastrointestinal absorption factor.

(4) This column represents the latest date at which IRIS, HEAST, or NCEA values were updated.

TABLE H-T24A-5.2.
NON-CANCER TOXICITY DATA -- INHALATION
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Chronic/ Subchronic	Value Inhalation RfC (2)	Units	Adjusted Inhalation RfD (3)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfC:RfD: Target Organ	Dates (4) (MM/DD/YY)
Aluminum	Chronic	--	mg/m3	0.00140	mg/kg-day	--	--	NCEA	
	Subchronic	--	mg/m3	0.00140	mg/kg-day	--	--	--	--
Beryllium	Chronic	0.0200	mg/m3	0.00571	mg/kg-day	respiratory system	10	IRIS	02/28/00
	Subchronic	0.0200	mg/m3	0.00571	mg/kg-day	respiratory system	--	--	--
Manganese	Chronic	5.000E-05	mg/m3	1.429E-05	mg/kg-day	CNS	1000	IRIS	02/28/00
	Subchronic	5.000E-05	mg/m3	1.429E-05	mg/kg-day	CNS	--	--	--
Benzene	Chronic	--	mg/m3	0.00170	mg/kg-day	--	--	NCEA	
	Subchronic	--	mg/m3	0.00170	mg/kg-day	--	--	--	--

N/A = Not Applicable

(1) This table only includes RfCs for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical was a COPC, but does not appear on this table, no toxicity values were available to evaluate noncarcinogenic effects from inhalation exposures.

(2) "- -" indicates that an RfC is currently not available.

(3) Inhalation RfCs have been converted to inhalation RfDs by multiplying by 20m3/day and dividing by 70 kg.

(4) This column represents the latest date at which IRIS, HEAST, or NCEA values were updated.

TABLE H-T24A-5.3.
NON-CANCER TOXICITY DATA -- SPECIAL CASE CHEMICALS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Chronic/ Subchronic	Value	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of Primary Target Organ	Date (2) (MM/DD/YY)
Benzo(b)fluoranthene	Chronic	0.03	mg/Kg-day	--	--	surr.	--
	Subchronic	0.3	mg/Kg-day	--	--	surr.	--
	Chronic	0.0093	mg/Kg-day	--	--	surr.	--
	Subchronic	0.093	mg/Kg-day	--	--	surr.	--

(1) This table only includes values for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical was a COPC, but does not appear on this table, no toxicity values were available to evaluate noncarcinogenic effects.

(2) This column represents the latest date at which IRIS, HEAST, or NCEA values were updated.

TABLE H-T24A-6.1.
CANCER TOXICITY DATA -- ORAL/DERMAL
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Oral Cancer Slope Factor	Oral to Dermal Adjustment Factor	Adjusted Dermal Cancer Slope Factor (2)	Units	Weight of Evidence/ Cancer Guideline Description (3)	Source (4)	Date (5) (MM/DD/YY)
Benzene	0.055	0.97	0.0567	1/(mg/Kg-day)	[A]	IRIS	02/28/00
Hexachlorobenzene	1.6	0.5	3.20	1/(mg/Kg-day)	[B2]	IRIS	02/28/00
Pentachlorophenol	0.12	1	0.120	1/(mg/Kg-day)	[B2]	IRIS	02/28/00
alpha-BHC	6.3	0.97	6.49	1/(mg/Kg-day)	[B2]	IRIS	02/28/00
bis(2-Ethylhexyl)phthalate	0.014	0.19	0.0737	1/(mg/Kg-day)	[B2]	IRIS	02/28/00
Lindane	1.3	0.97	1.34	1/(mg/Kg-day)	[C]	HEAST	07/31/97

(1) This table only includes CSFs for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical was a COPC, but does not appear on this table, no toxicity values were available to evaluate carcinogenic effects from oral or dermal exposures.

(2) The adjusted slope factor for the dermal route was calculated by dividing the oral slope factor by the gastrointestinal absorption factor.

(3) EPA Group:

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 a human carcinogen

E - Evidence of noncarcinogenicity

(4) This column represents the latest date at which IRIS, HEAST, or NCEA values were updated.

TABLE H-T24A-6.2.
CANCER TOXICITY DATA -- INHALATION
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Unit Risk	Units	Adjustment	Inhalation Cancer Slope Factor (2)	Units	Weight of Evidence/ Cancer Guideline Description (3)	Source (4)	Date (5) (MM/DD/YY)
Beryllium	0.0024	µg/m3	3500	8.40	1/(mg/kg-day)	[B1]	IRIS	02/28/00
Benzene	0.0000078	µg/m3	3500	0.0273	1/(mg/kg-day)	[A]	IRIS	02/28/00
Hexachlorobenzene	0.00046	µg/m3	3500	1.61	1/(mg/kg-day)	[B2]	IRIS	02/28/00
alpha-BHC	0.0018	µg/m3	3500	6.30	1/(mg/kg-day)	[B2]	IRIS	02/28/00

(2) The slope factor for the inhalation route was calculated by multiplying the unit risk by the adjustment factor.

(3) EPA Group:

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 a human carcinogen

E - Evidence of noncarcinogenicity

TABLE H-T24A-6.3.
CANCER TOXICITY DATA -- SPECIAL CASE CHEMICALS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Value	Units	Source	Date (2) MM/DD/YY
Lead	--	1/(mg/kg-day)	--	--
	--	1/(mg/kg-day)	--	--
	--	1/(mg/kg-day)	--	--
Benzo(b)fluoranthene	7.30	1/(mg/kg-day)	tef	--
	24	1/(mg/kg-day)	tef	--

(1) This table only includes CSFs for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical

TABLE H-T24A-7.1.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Soil
Exposure Point: Area T24A
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	27,300	mg/kg	27,300	mg/kg	M	0.0267	mg/Kg-day	1.000	mg/Kg-day	--	mg/m3	0.0267
	Antimony	29	mg/kg	29	mg/kg	M	2.847E-05	mg/Kg-day	0.000400	mg/Kg-day	--	mg/m3	0.0712
	(Total)												0.0979
Dermal	Aluminum	27,300	mg/kg	27,300	mg/kg	M	1.402E-05	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.000140
	Antimony	29	mg/kg	29	mg/kg	M	1.495E-08	mg/Kg-day	8.000E-06	mg/Kg-day	--	mg/m3	0.00187
	Iron	48,518	mg/kg	48,518	mg/kg	M	2.492E-05	mg/Kg-day	0.0450	mg/Kg-day	--	mg/m3	0.000554
	(Total)												0.00256
												Total Hazard Index Across All Exposure Routes/Pathways	0.100

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T24A-7.2.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Air
Exposure Point: Area T24A
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Aluminum (Total)	27,300	mg/kg	0.00273	µg/m3	R	0.000534	mg/Kg-day	0.00140	mg/Kg-day	- -	mg/m3	0.382
													0.382
												Total Hazard Index Across All Exposure Routes/Pathways	0.382

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T24A-7.3.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Soil
Exposure Point: Area T24A
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	27,300	mg/kg	27,300	mg/kg	M	0.349	mg/Kg-day	1.000	mg/Kg-day	--	mg/m3	0.349
	Antimony	29	mg/kg	29	mg/kg	M	0.000372	mg/Kg-day	0.000400	mg/Kg-day	--	mg/m3	0.930
	(Total)												1.28
Dermal	Aluminum	27,300	mg/kg	27,300	mg/kg	M	0.000220	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.00220
	Antimony	29	mg/kg	29	mg/kg	M	2.344E-07	mg/Kg-day	8.000E-06	mg/Kg-day	--	mg/m3	0.0293
	Iron	48,518	mg/kg	48,518	mg/kg	M	0.000391	mg/Kg-day	0.0450	mg/Kg-day	--	mg/m3	0.00868
	(Total)												0.0402
												Total Hazard Index Across All Exposure Routes/Pathways	1.32

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T24A-7.4.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Soil
Exposure Point: Area T24A
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	27,300	mg/kg	27,300	mg/kg	M	0.0534	mg/Kg-day	1.000	mg/Kg-day	--	mg/m3	0.0534
	Antimony	29	mg/kg	29	mg/kg	M	5.695E-05	mg/Kg-day	0.000400	mg/Kg-day	--	mg/m3	0.142
	(Total)												0.196
Dermal	Aluminum	27,300	mg/kg	27,300	mg/kg	M	0.000140	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.00140
	Antimony	29	mg/kg	29	mg/kg	M	1.495E-07	mg/Kg-day	8.000E-06	mg/Kg-day	--	mg/m3	0.0187
	Iron	48,518	mg/kg	48,518	mg/kg	M	0.000249	mg/Kg-day	0.0450	mg/Kg-day	--	mg/m3	0.00554
	(Total)												0.0256
												Total Hazard Index Across All Exposure Routes/Pathways	0.221

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T24A-7.5.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Air
Exposure Point: Area T24A
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Aluminum (Total)	27,300	mg/kg	0.00546	µg/m3	R	0.00107	mg/Kg-day	0.00140	mg/Kg-day	- -	mg/m3	0.763
													0.763
												Total Hazard Index Across All Exposure Routes/Pathways	0.763

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T24A-7.6.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Area T24A
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	4,190	µg/L	4,190	µg/L	M	0.0410	mg/Kg-day	1.000	mg/Kg-day	--	mg/m3	0.0410
	Beryllium	1.63	µg/L	1.63	µg/L	M	1.595E-05	mg/Kg-day	0.00200	mg/Kg-day	0.02	mg/m3	0.00797
	Manganese	1,690	µg/L	1,690	µg/L	M	0.0165	mg/Kg-day	0.0240	mg/Kg-day	0.00005	mg/m3	0.689
	Selenium	5.00	µg/L	5.00	µg/L	M	4.892E-05	mg/Kg-day	0.00500	mg/Kg-day	--	mg/m3	0.00978
	Benzene	200	µg/L	200	µg/L	M	0.00196	mg/Kg-day	0.00300	mg/Kg-day	--	mg/m3	0.652
	Benzo(b)fluoranthene	0.0866	µg/L	0.0866	µg/L	M	8.474E-07	mg/Kg-day	0.0300	mg/Kg-day	--	mg/m3	2.825E-05
	Hexachlorobenzene	0.133	µg/L	0.133	µg/L	M	1.301E-06	mg/Kg-day	0.000800	mg/Kg-day	--	mg/m3	0.00163
	Nitrate,Nitrite	36	µg/L	36	µg/L	M	0.000352	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.00352
	Pentachlorophenol	2.00	µg/L	2.00	µg/L	M	1.957E-05	mg/Kg-day	0.0300	mg/Kg-day	--	mg/m3	0.000652
	Phenol	57	µg/L	57	µg/L	M	0.000558	mg/Kg-day	0.600	mg/Kg-day	--	mg/m3	0.000930
	bis(2-Ethylhexyl)phthalate	19	µg/L	19	µg/L	M	0.000186	mg/Kg-day	0.0200	mg/Kg-day	--	mg/m3	0.00930
	Lindane	0.00432	µg/L	0.00432	µg/L	M	4.227E-08	mg/Kg-day	0.000300	mg/Kg-day	--	mg/m3	0.000141
	(Total)												1.42
Dermal	Aluminum	4,190	µg/L	4,190	µg/L	M	0.000168	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.00168
	Beryllium	1.63	µg/L	1.63	µg/L	M	6.539E-08	mg/Kg-day	2.000E-05	mg/Kg-day	0.02	mg/m3	0.00327
	Iron	23,300	µg/L	23,300	µg/L	M	0.000935	mg/Kg-day	0.0450	mg/Kg-day	--	mg/m3	0.0208
	Manganese	1,690	µg/L	1,690	µg/L	M	6.780E-05	mg/Kg-day	0.000960	mg/Kg-day	0.00005	mg/m3	0.0706
	Selenium	5.00	µg/L	5.00	µg/L	M	2.006E-07	mg/Kg-day	0.00220	mg/Kg-day	--	mg/m3	9.118E-05
	Benzene	200	µg/L	200	µg/L	M	0.000168	mg/Kg-day	0.00291	mg/Kg-day	--	mg/m3	0.0579
	Benzo(b)fluoranthene	0.0866	µg/L	0.0866	µg/L	M	4.169E-06	mg/Kg-day	0.00930	mg/Kg-day	--	mg/m3	0.000448
	Hexachlorobenzene	0.133	µg/L	0.133	µg/L	M	1.120E-06	mg/Kg-day	0.000400	mg/Kg-day	--	mg/m3	0.00280
	Nitrate,Nitrite	36	µg/L	36	µg/L	M	1.444E-06	mg/Kg-day	0.0500	mg/Kg-day	--	mg/m3	2.888E-05
	Pentachlorophenol	2.00	µg/L	2.00	µg/L	M	5.215E-05	mg/Kg-day	0.0300	mg/Kg-day	--	mg/m3	0.00174
	Phenol	57	µg/L	57	µg/L	M	1.258E-05	mg/Kg-day	0.540	mg/Kg-day	--	mg/m3	2.329E-05
	bis(2-Ethylhexyl)phthalate	19	µg/L	19	µg/L	M	2.515E-05	mg/Kg-day	0.00380	mg/Kg-day	--	mg/m3	0.00662
	Lindane	0.00432	µg/L	0.00432	µg/L	M	1.616E-09	mg/Kg-day	0.000291	mg/Kg-day	--	mg/m3	5.553E-06
	(Total)												0.166
												Total Hazard Index Across All Exposure Routes/Pathways	1.58

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T24A-7.7.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Area T24A
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	4,190	µg/L	4,190	µg/L	M	0.115	mg/Kg-day	1.000	mg/Kg-day	--	mg/m3	0.115
	Beryllium	1.63	µg/L	1.63	µg/L	M	4.466E-05	mg/Kg-day	0.00200	mg/Kg-day	0.02	mg/m3	0.0223
	Manganese	1,690	µg/L	1,690	µg/L	M	0.0463	mg/Kg-day	0.0240	mg/Kg-day	0.00005	mg/m3	1.93
	Selenium	5.00	µg/L	5.00	µg/L	M	0.000137	mg/Kg-day	0.00500	mg/Kg-day	--	mg/m3	0.0274
	Benzene	200	µg/L	200	µg/L	M	0.00548	mg/Kg-day	0.00300	mg/Kg-day	--	mg/m3	1.83
	Benzo(b)fluoranthene	0.0866	µg/L	0.0866	µg/L	M	2.373E-06	mg/Kg-day	0.0300	mg/Kg-day	--	mg/m3	7.909E-05
	Hexachlorobenzene	0.133	µg/L	0.133	µg/L	M	3.644E-06	mg/Kg-day	0.000800	mg/Kg-day	--	mg/m3	0.00455
	Nitrate,Nitrite	36	µg/L	36	µg/L	M	0.000986	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.00986
	Pentachlorophenol	2.00	µg/L	2.00	µg/L	M	5.479E-05	mg/Kg-day	0.0300	mg/Kg-day	--	mg/m3	0.00183
	Phenol	57	µg/L	57	µg/L	M	0.00156	mg/Kg-day	0.600	mg/Kg-day	--	mg/m3	0.00260
	bis(2-Ethylhexyl)phthalate	19	µg/L	19	µg/L	M	0.000521	mg/Kg-day	0.0200	mg/Kg-day	--	mg/m3	0.0260
	Lindane	0.00432	µg/L	0.00432	µg/L	M	1.184E-07	mg/Kg-day	0.000300	mg/Kg-day	--	mg/m3	0.000395
	(Total)												3.97
Dermal	Aluminum	4,190	µg/L	4,190	µg/L	M	0.000208	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.00208
	Beryllium	1.63	µg/L	1.63	µg/L	M	8.105E-08	mg/Kg-day	2.000E-05	mg/Kg-day	0.02	mg/m3	0.00405
	Iron	23,300	µg/L	23,300	µg/L	M	0.00116	mg/Kg-day	0.0450	mg/Kg-day	--	mg/m3	0.0257
	Manganese	1,690	µg/L	1,690	µg/L	M	8.404E-05	mg/Kg-day	0.000960	mg/Kg-day	0.00005	mg/m3	0.0875
	Selenium	5.00	µg/L	5.00	µg/L	M	2.486E-07	mg/Kg-day	0.00220	mg/Kg-day	--	mg/m3	0.000113
	Benzene	200	µg/L	200	µg/L	M	0.000209	mg/Kg-day	0.00291	mg/Kg-day	--	mg/m3	0.0718
	Benzo(b)fluoranthene	0.0866	µg/L	0.0866	µg/L	M	5.168E-06	mg/Kg-day	0.00930	mg/Kg-day	--	mg/m3	0.000556
	Hexachlorobenzene	0.133	µg/L	0.133	µg/L	M	1.389E-06	mg/Kg-day	0.000400	mg/Kg-day	--	mg/m3	0.00347
	Nitrate,Nitrite	36	µg/L	36	µg/L	M	1.790E-06	mg/Kg-day	0.0500	mg/Kg-day	--	mg/m3	3.580E-05
	Pentachlorophenol	2.00	µg/L	2.00	µg/L	M	6.464E-05	mg/Kg-day	0.0300	mg/Kg-day	--	mg/m3	0.00215
	Phenol	57	µg/L	57	µg/L	M	1.559E-05	mg/Kg-day	0.540	mg/Kg-day	--	mg/m3	2.887E-05
	bis(2-Ethylhexyl)phthalate	19	µg/L	19	µg/L	M	3.118E-05	mg/Kg-day	0.00380	mg/Kg-day	--	mg/m3	0.00820
	Lindane	0.00432	µg/L	0.00432	µg/L	M	2.003E-09	mg/Kg-day	0.000291	mg/Kg-day	--	mg/m3	6.884E-06
	(Total)												0.206
												Total Hazard Index Across All Exposure Routes/Pathways	4.17

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T24A-7.8.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Area T24A
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Benzene (Total)	200	µg/L	200	µg/m3	R	0.00548	mg/Kg-day	0.00170	mg/Kg-day	--	mg/m3	3.22
													3.22
												Total Hazard Index Across All Exposure Routes/Pathways	3.22

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T24A-7.9.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Area T24A
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	4,190	µg/L	4,190	µg/L	M	0.268	mg/Kg-day	1.000	mg/Kg-day	- -	mg/m3	0.268
	Beryllium	1.63	µg/L	1.63	µg/L	M	0.000104	mg/Kg-day	0.00200	mg/Kg-day	0.02	mg/m3	0.0521
	Manganese	1,690	µg/L	1,690	µg/L	M	0.108	mg/Kg-day	0.0240	mg/Kg-day	0.00005	mg/m3	4.50
	Selenium	5.00	µg/L	5.00	µg/L	M	0.000320	mg/Kg-day	0.00500	mg/Kg-day	- -	mg/m3	0.0639
	Benzene	200	µg/L	200	µg/L	M	0.0128	mg/Kg-day	0.00300	mg/Kg-day	- -	mg/m3	4.26
	Benzo(b)fluoranthene	0.0866	µg/L	0.0866	µg/L	M	5.536E-06	mg/Kg-day	0.0300	mg/Kg-day	- -	mg/m3	0.000185
	Hexachlorobenzene	0.133	µg/L	0.133	µg/L	M	8.502E-06	mg/Kg-day	0.000800	mg/Kg-day	- -	mg/m3	0.0106
	Nitrate,Nitrite	36	µg/L	36	µg/L	M	0.00230	mg/Kg-day	0.1000	mg/Kg-day	- -	mg/m3	0.0230
	Pentachlorophenol	2.00	µg/L	2.00	µg/L	M	0.000128	mg/Kg-day	0.0300	mg/Kg-day	- -	mg/m3	0.00426
	Phenol	57	µg/L	57	µg/L	M	0.00364	mg/Kg-day	0.600	mg/Kg-day	- -	mg/m3	0.00607
	bis(2-Ethylhexyl)phthalate	19	µg/L	19	µg/L	M	0.00121	mg/Kg-day	0.0200	mg/Kg-day	- -	mg/m3	0.0607
	Lindane	0.00432	µg/L	0.00432	µg/L	M	2.762E-07	mg/Kg-day	0.000300	mg/Kg-day	- -	mg/m3	0.000921
	(Total)												9.25
Dermal	Aluminum	4,190	µg/L	4,190	µg/L	M	0.000391	mg/Kg-day	0.1000	mg/Kg-day	- -	mg/m3	0.00391
	Beryllium	1.63	µg/L	1.63	µg/L	M	1.521E-07	mg/Kg-day	2.000E-05	mg/Kg-day	0.02	mg/m3	0.00761
	Iron	23,300	µg/L	23,300	µg/L	M	0.00217	mg/Kg-day	0.0450	mg/Kg-day	- -	mg/m3	0.0483
	Manganese	1,690	µg/L	1,690	µg/L	M	0.000158	mg/Kg-day	0.000960	mg/Kg-day	0.00005	mg/m3	0.164
	Selenium	5.00	µg/L	5.00	µg/L	M	4.667E-07	mg/Kg-day	0.00220	mg/Kg-day	- -	mg/m3	0.000212
	Benzene	200	µg/L	200	µg/L	M	0.000392	mg/Kg-day	0.00291	mg/Kg-day	- -	mg/m3	0.135
	Benzo(b)fluoranthene	0.0866	µg/L	0.0866	µg/L	M	9.699E-06	mg/Kg-day	0.00930	mg/Kg-day	- -	mg/m3	0.00104
	Hexachlorobenzene	0.133	µg/L	0.133	µg/L	M	2.607E-06	mg/Kg-day	0.000400	mg/Kg-day	- -	mg/m3	0.00652
	Nitrate,Nitrite	36	µg/L	36	µg/L	M	3.360E-06	mg/Kg-day	0.0500	mg/Kg-day	- -	mg/m3	6.720E-05
	Pentachlorophenol	2.00	µg/L	2.00	µg/L	M	0.000121	mg/Kg-day	0.0300	mg/Kg-day	- -	mg/m3	0.00404
	Phenol	57	µg/L	57	µg/L	M	2.926E-05	mg/Kg-day	0.540	mg/Kg-day	- -	mg/m3	5.419E-05
	bis(2-Ethylhexyl)phthalate	19	µg/L	19	µg/L	M	5.852E-05	mg/Kg-day	0.00380	mg/Kg-day	- -	mg/m3	0.0154
	Lindane	0.00432	µg/L	0.00432	µg/L	M	3.760E-09	mg/Kg-day	0.000291	mg/Kg-day	- -	mg/m3	1.292E-05
	(Total)												0.386
												Total Hazard Index Across All Exposure Routes/Pathways	9.64

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T24A-8.1.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Area T24A
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzene	200	µg/L	200	µg/L	M	0.000699	mg/Kg-day	0.055	1/(mg/Kg-day)	3.844E-05
	Benzo(b)fluoranthene	0.00866	µg/L	0.00866	µg/L	M	3.026E-08	mg/Kg-day	7.3	1/(mg/Kg-day)	2.209E-07
	Hexachlorobenzene	0.133	µg/L	0.133	µg/L	M	4.648E-07	mg/Kg-day	1.6	1/(mg/Kg-day)	7.436E-07
	Pentachlorophenol	2.00	µg/L	2.00	µg/L	M	6.989E-06	mg/Kg-day	0.12	1/(mg/Kg-day)	8.387E-07
	alpha-BHC	0.00424	µg/L	0.00424	µg/L	M	1.482E-08	mg/Kg-day	6.3	1/(mg/Kg-day)	9.335E-08
	bis(2-Ethylhexyl)phthalate	19	µg/L	19	µg/L	M	6.640E-05	mg/Kg-day	0.014	1/(mg/Kg-day)	9.295E-07
	Lindane	0.00432	µg/L	0.00432	µg/L	M	1.510E-08	mg/Kg-day	1.3	1/(mg/Kg-day)	1.963E-08
	(Total)										4.129E-05
Dermal	Benzene	200	µg/L	200	µg/L	M	6.018E-05	mg/Kg-day	0.056701031	1/(mg/Kg-day)	3.412E-06
	Benzo(b)fluoranthene	0.00866	µg/L	0.00866	µg/L	M	1.489E-07	mg/Kg-day	23.5483871	1/(mg/Kg-day)	3.506E-06
	Hexachlorobenzene	0.133	µg/L	0.133	µg/L	M	4.002E-07	mg/Kg-day	3.2	1/(mg/Kg-day)	1.281E-06
	Pentachlorophenol	2.00	µg/L	2.00	µg/L	M	1.863E-05	mg/Kg-day	0.12	1/(mg/Kg-day)	2.235E-06
	alpha-BHC	0.00424	µg/L	0.00424	µg/L	M	8.525E-10	mg/Kg-day	6.494845361	1/(mg/Kg-day)	5.537E-09
	bis(2-Ethylhexyl)phthalate	19	µg/L	19	µg/L	M	8.983E-06	mg/Kg-day	0.073684211	1/(mg/Kg-day)	6.619E-07
	Lindane	0.00432	µg/L	0.00432	µg/L	M	5.772E-10	mg/Kg-day	1.340206186	1/(mg/Kg-day)	7.735E-10
	(Total)										1.110E-05
										Total Cancer Risk Across All Exposure Routes/Pathways	5.239E-05

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

TABLE H-T24A-8.2.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Area T24A
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzene	200	µg/L	200	µg/L	M	0.00299	mg/Kg-day	0.055	1/(mg/Kg-day)	0.000164
	Benzo(b)fluoranthene	0.00866	µg/L	0.00866	µg/L	M	1.293E-07	mg/Kg-day	7.3	1/(mg/Kg-day)	9.439E-07
	Hexachlorobenzene	0.133	µg/L	0.133	µg/L	M	1.986E-06	mg/Kg-day	1.6	1/(mg/Kg-day)	3.177E-06
	Pentachlorophenol	2.00	µg/L	2.00	µg/L	M	2.986E-05	mg/Kg-day	0.12	1/(mg/Kg-day)	3.584E-06
	alpha-BHC	0.00424	µg/L	0.00424	µg/L	M	6.331E-08	mg/Kg-day	6.3	1/(mg/Kg-day)	3.989E-07
	bis(2-Ethylhexyl)phthalate	19	µg/L	19	µg/L	M	0.000284	mg/Kg-day	0.014	1/(mg/Kg-day)	3.972E-06
	Lindane	0.00432	µg/L	0.00432	µg/L	M	6.450E-08	mg/Kg-day	1.3	1/(mg/Kg-day)	8.386E-08
	(Total)										0.000176
Dermal	Benzene	200	µg/L	200	µg/L	M	0.000105	mg/Kg-day	0.056701031	1/(mg/Kg-day)	5.963E-06
	Benzo(b)fluoranthene	0.00866	µg/L	0.00866	µg/L	M	2.602E-07	mg/Kg-day	23.5483871	1/(mg/Kg-day)	6.128E-06
	Hexachlorobenzene	0.133	µg/L	0.133	µg/L	M	6.994E-07	mg/Kg-day	3.2	1/(mg/Kg-day)	2.238E-06
	Pentachlorophenol	2.00	µg/L	2.00	µg/L	M	3.255E-05	mg/Kg-day	0.12	1/(mg/Kg-day)	3.906E-06
	alpha-BHC	0.00424	µg/L	0.00424	µg/L	M	1.490E-09	mg/Kg-day	6.494845361	1/(mg/Kg-day)	9.677E-09
	bis(2-Ethylhexyl)phthalate	19	µg/L	19	µg/L	M	1.570E-05	mg/Kg-day	0.073684211	1/(mg/Kg-day)	1.157E-06
	Lindane	0.00432	µg/L	0.00432	µg/L	M	1.009E-09	mg/Kg-day	1.340206186	1/(mg/Kg-day)	1.352E-09
	(Total)										1.940E-05
										Total Cancer Risk Across All Exposure Routes/Pathways	0.000196

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

TABLE H-T24A-8.3.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Area T24A
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Benzene (Total)	200	µg/L	200	µg/m3	R	0.00192	mg/Kg-day	0.0273	1/(mg/Kg-day)	5.236E-05
											5.236E-05
										Total Cancer Risk Across All Exposure Routes/Pathways	5.236E-05

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

TABLE H-T24A-8.4.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Area T24A
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Benzene	200	µg/L	200	µg/L	M	0.00299	mg/Kg-day	0.055	1/(mg/Kg-day)	0.000164
	Benzo(b)fluoranthene	0.00866	µg/L	0.00866	µg/L	M	1.293E-07	mg/Kg-day	7.3	1/(mg/Kg-day)	9.439E-07
	Hexachlorobenzene	0.133	µg/L	0.133	µg/L	M	1.986E-06	mg/Kg-day	1.6	1/(mg/Kg-day)	3.177E-06
	Pentachlorophenol	2.00	µg/L	2.00	µg/L	M	2.986E-05	mg/Kg-day	0.12	1/(mg/Kg-day)	3.584E-06
	alpha-BHC	0.00424	µg/L	0.00424	µg/L	M	6.331E-08	mg/Kg-day	6.3	1/(mg/Kg-day)	3.989E-07
	bis(2-Ethylhexyl)phthalate	19	µg/L	19	µg/L	M	0.000284	mg/Kg-day	0.014	1/(mg/Kg-day)	3.972E-06
	Lindane	0.00432	µg/L	0.00432	µg/L	M	6.450E-08	mg/Kg-day	1.3	1/(mg/Kg-day)	8.386E-08
	(Total)										0.000176
Dermal	Benzene	200	µg/L	200	µg/L	M	0.000105	mg/Kg-day	0.056701031	1/(mg/Kg-day)	5.963E-06
	Benzo(b)fluoranthene	0.00866	µg/L	0.00866	µg/L	M	2.602E-07	mg/Kg-day	23.5483871	1/(mg/Kg-day)	6.128E-06
	Hexachlorobenzene	0.133	µg/L	0.133	µg/L	M	6.994E-07	mg/Kg-day	3.2	1/(mg/Kg-day)	2.238E-06
	Pentachlorophenol	2.00	µg/L	2.00	µg/L	M	3.255E-05	mg/Kg-day	0.12	1/(mg/Kg-day)	3.906E-06
	alpha-BHC	0.00424	µg/L	0.00424	µg/L	M	1.490E-09	mg/Kg-day	6.494845361	1/(mg/Kg-day)	9.677E-09
	bis(2-Ethylhexyl)phthalate	19	µg/L	19	µg/L	M	1.570E-05	mg/Kg-day	0.073684211	1/(mg/Kg-day)	1.157E-06
	Lindane	0.00432	µg/L	0.00432	µg/L	M	1.009E-09	mg/Kg-day	1.340206186	1/(mg/Kg-day)	1.352E-09
	(Total)										1.940E-05
										Total Cancer Risk Across All Exposure Routes/Pathways	0.000196

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

TABLE H-T24A-10.1.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Soil	Area T24A	Aluminum	--	--	--	--	Aluminum	CNS	0.0267	--	0.000140	0.0269
			Antimony	--	--	--	--	Antimony	blood/circulatory system	0.0712	--	0.00187	0.0731
			(Total)	--	--	--	--	(Total)	--	0.0979	--	0.00201	0.0999
	Air	Area T24A	Aluminum	--	--	--	--	Aluminum	--	--	0.382	--	0.382
			Antimony	--	--	--	--	Antimony	--	--	--	--	--
			(Total)	--	--	--	--	(Total)	--	--	0.382	--	0.382
Groundwater	Groundwater	Area T24A	Aluminum	--	--	--	--	Aluminum	CNS	0.0410	--	0.00168	0.0427
			Beryllium	--	--	--	--	Beryllium	GI system	0.00797	--	0.00327	0.0112
			Manganese	--	--	--	--	Manganese	CNS	0.689	--	0.0706	0.760
			Selenium	--	--	--	--	Selenium	whole body	0.00978	--	9.118E-05	0.00988
			Benzene	3.844E-05	--	3.412E-06	4.185E-05	Benzene	--	0.652	--	0.0579	0.710
			Benzo(b)fluoranthene	2.209E-07	--	3.506E-06	3.727E-06	Benzo(b)fluoranthene	--	2.825E-05	--	0.000448	0.000477
			Hexachlorobenzene	7.436E-07	--	1.281E-06	2.024E-06	Hexachlorobenzene	liver	0.00163	--	0.00280	0.00443
			Nitrate,Nitrite	--	--	--	--	Nitrate,Nitrite	blood	0.00352	--	2.888E-05	0.00355
			Pentachlorophenol	8.387E-07	--	2.235E-06	3.074E-06	Pentachlorophenol	liver	0.000652	--	0.00174	0.00239
			Phenol	--	--	--	--	Phenol	reproductive system	0.000930	--	2.329E-05	0.000953
			alpha-BHC	9.335E-08	--	5.537E-09	9.888E-08	alpha-BHC	--	--	--	--	--
			bis(2-Ethylhexyl)phthalate	9.295E-07	--	6.619E-07	1.591E-06	bis(2-Ethylhexyl)phthalate	liver	0.00930	--	0.00662	0.0159
			Lindane	1.963E-08	--	7.735E-10	2.040E-08	Lindane	liver, kidney	0.000141	--	5.553E-06	0.000146
			(Total)	4.129E-05	--	1.110E-05	5.239E-05	(Total)	--	1.42	--	0.145	1.56

Total Risk Across Subsurface Soil	--
Total Risk Across Groundwater	5.239E-05
Total Risk Across All Media and All Exposure Routes	5.239E-05

Total Hazard Index Across Subsurface Soil	0.482
Total Hazard Index Across Groundwater	1.56
Total Hazard Index Across All Media and All Exposure Routes	2.04

Total CNS HI =	0.829
Total blood/circulatory system HI =	0.0731
Total GI system HI =	0.0112
Total whole body HI =	0.00988
Total liver HI =	0.0229
Total blood HI =	0.00355
Total reproductive system HI =	0.000953
Total kidney HI =	0.000146

TABLE H-T24A-10.2.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Area T24A	Aluminum	--	--	--	--	Aluminum	CNS	0.115	--	0.00208	0.117
			Beryllium	--	--	--	--	Beryllium	GI system	0.0223	--	0.00405	0.0264
			Manganese	--	--	--	--	Manganese	CNS	1.93	--	0.0875	2.02
			Selenium	--	--	--	--	Selenium	whole body	0.0274	--	0.000113	0.0275
			Benzene	0.000164	--	5.963E-06	0.000170	Benzene	--	1.83	--	0.0718	1.90
			Benzo(b)fluoranthene	9.439E-07	--	6.128E-06	7.072E-06	Benzo(b)fluoranthene	--	7.909E-05	--	0.000556	0.000635
			Hexachlorobenzene	3.177E-06	--	2.238E-06	5.415E-06	Hexachlorobenzene	liver	0.00455	--	0.00347	0.00803
			Nitrate,Nitrite	--	--	--	--	Nitrate,Nitrite	blood	0.00986	--	3.580E-05	0.00990
			Pentachlorophenol	3.584E-06	--	3.906E-06	7.490E-06	Pentachlorophenol	liver	0.00183	--	0.00215	0.00398
			Phenol	--	--	--	--	Phenol	reproductive system	0.00260	--	2.887E-05	0.00263
			alpha-BHC	3.989E-07	--	9.677E-09	4.085E-07	alpha-BHC	--	--	--	--	--
			bis(2-Ethylhexyl)phthalate	3.972E-06	--	1.157E-06	5.129E-06	bis(2-Ethylhexyl)phthalate	liver	0.0260	--	0.00820	0.0342
			Lindane	8.386E-08	--	1.352E-09	8.521E-08	Lindane	liver, kidney	0.000395	--	6.884E-06	0.000401
			(Total)	0.000176	--	1.940E-05	0.000196	(Total)	--	3.97	--	0.180	4.15
	Air	Area T24A	Benzene	--	5.236E-05	--	5.236E-05	Benzene	--	--	3.22	--	3.22
			(Total)	--	5.236E-05	--	5.236E-05	(Total)	--	--	3.22	--	3.22
						Total Risk Across Groundwater	0.000248					Total Hazard Index Across Groundwater	7.37
						Total Risk Across All Media and All Exposure Routes	0.000248					Total Hazard Index Across All Media and All Exposure Routes	7.37

Total CNS HI =	2.13
Total GI system HI =	0.0264
Total whole body HI =	0.0275
Total liver HI =	0.0466
Total blood HI =	0.00990
Total reproductive system HI =	0.00263
Total kidney HI =	0.000401

TABLE H-T24A-10.3.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Soil	Area T24A	Aluminum	--	--	--	--
			Antimony	--	--	--	--
			(Total)	--	--	--	--
Groundwater	Groundwater	Area T24A	Aluminum	--	--	--	--
			Beryllium	--	--	--	--
			Manganese	--	--	--	--
			Selenium	--	--	--	--
			Benzene	0.000164	--	5.963E-06	0.000170
			Benzo(b)fluoranthene	9.439E-07	--	6.128E-06	7.072E-06
			Hexachlorobenzene	3.177E-06	--	2.238E-06	5.415E-06
			Nitrate,Nitrite	--	--	--	--
			Pentachlorophenol	3.584E-06	--	3.906E-06	7.490E-06
			Phenol	--	--	--	--
			alpha-BHC	3.989E-07	--	9.677E-09	4.085E-07
			bis(2-Ethylhexyl)phthalate	3.972E-06	--	1.157E-06	5.129E-06
			Lindane	8.386E-08	--	1.352E-09	8.521E-08
			(Total)	0.000176	--	1.940E-05	0.000196

Total Risk Across Subsurface Soil	--
Total Risk Across Groundwater	0.000196
Total Risk Across All Media and All Exposure Routes	0.000196

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Aluminum	CNS	0.349	--	0.00220	0.351
Antimony	blood/circulatory system	0.930	--	0.0293	0.959
(Total)	--	1.28	--	0.0315	1.31
Aluminum	CNS	0.268	--	0.00391	0.272
Beryllium	GI system	0.0521	--	0.00761	0.0597
Manganese	CNS	4.50	--	0.164	4.67
Selenium	whole body	0.0639	--	0.000212	0.0641
Benzene	--	4.26	--	0.135	4.40
Benzo(b)fluoranthene	--	0.000185	--	0.00104	0.00123
Hexachlorobenzene	liver	0.0106	--	0.00652	0.0171
Nitrate,Nitrite	blood	0.0230	--	6.720E-05	0.0231
Pentachlorophenol	liver	0.00426	--	0.00404	0.00831
Phenol	reproductive system	0.00607	--	5.419E-05	0.00613
alpha-BHC	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	liver	0.0607	--	0.0154	0.0761
Lindane	liver, kidney	0.000921	--	1.292E-05	0.000933
(Total)	--	9.25	--	0.338	9.59

Total Hazard Index Across Subsurface Soil	1.31
Total Hazard Index Across Groundwater	9.59
Total Hazard Index Across All Media and All Exposure Routes	11

Total CNS HI =	5.29
Total blood/circulatory system HI =	0.959
Total GI system HI =	0.0597
Total whole body HI =	0.0641
Total liver HI =	0.103
Total blood HI =	0.0231
Total reproductive system HI =	0.00613
Total kidney HI =	0.000933

TABLE H-T24A-10.4.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Soil	Area T24A	Aluminum	- -	- -	- -	- -	Aluminum	CNS	0.0534	- -	0.00140	0.0548
			Antimony	- -	- -	- -	- -	Antimony	blood/circulatory system	0.142	- -	0.0187	0.161
			(Total)	- -	- -	- -	- -	(Total)	- -	0.196	- -	0.0201	0.216
	Air	Area T24A	Aluminum	- -	- -	- -	- -	Aluminum	- -	- -	0.763	- -	0.763
			Antimony	- -	- -	- -	- -	Antimony	- -	- -	- -	- -	- -
			(Total)	- -	- -	- -	- -	(Total)	- -	- -	0.763	- -	0.763
							Total Risk Across Subsurface Soil						0.979
							Total Risk Across All Media and All Exposure Routes						0.979

Total CNS HI =	0.0548
Total blood/circulatory system HI =	0.161

TABLE H-T38-1.
SELECTION OF EXPOSURE PATHWAYS
FORT McCLELLAN RI, ANNISTON, ALABAMA

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	Soil	Soil	Site 4 Area T-38 Technical Escort Reaction Area	Industrial Worker	Adult	Ingestion	On-Site	Quant	Potential for exposure based on current land use.
						Dermal	On-Site	Quant	Potential for exposure based on current land use.
		Air		Industrial Worker	Adult	Inhalation	On-Site	Quant	Potential for exposure based on current land use.
Current/Future	Soil	Soil		Recreational	Adolescent[a]	Ingestion	On-Site	Quant	Adolescents live nearby and have access to site.
						Dermal	On-Site	Quant	Adolescents live nearby and have access to site.
		Tissue		Hunter	Adolescent[a]	Ingestion	On-Site	Quant	Potential for bioaccumulation of contaminants in game.
Future	Soil	Soil		Industrial Worker	Adult	Ingestion	On-Site	Quant	Potential for exposure based on future land use.
						Dermal	On-Site	Quant	Potential for exposure based on future land use.
				Resident	Child	Ingestion	On-Site	Quant	Residents could live onsite in the future.
						Dermal	On-Site	Quant	Residents could live onsite in the future.
				Construction Worker	Adult	Ingestion	On-Site	Quant	Potential for exposure based on future land use.
						Dermal	On-Site	Quant	Potential for exposure based on future land use.
		Air		Industrial Worker	Adult	Inhalation	On-Site	Quant	Potential for exposure based on future land use.
				Construction Worker	Adult	Inhalation	On-Site	Quant	Potential for exposure based on future land use.
	Groundwater	Groundwater		Industrial Worker[b]	Adult	Ingestion	On-Site	Quant	Assumes workers will ingest onsite groundwater.
						Dermal	On-Site	Quant	Workers assumed to shower onsite.
				Resident	Adult	Ingestion	On-Site	Quant	Residents could live onsite in the future.
						Dermal	On-Site	Quant	Residents could live onsite in the future.
					Child	Ingestion	On-Site	Quant	Residents could live onsite in the future.
						Dermal	On-Site	Quant	Residents could live onsite in the future.
		Air		Resident	Adult	Inhalation	On-Site	Quant	Future potential for inhalation of contaminants while showering.

[a] Age adjusted values will be used for the adolescent receptor.
[b] Industrial worker is used to define a groundskeeper scenario.

TABLE H-T38-3.1.
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Surface Soil
Exposure Medium: Soil
Exposure Point: Area T38

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Aluminum	mg/kg	29,300	- -	38,700		mg/kg	38,700	Max	Shapiro (2)	38,700	Max	Shapiro (2)
Chromium	mg/kg	69	- -	150	D	mg/kg	150	Max	Shapiro (2)	150	Max	Shapiro (2)
Iron	mg/kg	79,467	- -	180,000	D	mg/kg	180,000	Max	Shapiro (2)	180,000	Max	Shapiro (2)
Lead	mg/kg	39	- -	84		mg/kg	84	Max	Shapiro (2)	84	Max	Shapiro (2)
Vanadium	mg/kg	92	- -	186	D	mg/kg	186	Max	Shapiro (2)	186	Max	Shapiro (2)

Qualifiers: Refer to Table H-1 for supporting information on flags and qualifiers.

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

Shapiro (1) - Shapiro goodness-of-fit test determines data are lognormally distributed

Shapiro (2) - The maximum detected value was < 95% UCL; it was therefore used as the EPC rather than the 95% UCL

Shapiro (3) - Shapiro goodness-of-fit test determines data are normally distributed

TABLE H-T38-3.2.
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Subsurface Soil
Exposure Medium: Soil
Exposure Point: Area T38

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Aluminum	mg/kg	44,750	--	74,000		mg/kg	74,000	Max	Shapiro (2)	74,000	Max	Shapiro (2)
Chromium	mg/kg	40	--	54		mg/kg	54	Max	Shapiro (2)	54	Max	Shapiro (2)
Iron	mg/kg	64,600	--	75,000		mg/kg	75,000	Max	Shapiro (2)	75,000	Max	Shapiro (2)
Vanadium	mg/kg	73	--	85		mg/kg	85	Max	Shapiro (2)	85	Max	Shapiro (2)

Qualifiers: Refer to Table H-1 for supporting information on flags and qualifiers.

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

Shapiro (1) - Shapiro goodness-of-fit test determines data are lognormally distributed

Shapiro (2) - The maximum detected value was < 95% UCL; it was therefore used as the EPC rather than the 95% UCL

Shapiro (3) - Shapiro goodness-of-fit test determines data are normally distributed

TABLE H-T38-3.3.
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Area T38

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Aluminum	µg/L	1,309	2,939	2,620		µg/L	2,620	Max	Shapiro (2)	2,620	Max	Shapiro (2)
Barium	µg/L	98	186	262		µg/L	186	95% UCL-N	Shapiro (3)	186	95% UCL-N	Shapiro (3)
Beryllium	µg/L	0.962	2.48	2.84		µg/L	2.48	95% UCL-T	Shapiro (1)	2.48	95% UCL-T	Shapiro (1)
Iron	µg/L	6,262	17,294	12,800		µg/L	12,800	Max	Shapiro (2)	12,800	Max	Shapiro (2)
Lead	µg/L	6.21	33	15		µg/L	15	Max	Shapiro (2)	15	Max	Shapiro (2)
Manganese	µg/L	942	27,826	3,160		µg/L	3,160	Max	Shapiro (2)	3,160	Max	Shapiro (2)
Mercury	µg/L	0.0716	0.266	0.266		µg/L	0.266	Max		0.266	Max	
Nickel	µg/L	21	46	46		µg/L	46	Max		46	Max	
Zinc	µg/L	92	934	321		µg/L	321	Max	Shapiro (2)	321	Max	Shapiro (2)
1,1,2,2-Tetrachloroethane	µg/L	481	9.33E+12	2,000		µg/L	2,000	Max	Shapiro (2)	2,000	Max	Shapiro (2)
1,1,2-Trichloroethane	µg/L	0.660	2.10	2.10		µg/L	2.10	Max		2.10	Max	
1,2-Dichloroethene (total)	µg/L	25	93	93		µg/L	93	Max		93	Max	
1,3,5-Trinitrobenzene	µg/L	0.131	0.183	0.291	C	µg/L	0.183	95% UCL-T	Shapiro (1)	0.183	95% UCL-T	Shapiro (1)
Acetone	µg/L	16	32	77		µg/L	32	95% UCL-N	Shapiro (3)	32	95% UCL-N	Shapiro (3)
Benzo(b)fluoranthene	µg/L	0.367	0.247	0.247	B	µg/L	0.247	Max		0.247	Max	
Carbon tetrachloride	µg/L	12	2.985E+06	53		µg/L	53	Max	Shapiro (2)	53	Max	Shapiro (2)
Chloroform	µg/L	3.62	9.20	9.20		µg/L	9.20	Max		9.20	Max	
Chrysene	µg/L	0.259	0.0509	0.0509		µg/L	0.0509	Max		0.0509	Max	
Indeno(1,2,3-cd)pyrene	µg/L	0.714	0.0810	0.0810	D	µg/L	0.0810	Max		0.0810	Max	
Nitroglycerine	µg/L	1.46	2.46	3.49	Q	µg/L	2.46	95% UCL-T	Shapiro (1)	2.46	95% UCL-T	Shapiro (1)
Tetrachloroethene	µg/L	1.75	13	13		µg/L	13	Max		13	Max	
Trichloroethene	µg/L	112	238	300		µg/L	238	95% UCL-N	Shapiro (3)	238	95% UCL-N	Shapiro (3)
bis(2-Ethylhexyl)phthalate	µg/L	10	17	34		µg/L	17	95% UCL-N	Shapiro (3)	17	95% UCL-N	Shapiro (3)

Qualifiers: Refer to Table H-1 for supporting information on flags and qualifiers.

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

Shapiro (1) - Shapiro goodness-of-fit test determines data are lognormally distributed

Shapiro (2) - The maximum detected value was < 95% UCL; it was therefore used as the EPC rather than the 95% UCL

Shapiro (3) - Shapiro goodness-of-fit test determines data are normally distributed

TABLE H-T38-5.1.
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (2)	Adjusted Dermal RfD (3)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (4) (MM/DD/YY)
Aluminum	Chronic	1	mg/kg-day	0.1	0.1	mg/Kg-day	CNS	100	NCEA	08/26/96
	Subchronic	1	mg/kg-day	0.1	0.1	mg/Kg-day	CNS	--	--	--
Chromium	Chronic	0.003	mg/kg-day	0.02	0.00006	mg/Kg-day	none	900	IRIS	02/28/00
	Subchronic	0.02	mg/kg-day	0.02	0.0004	mg/Kg-day	none	100	HEAST	07/31/97
Iron	Chronic	--	mg/kg-day	0.15	0.045	mg/Kg-day	--	--	--	--
	Subchronic	--	mg/kg-day	0.15	0.045	mg/Kg-day	--	--	--	--
Vanadium	Chronic	0.009	mg/kg-day	0.01	0.00009	mg/Kg-day	none	100	IRIS	02/28/00
	Subchronic	0.007	mg/kg-day	0.01	0.00007	mg/Kg-day	none	100	HEAST	07/31/97
Barium	Chronic	0.07	mg/kg-day	0.07	0.0049	mg/Kg-day	kidney	3	IRIS	02/28/00
	Subchronic	0.07	mg/kg-day	0.07	0.0049	mg/Kg-day	kidney	3	HEAST	07/31/97
Beryllium	Chronic	0.002	mg/kg-day	0.01	0.00002	mg/Kg-day	GI system	300	IRIS	02/28/00
	Subchronic	0.005	mg/kg-day	0.01	0.00005	mg/Kg-day	GI system	100	HEAST	07/31/97
Manganese	Chronic	0.024	mg/kg-day	0.04	0.00096	mg/Kg-day	CNS	1	IRIS	02/28/00
	Subchronic	0.024	mg/kg-day	0.04	0.00096	mg/Kg-day	CNS	--	--	--
	Chronic	0.14	mg/kg-day	0.04	0.0056	mg/Kg-day	CNS	1	IRIS	02/28/00
	Subchronic	0.14	mg/kg-day	0.04	0.0056	mg/Kg-day	CNS	1	HEAST	07/31/97
Nickel	Chronic	0.02	mg/kg-day	0.27	0.0054	mg/Kg-day	whole body	300	IRIS	02/28/00
	Subchronic	0.02	mg/kg-day	0.27	0.0054	mg/Kg-day	whole body	300	HEAST	07/31/97
Zinc	Chronic	0.3	mg/kg-day	0.2	0.06	mg/Kg-day	blood	3	IRIS	02/28/00
	Subchronic	0.3	mg/kg-day	0.2	0.06	mg/Kg-day	blood	3	HEAST	07/31/97
1,1,2,2-Tetrachloroethane	Chronic	0.06	mg/kg-day	0.7	0.042	mg/Kg-day	--	--	NCEA	
	Subchronic	0.06	mg/kg-day	0.7	0.042	mg/Kg-day	--	--	--	--
1,1,2-Trichloroethane	Chronic	0.004	mg/kg-day	0.81	0.00324	mg/Kg-day	blood	1000	IRIS	02/28/00
	Subchronic	0.04	mg/kg-day	0.81	0.0324	mg/Kg-day	blood	100	HEAST	07/31/97
1,2-Dichloroethene (total)	Chronic	0.009	mg/kg-day	1	0.009	mg/Kg-day	liver	1000	HEAST	07/31/97
	Subchronic	0.009	mg/kg-day	1	0.009	mg/Kg-day	liver	1000	HEAST	07/31/97
1,3,5-Trinitrobenzene	Chronic	0.03	mg/kg-day	0.65	0.0195	mg/Kg-day	spleen	100	IRIS	02/28/00
	Subchronic	0.0005	mg/kg-day	0.65	0.000325	mg/Kg-day	spleen	1000	HEAST	07/31/97
Acetone	Chronic	0.1	mg/kg-day	0.83	0.083	mg/Kg-day	liver, kidney	1000	IRIS	02/28/00
	Subchronic	1	mg/kg-day	0.83	0.83	mg/Kg-day	liver, kidney	100	HEAST	07/31/97
Carbon tetrachloride	Chronic	0.0007	mg/kg-day	0.65	0.000455	mg/Kg-day	liver	1000	IRIS	02/28/00
	Subchronic	0.0007	mg/kg-day	0.65	0.000455	mg/Kg-day	liver	--	--	--
Chloroform	Chronic	0.01	mg/kg-day	0.2	0.002	mg/Kg-day	liver	1000	IRIS	02/28/00
	Subchronic	0.01	mg/kg-day	0.2	0.002	mg/Kg-day	liver	1000	HEAST	07/31/97

TABLE H-T38-5.1.
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (2)	Adjusted Dermal RfD (3)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (4) (MM/DD/YY)
Tetrachloroethene	Chronic	0.01	mg/kg-day	1	0.01	mg/Kg-day	liver	1000	IRIS	02/28/00
	Subchronic	0.1	mg/kg-day	1	0.1	mg/Kg-day	liver	100	HEAST	07/31/97
Trichloroethene	Chronic	0.006	mg/kg-day	0.15	0.0009	mg/Kg-day	--	3000	NCEA	03/05/92
	Subchronic	0.006	mg/kg-day	0.15	0.0009	mg/Kg-day	--	--	--	--
bis(2-Ethylhexyl)phthalate	Chronic	0.02	mg/kg-day	0.19	0.0038	mg/Kg-day	liver	1000	IRIS	02/28/00
	Subchronic	0.02	mg/kg-day	0.19	0.0038	mg/Kg-day	liver	--	--	--

N/A = Not Applicable

(1) This table only includes RfDs for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical was a COPC, but does not appear on this table, no toxicity values were available to evaluate noncarcinogenic effects from oral or dermal exposures.

(2) Refer to RAGS, Part A

(3) The adjusted chronic RfD for the dermal route was calculated by multiplying the chronic oral RfD by the gastrointestinal absorption factor.

(4) This column represents the latest date at which IRIS, HEAST, or NCEA values were updated.

TABLE H-T38-5.2.
NON-CANCER TOXICITY DATA -- INHALATION
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Chronic/ Subchronic	Value Inhalation RfC (2)	Units	Adjusted Inhalation RfD (3)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfC:RfD: Target Organ	Dates (4) (MM/DD/YY)
Aluminum	Chronic	--	mg/m3	0.00140	mg/kg-day	--	--	NCEA	
	Subchronic	--	mg/m3	0.00140	mg/kg-day	--	--	--	--
Chromium	Chronic	0.0001	mg/m3	2.857E-05	mg/kg-day	respiratory system	300	IRIS	02/28/00
	Subchronic	0.0001	mg/m3	2.857E-05	mg/kg-day	respiratory system	--	--	--
Barium	Chronic	0.000500	mg/m3	0.000143	mg/kg-day	reproductive system	1000	HEAST	07/31/97
	Subchronic	0.00500	mg/m3	0.00143	mg/kg-day	reproductive system	100	HEAST	07/31/97
Beryllium	Chronic	0.0200	mg/m3	0.00571	mg/kg-day	respiratory system	10	IRIS	02/28/00
	Subchronic	0.0200	mg/m3	0.00571	mg/kg-day	respiratory system	--	--	--
Manganese	Chronic	5.000E-05	mg/m3	1.429E-05	mg/kg-day	CNS	1000	IRIS	02/28/00
	Subchronic	5.000E-05	mg/m3	1.429E-05	mg/kg-day	CNS	--	--	--
	Chronic	5.000E-05	mg/m3	1.429E-05	mg/kg-day	CNS	1000	IRIS	02/28/00
Mercury	Chronic	0.000300	mg/m3	8.571E-05	mg/kg-day	--	30	IRIS	02/28/00
	Subchronic	0.000300	mg/m3	8.571E-05	mg/kg-day	--	30	HEAST	07/31/97
Carbon tetrachloride	Chronic	--	mg/m3	0.000570	mg/kg-day	--	--	NCEA	
	Subchronic	--	mg/m3	0.000570	mg/kg-day	--	--	--	--
Chloroform	Chronic	--	mg/m3	8.600E-05	mg/kg-day	--	--	NCEA	
	Subchronic	--	mg/m3	8.600E-05	mg/kg-day	--	--	--	--
Tetrachloroethene	Chronic	--	mg/m3	0.110	mg/kg-day	--	--	NCEA	
	Subchronic	--	mg/m3	0.110	mg/kg-day	--	--	--	--

N/A = Not Applicable

(1) This table only includes RfCs for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical was a COPC, but does not appear on this table, no toxicity values were available to evaluate noncarcinogenic effects from inhalation exposures.

(2) "- -" indicates that an RfC is currently not available.

(3) Inhalation RfCs have been converted to inhalation RfDs by multiplying by 20m3/day and dividing by 70 kg.

(4) This column represents the latest date at which IRIS, HEAST, or NCEA values were updated.

TABLE H-T38-5.3.
NON-CANCER TOXICITY DATA -- SPECIAL CASE CHEMICALS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Chronic/ Subchronic	Value	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of Primary Target Organ	Date (2) (MM/DD/YY)
Mercury	Chronic	0.0003	mg/Kg-day	kidney	--	surr.	--
	Subchronic	0.0003	mg/Kg-day	kidney	--	surr.	--
	Chronic	0.000003	mg/Kg-day	kidney	--	surr.	--
	Subchronic	0.000003	mg/Kg-day	kidney	--	surr.	--
Benzo(b)fluoranthene	Chronic	0.03	mg/Kg-day	--	--	surr.	--
	Subchronic	0.3	mg/Kg-day	--	--	surr.	--
	Chronic	0.0093	mg/Kg-day	--	--	surr.	--
	Subchronic	0.093	mg/Kg-day	--	--	surr.	--
Chrysene	Chronic	0.03	mg/Kg-day	--	--	surr.	--
	Subchronic	0.3	mg/Kg-day	--	--	surr.	--
	Chronic	0.0093	mg/Kg-day	--	--	surr.	--
	Subchronic	0.093	mg/Kg-day	--	--	surr.	--
Indeno(1,2,3-cd)pyrene	Chronic	0.03	mg/Kg-day	--	--	surr.	--
	Subchronic	0.3	mg/Kg-day	--	--	surr.	--
	Chronic	0.0093	mg/Kg-day	--	--	surr.	--
	Subchronic	0.093	mg/Kg-day	--	--	surr.	--

(1) This table only includes values for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical was a COPC, but does not appear on this table, no toxicity values were available to evaluate noncarcinogenic effects.

(2) This column represents the latest date at which IRIS, HEAST, or NCEA values were updated.

TABLE H-T38-6.1.
CANCER TOXICITY DATA -- ORAL/DERMAL
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Oral Cancer Slope Factor	Oral to Dermal Adjustment Factor	Adjusted Dermal Cancer Slope Factor (2)	Units	Weight of Evidence/ Cancer Guideline Description (3)	Source (4)	Date (5) (MM/DD/YY)
1,1,2,2-Tetrachloroethane	0.2	0.7	0.286	1/(mg/Kg-day)	[C]	IRIS	02/28/00
1,1,2-Trichloroethane	0.057	0.81	0.0704	1/(mg/Kg-day)	[C]	IRIS	02/28/00
Carbon tetrachloride	0.13	0.65	0.200	1/(mg/Kg-day)	[B2]	IRIS	02/28/00
Chloroform	0.0061	0.2	0.0305	1/(mg/Kg-day)	[B2]	IRIS	02/28/00
Nitroglycerine	0.014	0.5	0.0280	1/(mg/Kg-day)	--	NCEA	
Tetrachloroethene	0.052	1	0.0520	1/(mg/Kg-day)	--	NCEA	
Trichloroethene	0.011	0.15	0.0733	1/(mg/Kg-day)	--	NCEA	03/05/92
bis(2-Ethylhexyl)phthalate	0.014	0.19	0.0737	1/(mg/Kg-day)	[B2]	IRIS	02/28/00

(1) This table only includes CSFs for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical was a COPC, but does not appear on this table, no toxicity values were available to evaluate carcinogenic effects from oral or dermal exposures.

(2) The adjusted slope factor for the dermal route was calculated by dividing the oral slope factor by the gastrointestinal absorption factor.

(3) EPA Group:

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 a human carcinogen

E - Evidence of noncarcinogenicity

(4) This column represents the latest date at which IRIS, HEAST, or NCEA values were updated.

TABLE H-T38-6.2.
CANCER TOXICITY DATA -- INHALATION
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Unit Risk	Units	Adjustment	Inhalation Cancer Slope Factor (2)	Units	Weight of Evidence/ Cancer Guideline Description (3)	Source (4)	Date (5) (MM/DD/YY)
Chromium	0.012	µg/m3	3500	41	1/(mg/kg-day)	[A]	HEAST	07/31/97
Beryllium	0.0024	µg/m3	3500	8.40	1/(mg/kg-day)	[B1]	IRIS	02/28/00
1,1,2,2-Tetrachloroethane	0.000058	µg/m3	3500	0.203	1/(mg/kg-day)	[C]	IRIS	02/28/00
1,1,2-Trichloroethane	0.000016	µg/m3	3500	0.0570	1/(mg/kg-day)	[C]	HEAST	07/31/97
Carbon tetrachloride	0.000015	µg/m3	3500	0.0525	1/(mg/kg-day)	[B2]	IRIS	02/28/00
Chloroform	0.000023	µg/m3	3500	0.0805	1/(mg/kg-day)	[B2]	IRIS	02/28/00
Tetrachloroethene	--	µg/m3	--	0.00200	1/(mg/kg-day)	--	NCEA	
Trichloroethene	0.0000017	µg/m3	3500	0.00600	1/(mg/kg-day)	--	NCEA	03/05/92

(2) The slope factor for the inhalation route was calculated by multiplying the unit risk by the adjustment factor.

(3) EPA Group:

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 a human carcinogen

E - Evidence of noncarcinogenicity

TABLE H-T38-6.3.
CANCER TOXICITY DATA -- SPECIAL CASE CHEMICALS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Value	Units	Source	Date (2) MM/DD/YY
Lead	--	1/(mg/kg-day)	--	--
	--	1/(mg/kg-day)	--	--
	--	1/(mg/kg-day)	--	--
Benzo(b)fluoranthene	7.30	1/(mg/kg-day)	tef	--
	24	1/(mg/kg-day)	tef	--
Chrysene	7.30	1/(mg/kg-day)	tef	--
	24	1/(mg/kg-day)	tef	--
Indeno(1,2,3-cd)pyrene	7.30	1/(mg/kg-day)	tef	--
	24	1/(mg/kg-day)	tef	--

(1) This table only includes CSFs for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical

TABLE H-T38-7.1.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current
Medium: Surface Soil
Exposure Medium: Soil
Exposure Point: Area T38
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	38,700	mg/kg	38,700	mg/kg	M	0.00727	mg/Kg-day	1.000	mg/Kg-day	--	mg/m3	0.00727
	Chromium	150	mg/kg	150	mg/kg	M	2.818E-05	mg/Kg-day	0.00300	mg/Kg-day	0.0001	mg/m3	0.00939
	Vanadium	186	mg/kg	186	mg/kg	M	3.494E-05	mg/Kg-day	0.00900	mg/Kg-day	--	mg/m3	0.00388
	(Total)												0.0205
Dermal	Aluminum	38,700	mg/kg	38,700	mg/kg	M	8.785E-05	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.000879
	Chromium	150	mg/kg	150	mg/kg	M	3.405E-07	mg/Kg-day	6.000E-05	mg/Kg-day	0.0001	mg/m3	0.00568
	Iron	180,000	mg/kg	180,000	mg/kg	M	0.000409	mg/Kg-day	0.0450	mg/Kg-day	--	mg/m3	0.00908
	Vanadium	186	mg/kg	186	mg/kg	M	4.222E-07	mg/Kg-day	9.000E-05	mg/Kg-day	--	mg/m3	0.00469
	(Total)												0.0203
												Total Hazard Index Across All Exposure Routes/Pathways	0.0409

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T38-7.2.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current
Medium: Surface Soil
Exposure Medium: Air
Exposure Point: Area T38
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Aluminum	38,700	mg/kg	0.00387	µg/m3	R	3.635E-05	mg/Kg-day	0.00140	mg/Kg-day	- -	mg/m3	0.0260
	Chromium	150	mg/kg	1.500E-05	µg/m3	R	1.409E-07	mg/Kg-day	2.857E-05	mg/Kg-day	0.0001	mg/m3	0.00493
	(Total)												0.0309
												Total Hazard Index Across All Exposure Routes/Pathways	0.0309

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T38-7.3.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Soil
Exposure Point: Area T38
Receptor Population: Recreational User
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	38,700	mg/kg	38,700	mg/kg	M	0.00613	mg/Kg-day	1.000	mg/Kg-day	--	mg/m3	0.00613
	Chromium	150	mg/kg	150	mg/kg	M	2.374E-05	mg/Kg-day	0.00300	mg/Kg-day	0.0001	mg/m3	0.00791
	Vanadium	186	mg/kg	186	mg/kg	M	2.944E-05	mg/Kg-day	0.00900	mg/Kg-day	--	mg/m3	0.00327
	(Total)												0.0173
Dermal	Aluminum	38,700	mg/kg	38,700	mg/kg	M	1.286E-05	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.000129
	Chromium	150	mg/kg	150	mg/kg	M	4.986E-08	mg/Kg-day	6.000E-05	mg/Kg-day	0.0001	mg/m3	0.000831
	Iron	180,000	mg/kg	180,000	mg/kg	M	5.984E-05	mg/Kg-day	0.0450	mg/Kg-day	--	mg/m3	0.00133
	Vanadium	186	mg/kg	186	mg/kg	M	6.183E-08	mg/Kg-day	9.000E-05	mg/Kg-day	--	mg/m3	0.000687
	(Total)												0.00298
												Total Hazard Index Across All Exposure Routes/Pathways	0.0203

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T38-7.4.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Venison
Exposure Point: Area T38
Receptor Population: Hunter
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Chromium (Total)	150	mg/kg	150	mg/kg	M	5.631E-08	mg/Kg-day	0.00300	mg/Kg-day	0.0001	mg/m3	1.877E-05
													1.877E-05
												Total Hazard Index Across All Exposure Routes/Pathways	1.877E-05

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE H-T38-7.5.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Soil
Exposure Point: Area T38
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	38,700	mg/kg	38,700	mg/kg	M	0.0379	mg/Kg-day	1.000	mg/Kg-day	--	mg/m3	0.0379
	Chromium	150	mg/kg	150	mg/kg	M	0.000147	mg/Kg-day	0.00300	mg/Kg-day	0.0001	mg/m3	0.0489
	Vanadium	186	mg/kg	186	mg/kg	M	0.000182	mg/Kg-day	0.00900	mg/Kg-day	--	mg/m3	0.0202
	(Total)												0.107
Dermal	Aluminum	38,700	mg/kg	38,700	mg/kg	M	1.988E-05	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.000199
	Chromium	150	mg/kg	150	mg/kg	M	7.705E-08	mg/Kg-day	6.000E-05	mg/Kg-day	0.0001	mg/m3	0.00128
	Iron	180,000	mg/kg	180,000	mg/kg	M	9.247E-05	mg/Kg-day	0.0450	mg/Kg-day	--	mg/m3	0.00205
	Vanadium	186	mg/kg	186	mg/kg	M	9.555E-08	mg/Kg-day	9.000E-05	mg/Kg-day	--	mg/m3	0.00106
	(Total)												0.00460
												Total Hazard Index Across All Exposure Routes/Pathways	0.112

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T38-7.6.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Air
Exposure Point: Area T38
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Aluminum	38,700	mg/kg	0.00387	µg/m3	R	0.000757	mg/Kg-day	0.00140	mg/Kg-day	- -	mg/m3	0.541
	Chromium (Total)	150	mg/kg	1.500E-05	µg/m3	R	2.935E-06	mg/Kg-day	2.857E-05	mg/Kg-day	0.0001	mg/m3	0.103
													0.644
												Total Hazard Index Across All Exposure Routes/Pathways	0.644

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T38-7.7.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Soil
Exposure Point: Area T38
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	38,700	mg/kg	38,700	mg/kg	M	0.495	mg/Kg-day	1.000	mg/Kg-day	- -	mg/m3	0.495
	Chromium	150	mg/kg	150	mg/kg	M	0.00192	mg/Kg-day	0.00300	mg/Kg-day	0.0001	mg/m3	0.639
	Vanadium	186	mg/kg	186	mg/kg	M	0.00238	mg/Kg-day	0.00900	mg/Kg-day	- -	mg/m3	0.264
	(Total)												1.40
Dermal	Aluminum	38,700	mg/kg	38,700	mg/kg	M	0.000312	mg/Kg-day	0.1000	mg/Kg-day	- -	mg/m3	0.00312
	Chromium	150	mg/kg	150	mg/kg	M	1.208E-06	mg/Kg-day	6.000E-05	mg/Kg-day	0.0001	mg/m3	0.0201
	Iron	180,000	mg/kg	180,000	mg/kg	M	0.00145	mg/Kg-day	0.0450	mg/Kg-day	- -	mg/m3	0.0322
	Vanadium	186	mg/kg	186	mg/kg	M	1.498E-06	mg/Kg-day	9.000E-05	mg/Kg-day	- -	mg/m3	0.0166
	(Total)												0.0721
												Total Hazard Index Across All Exposure Routes/Pathways	1.47

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T38-7.8.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Soil
Exposure Point: Area T38
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	38,700	mg/kg	38,700	mg/kg	M	0.0757	mg/Kg-day	1.000	mg/Kg-day	- -	mg/m3	0.0757
	Chromium	150	mg/kg	150	mg/kg	M	0.000294	mg/Kg-day	0.00300	mg/Kg-day	0.0001	mg/m3	0.0978
	Vanadium	186	mg/kg	186	mg/kg	M	0.000364	mg/Kg-day	0.00900	mg/Kg-day	- -	mg/m3	0.0404
	(Total)												0.214
Dermal	Aluminum	38,700	mg/kg	38,700	mg/kg	M	0.000199	mg/Kg-day	0.1000	mg/Kg-day	- -	mg/m3	0.00199
	Chromium	150	mg/kg	150	mg/kg	M	7.705E-07	mg/Kg-day	6.000E-05	mg/Kg-day	0.0001	mg/m3	0.0128
	Iron	180,000	mg/kg	180,000	mg/kg	M	0.000925	mg/Kg-day	0.0450	mg/Kg-day	- -	mg/m3	0.0205
	Vanadium	186	mg/kg	186	mg/kg	M	9.555E-07	mg/Kg-day	9.000E-05	mg/Kg-day	- -	mg/m3	0.0106
	(Total)												0.0460
												Total Hazard Index Across All Exposure Routes/Pathways	0.260

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T38-7.9.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Air
Exposure Point: Area T38
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Aluminum	38,700	mg/kg	0.00774	µg/m3	R	0.00151	mg/Kg-day	0.00140	mg/Kg-day	- -	mg/m3	1.08
	Chromium (Total)	150	mg/kg	3.000E-05	µg/m3	R	5.871E-06	mg/Kg-day	2.857E-05	mg/Kg-day	0.0001	mg/m3	0.205
													1.29
												Total Hazard Index Across All Exposure Routes/Pathways	1.29

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T38-7.10.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Soil
Exposure Point: Area T38
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	74,000	mg/kg	74,000	mg/kg	M	0.0724	mg/Kg-day	1.000	mg/Kg-day	- -	mg/m3	0.0724
	Chromium	54	mg/kg	54	mg/kg	M	5.245E-05	mg/Kg-day	0.00300	mg/Kg-day	0.0001	mg/m3	0.0175
	Vanadium	85	mg/kg	85	mg/kg	M	8.337E-05	mg/Kg-day	0.00900	mg/Kg-day	- -	mg/m3	0.00926
	(Total)												0.0992
Dermal	Aluminum	74,000	mg/kg	74,000	mg/kg	M	3.801E-05	mg/Kg-day	0.1000	mg/Kg-day	- -	mg/m3	0.000380
	Chromium	54	mg/kg	54	mg/kg	M	2.753E-08	mg/Kg-day	6.000E-05	mg/Kg-day	0.0001	mg/m3	0.000459
	Iron	75,000	mg/kg	75,000	mg/kg	M	3.853E-05	mg/Kg-day	0.0450	mg/Kg-day	- -	mg/m3	0.000856
	Vanadium	85	mg/kg	85	mg/kg	M	4.377E-08	mg/Kg-day	9.000E-05	mg/Kg-day	- -	mg/m3	0.000486
	(Total)												0.00218
												Total Hazard Index Across All Exposure Routes/Pathways	0.101

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T38-7.11.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Air
Exposure Point: Area T38
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Aluminum	74,000	mg/kg	0.00740	µg/m3	R	0.00145	mg/Kg-day	0.00140	mg/Kg-day	- -	mg/m3	1.03
	Chromium	54	mg/kg	5.360E-06	µg/m3	R	1.049E-06	mg/Kg-day	2.857E-05	mg/Kg-day	0.0001	mg/m3	0.0367
	(Total)												1.07
												Total Hazard Index Across All Exposure Routes/Pathways	1.07

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T38-7.12.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Soil
Exposure Point: Area T38
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	74,000	mg/kg	74,000	mg/kg	M	0.946	mg/Kg-day	1.000	mg/Kg-day	--	mg/m3	0.946
	Chromium	54	mg/kg	54	mg/kg	M	0.000685	mg/Kg-day	0.00300	mg/Kg-day	0.0001	mg/m3	0.228
	Vanadium	85	mg/kg	85	mg/kg	M	0.00109	mg/Kg-day	0.00900	mg/Kg-day	--	mg/m3	0.121
	(Total)												1.30
Dermal	Aluminum	74,000	mg/kg	74,000	mg/kg	M	0.000596	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.00596
	Chromium	54	mg/kg	54	mg/kg	M	4.317E-07	mg/Kg-day	6.000E-05	mg/Kg-day	0.0001	mg/m3	0.00720
	Iron	75,000	mg/kg	75,000	mg/kg	M	0.000604	mg/Kg-day	0.0450	mg/Kg-day	--	mg/m3	0.0134
	Vanadium	85	mg/kg	85	mg/kg	M	6.863E-07	mg/Kg-day	9.000E-05	mg/Kg-day	--	mg/m3	0.00763
	(Total)												0.0342
												Total Hazard Index Across All Exposure Routes/Pathways	1.33

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T38-7.13.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Soil
Exposure Point: Area T38
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	74,000	mg/kg	74,000	mg/kg	M	0.145	mg/Kg-day	1.000	mg/Kg-day	--	mg/m3	0.145
	Chromium	54	mg/kg	54	mg/kg	M	0.000105	mg/Kg-day	0.00300	mg/Kg-day	0.0001	mg/m3	0.0350
	Vanadium	85	mg/kg	85	mg/kg	M	0.000167	mg/Kg-day	0.00900	mg/Kg-day	--	mg/m3	0.0185
	(Total)												0.198
Dermal	Aluminum	74,000	mg/kg	74,000	mg/kg	M	0.000380	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.00380
	Chromium	54	mg/kg	54	mg/kg	M	2.753E-07	mg/Kg-day	6.000E-05	mg/Kg-day	0.0001	mg/m3	0.00459
	Iron	75,000	mg/kg	75,000	mg/kg	M	0.000385	mg/Kg-day	0.0450	mg/Kg-day	--	mg/m3	0.00856
	Vanadium	85	mg/kg	85	mg/kg	M	4.377E-07	mg/Kg-day	9.000E-05	mg/Kg-day	--	mg/m3	0.00486
	(Total)												0.0218
												Total Hazard Index Across All Exposure Routes/Pathways	0.220

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T38-7.14.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Air
Exposure Point: Area T38
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Aluminum	74,000	mg/kg	0.0148	µg/m3	R	0.00290	mg/Kg-day	0.00140	mg/Kg-day	- -	mg/m3	2.07
	Chromium	54	mg/kg	1.072E-05	µg/m3	R	2.098E-06	mg/Kg-day	2.857E-05	mg/Kg-day	0.0001	mg/m3	0.0734
	(Total)												2.14
												Total Hazard Index Across All Exposure Routes/Pathways	2.14

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T38-7.15.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Area T38
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	2,620	µg/L	2,620	µg/L	M	0.0256	mg/Kg-day	1.000	mg/Kg-day	--	mg/m3	0.0256
	Barium	186	µg/L	186	µg/L	M	0.00182	mg/Kg-day	0.0700	mg/Kg-day	0.0005	mg/m3	0.0260
	Beryllium	2.48	µg/L	2.48	µg/L	M	2.423E-05	mg/Kg-day	0.00200	mg/Kg-day	0.02	mg/m3	0.0121
	Manganese	3,160	µg/L	3,160	µg/L	M	0.0309	mg/Kg-day	0.0240	mg/Kg-day	0.00005	mg/m3	1.29
	Mercury	0.266	µg/L	0.266	µg/L	M	2.603E-06	mg/Kg-day	0.000300	mg/Kg-day	0.0003	mg/m3	0.00868
	Nickel	46	µg/L	46	µg/L	M	0.000453	mg/Kg-day	0.0200	mg/Kg-day	--	mg/m3	0.0227
	Zinc	321	µg/L	321	µg/L	M	0.00314	mg/Kg-day	0.300	mg/Kg-day	--	mg/m3	0.0105
	1,1,2,2-Tetrachloroethane	2,000	µg/L	2,000	µg/L	M	0.0196	mg/Kg-day	0.0600	mg/Kg-day	--	mg/m3	0.326
	1,1,2-Trichloroethane	2.10	µg/L	2.10	µg/L	M	2.055E-05	mg/Kg-day	0.00400	mg/Kg-day	--	mg/m3	0.00514
	1,2-Dichloroethene (total)	93	µg/L	93	µg/L	M	0.000910	mg/Kg-day	0.00900	mg/Kg-day	--	mg/m3	0.101
	1,3,5-Trinitrobenzene	0.183	µg/L	0.183	µg/L	M	1.793E-06	mg/Kg-day	0.0300	mg/Kg-day	--	mg/m3	5.975E-05
	Acetone	32	µg/L	32	µg/L	M	0.000309	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.00309
	Benzo(b)fluoranthene	0.247	µg/L	0.247	µg/L	M	2.417E-06	mg/Kg-day	0.0300	mg/Kg-day	--	mg/m3	8.056E-05
	Carbon tetrachloride	53	µg/L	53	µg/L	M	0.000519	mg/Kg-day	0.000700	mg/Kg-day	--	mg/m3	0.741
	Chloroform	9.20	µg/L	9.20	µg/L	M	9.002E-05	mg/Kg-day	0.01000	mg/Kg-day	--	mg/m3	0.00900
	Chrysene	0.0509	µg/L	0.0509	µg/L	M	4.980E-07	mg/Kg-day	0.0300	mg/Kg-day	--	mg/m3	1.660E-05
	Indeno(1,2,3-cd)pyrene	0.0810	µg/L	0.0810	µg/L	M	7.926E-07	mg/Kg-day	0.0300	mg/Kg-day	--	mg/m3	2.642E-05
	Tetrachloroethene	13	µg/L	13	µg/L	M	0.000127	mg/Kg-day	0.01000	mg/Kg-day	--	mg/m3	0.0127
	Trichloroethene	238	µg/L	238	µg/L	M	0.00232	mg/Kg-day	0.00600	mg/Kg-day	--	mg/m3	0.387
	bis(2-Ethylhexyl)phthalate	17	µg/L	17	µg/L	M	0.000170	mg/Kg-day	0.0200	mg/Kg-day	--	mg/m3	0.00852
	(Total)												2.99
Dermal	Aluminum	2,620	µg/L	2,620	µg/L	M	0.000105	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.00105
	Barium	186	µg/L	186	µg/L	M	7.472E-06	mg/Kg-day	0.00490	mg/Kg-day	0.0005	mg/m3	0.00152
	Beryllium	2.48	µg/L	2.48	µg/L	M	9.935E-08	mg/Kg-day	2.000E-05	mg/Kg-day	0.02	mg/m3	0.00497
	Iron	12,800	µg/L	12,800	µg/L	M	0.000514	mg/Kg-day	0.0450	mg/Kg-day	--	mg/m3	0.0114
	Manganese	3,160	µg/L	3,160	µg/L	M	0.000127	mg/Kg-day	0.000960	mg/Kg-day	0.00005	mg/m3	0.132
	Mercury	0.266	µg/L	0.266	µg/L	M	1.067E-08	mg/Kg-day	3.000E-06	mg/Kg-day	0.0003	mg/m3	0.00356
	Nickel	46	µg/L	46	µg/L	M	1.857E-07	mg/Kg-day	0.00540	mg/Kg-day	--	mg/m3	3.440E-05
	Zinc	321	µg/L	321	µg/L	M	1.288E-05	mg/Kg-day	0.0600	mg/Kg-day	--	mg/m3	0.000215
	1,1,2,2-Tetrachloroethane	2,000	µg/L	2,000	µg/L	M	0.000722	mg/Kg-day	0.0420	mg/Kg-day	--	mg/m3	0.0172
	1,1,2-Trichloroethane	2.10	µg/L	2.10	µg/L	M	7.077E-07	mg/Kg-day	0.00324	mg/Kg-day	--	mg/m3	0.000218
	1,2-Dichloroethene (total)	93	µg/L	93	µg/L	M	3.731E-05	mg/Kg-day	0.00900	mg/Kg-day	--	mg/m3	0.00415
	1,3,5-Trinitrobenzene	0.183	µg/L	0.183	µg/L	M	4.239E-09	mg/Kg-day	0.0195	mg/Kg-day	--	mg/m3	2.174E-07
	Acetone	32	µg/L	32	µg/L	M	7.209E-07	mg/Kg-day	0.0830	mg/Kg-day	--	mg/m3	8.685E-06

TABLE H-T38-7.15.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Area T38
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
	Benzo(b)fluoranthene	0.247	µg/L	0.247	µg/L	M	1.189E-05	mg/Kg-day	0.00930	mg/Kg-day	- -	mg/m3	0.00128
	Carbon tetrachloride	53	µg/L	53	µg/L	M	4.678E-05	mg/Kg-day	0.000455	mg/Kg-day	- -	mg/m3	0.103
	Chloroform	9.20	µg/L	9.20	µg/L	M	3.285E-06	mg/Kg-day	0.00200	mg/Kg-day	- -	mg/m3	0.00164
	Chrysene	0.0509	µg/L	0.0509	µg/L	M	1.654E-06	mg/Kg-day	0.00930	mg/Kg-day	- -	mg/m3	0.000178
	Indeno(1,2,3-cd)pyrene	0.0810	µg/L	0.0810	µg/L	M	6.174E-06	mg/Kg-day	0.00930	mg/Kg-day	- -	mg/m3	0.000664
	Tetrachloroethene	13	µg/L	13	µg/L	M	2.503E-05	mg/Kg-day	0.01000	mg/Kg-day	- -	mg/m3	0.00250
	Trichloroethene	238	µg/L	238	µg/L	M	0.000153	mg/Kg-day	0.000900	mg/Kg-day	- -	mg/m3	0.169
	bis(2-Ethylhexyl)phthalate	17	µg/L	17	µg/L	M	2.306E-05	mg/Kg-day	0.00380	mg/Kg-day	- -	mg/m3	0.00607
	(Total)												0.461
												Total Hazard Index Across All Exposure Routes/Pathways	3.45

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T38-7.16.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Area T38
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	2,620	µg/L	2,620	µg/L	M	0.0718	mg/Kg-day	1.000	mg/Kg-day	--	mg/m3	0.0718
	Barium	186	µg/L	186	µg/L	M	0.00510	mg/Kg-day	0.0700	mg/Kg-day	0.0005	mg/m3	0.0729
	Beryllium	2.48	µg/L	2.48	µg/L	M	6.785E-05	mg/Kg-day	0.00200	mg/Kg-day	0.02	mg/m3	0.0339
	Manganese	3,160	µg/L	3,160	µg/L	M	0.0866	mg/Kg-day	0.0240	mg/Kg-day	0.00005	mg/m3	3.61
	Mercury	0.266	µg/L	0.266	µg/L	M	7.288E-06	mg/Kg-day	0.000300	mg/Kg-day	0.0003	mg/m3	0.0243
	Nickel	46	µg/L	46	µg/L	M	0.00127	mg/Kg-day	0.0200	mg/Kg-day	--	mg/m3	0.0634
	Zinc	321	µg/L	321	µg/L	M	0.00879	mg/Kg-day	0.300	mg/Kg-day	--	mg/m3	0.0293
	1,1,2,2-Tetrachloroethane	2,000	µg/L	2,000	µg/L	M	0.0548	mg/Kg-day	0.0600	mg/Kg-day	--	mg/m3	0.913
	1,1,2-Trichloroethane	2.10	µg/L	2.10	µg/L	M	5.753E-05	mg/Kg-day	0.00400	mg/Kg-day	--	mg/m3	0.0144
	1,2-Dichloroethene (total)	93	µg/L	93	µg/L	M	0.00255	mg/Kg-day	0.00900	mg/Kg-day	--	mg/m3	0.283
	1,3,5-Trinitrobenzene	0.183	µg/L	0.183	µg/L	M	5.019E-06	mg/Kg-day	0.0300	mg/Kg-day	--	mg/m3	0.000167
	Acetone	32	µg/L	32	µg/L	M	0.000865	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.00865
	Benzo(b)fluoranthene	0.247	µg/L	0.247	µg/L	M	6.767E-06	mg/Kg-day	0.0300	mg/Kg-day	--	mg/m3	0.000226
	Carbon tetrachloride	53	µg/L	53	µg/L	M	0.00145	mg/Kg-day	0.000700	mg/Kg-day	--	mg/m3	2.07
	Chloroform	9.20	µg/L	9.20	µg/L	M	0.000252	mg/Kg-day	0.01000	mg/Kg-day	--	mg/m3	0.0252
	Chrysene	0.0509	µg/L	0.0509	µg/L	M	1.395E-06	mg/Kg-day	0.0300	mg/Kg-day	--	mg/m3	4.648E-05
	Indeno(1,2,3-cd)pyrene	0.0810	µg/L	0.0810	µg/L	M	2.219E-06	mg/Kg-day	0.0300	mg/Kg-day	--	mg/m3	7.397E-05
	Tetrachloroethene	13	µg/L	13	µg/L	M	0.000356	mg/Kg-day	0.01000	mg/Kg-day	--	mg/m3	0.0356
	Trichloroethene	238	µg/L	238	µg/L	M	0.00651	mg/Kg-day	0.00600	mg/Kg-day	--	mg/m3	1.08
	bis(2-Ethylhexyl)phthalate	17	µg/L	17	µg/L	M	0.000477	mg/Kg-day	0.0200	mg/Kg-day	--	mg/m3	0.0239
	(Total)												8.37
Dermal	Aluminum	2,620	µg/L	2,620	µg/L	M	0.000130	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.00130
	Barium	186	µg/L	186	µg/L	M	9.262E-06	mg/Kg-day	0.00490	mg/Kg-day	0.0005	mg/m3	0.00189
	Beryllium	2.48	µg/L	2.48	µg/L	M	1.232E-07	mg/Kg-day	2.000E-05	mg/Kg-day	0.02	mg/m3	0.00616
	Iron	12,800	µg/L	12,800	µg/L	M	0.000636	mg/Kg-day	0.0450	mg/Kg-day	--	mg/m3	0.0141
	Manganese	3,160	µg/L	3,160	µg/L	M	0.000157	mg/Kg-day	0.000960	mg/Kg-day	0.00005	mg/m3	0.164
	Mercury	0.266	µg/L	0.266	µg/L	M	1.323E-08	mg/Kg-day	3.000E-06	mg/Kg-day	0.0003	mg/m3	0.00441
	Nickel	46	µg/L	46	µg/L	M	2.302E-07	mg/Kg-day	0.00540	mg/Kg-day	--	mg/m3	4.264E-05
	Zinc	321	µg/L	321	µg/L	M	1.596E-05	mg/Kg-day	0.0600	mg/Kg-day	--	mg/m3	0.000266
	1,1,2,2-Tetrachloroethane	2,000	µg/L	2,000	µg/L	M	0.000895	mg/Kg-day	0.0420	mg/Kg-day	--	mg/m3	0.0213
	1,1,2-Trichloroethane	2.10	µg/L	2.10	µg/L	M	8.772E-07	mg/Kg-day	0.00324	mg/Kg-day	--	mg/m3	0.000271
	1,2-Dichloroethene (total)	93	µg/L	93	µg/L	M	4.625E-05	mg/Kg-day	0.00900	mg/Kg-day	--	mg/m3	0.00514
	1,3,5-Trinitrobenzene	0.183	µg/L	0.183	µg/L	M	5.255E-09	mg/Kg-day	0.0195	mg/Kg-day	--	mg/m3	2.695E-07
	Acetone	32	µg/L	32	µg/L	M	8.935E-07	mg/Kg-day	0.0830	mg/Kg-day	--	mg/m3	1.077E-05

TABLE H-T38-7.16.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Area T38
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
	Benzo(b)fluoranthene	0.247	µg/L	0.247	µg/L	M	1.474E-05	mg/Kg-day	0.00930	mg/Kg-day	- -	mg/m3	0.00158
	Carbon tetrachloride	53	µg/L	53	µg/L	M	5.798E-05	mg/Kg-day	0.000455	mg/Kg-day	- -	mg/m3	0.127
	Chloroform	9.20	µg/L	9.20	µg/L	M	4.072E-06	mg/Kg-day	0.00200	mg/Kg-day	- -	mg/m3	0.00204
	Chrysene	0.0509	µg/L	0.0509	µg/L	M	2.050E-06	mg/Kg-day	0.00930	mg/Kg-day	- -	mg/m3	0.000220
	Indeno(1,2,3-cd)pyrene	0.0810	µg/L	0.0810	µg/L	M	7.653E-06	mg/Kg-day	0.00930	mg/Kg-day	- -	mg/m3	0.000823
	Tetrachloroethene	13	µg/L	13	µg/L	M	3.103E-05	mg/Kg-day	0.01000	mg/Kg-day	- -	mg/m3	0.00310
	Trichloroethene	238	µg/L	238	µg/L	M	0.000189	mg/Kg-day	0.000900	mg/Kg-day	- -	mg/m3	0.210
	bis(2-Ethylhexyl)phthalate	17	µg/L	17	µg/L	M	2.859E-05	mg/Kg-day	0.00380	mg/Kg-day	- -	mg/m3	0.00752
	(Total)												0.571
												Total Hazard Index Across All Exposure Routes/Pathways	8.94

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T38-7.17.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Area T38
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Carbon tetrachloride	53	µg/L	53	µg/m3	R	0.00145	mg/Kg-day	0.000570	mg/Kg-day	- -	mg/m3	2.55
	Chloroform	9.20	µg/L	9.20	µg/m3	R	0.000252	mg/Kg-day	8.600E-05	mg/Kg-day	- -	mg/m3	2.93
	Tetrachloroethene	13	µg/L	13	µg/m3	R	0.000356	mg/Kg-day	0.110	mg/Kg-day	- -	mg/m3	0.00324
	(Total)												5.48
												Total Hazard Index Across All Exposure Routes/Pathways	5.48

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T38-7.18.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Area T38
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	2,620	µg/L	2,620	µg/L	M	0.167	mg/Kg-day	1.000	mg/Kg-day	- -	mg/m3	0.167
	Barium	186	µg/L	186	µg/L	M	0.0119	mg/Kg-day	0.0700	mg/Kg-day	0.0005	mg/m3	0.170
	Beryllium	2.48	µg/L	2.48	µg/L	M	0.000158	mg/Kg-day	0.00200	mg/Kg-day	0.02	mg/m3	0.0792
	Manganese	3,160	µg/L	3,160	µg/L	M	0.202	mg/Kg-day	0.0240	mg/Kg-day	0.00005	mg/m3	8.42
	Mercury	0.266	µg/L	0.266	µg/L	M	1.700E-05	mg/Kg-day	0.000300	mg/Kg-day	0.0003	mg/m3	0.0567
	Nickel	46	µg/L	46	µg/L	M	0.00296	mg/Kg-day	0.0200	mg/Kg-day	- -	mg/m3	0.148
	Zinc	321	µg/L	321	µg/L	M	0.0205	mg/Kg-day	0.300	mg/Kg-day	- -	mg/m3	0.0684
	1,1,2,2-Tetrachloroethane	2,000	µg/L	2,000	µg/L	M	0.128	mg/Kg-day	0.0600	mg/Kg-day	- -	mg/m3	2.13
	1,1,2-Trichloroethane	2.10	µg/L	2.10	µg/L	M	0.000134	mg/Kg-day	0.00400	mg/Kg-day	- -	mg/m3	0.0336
	1,2-Dichloroethene (total)	93	µg/L	93	µg/L	M	0.00595	mg/Kg-day	0.00900	mg/Kg-day	- -	mg/m3	0.661
	1,3,5-Trinitrobenzene	0.183	µg/L	0.183	µg/L	M	1.171E-05	mg/Kg-day	0.0300	mg/Kg-day	- -	mg/m3	0.000390
	Acetone	32	µg/L	32	µg/L	M	0.00202	mg/Kg-day	0.1000	mg/Kg-day	- -	mg/m3	0.0202
	Benzo(b)fluoranthene	0.247	µg/L	0.247	µg/L	M	1.579E-05	mg/Kg-day	0.0300	mg/Kg-day	- -	mg/m3	0.000526
	Carbon tetrachloride	53	µg/L	53	µg/L	M	0.00339	mg/Kg-day	0.000700	mg/Kg-day	- -	mg/m3	4.84
	Chloroform	9.20	µg/L	9.20	µg/L	M	0.000588	mg/Kg-day	0.01000	mg/Kg-day	- -	mg/m3	0.0588
	Chrysene	0.0509	µg/L	0.0509	µg/L	M	3.254E-06	mg/Kg-day	0.0300	mg/Kg-day	- -	mg/m3	0.000108
	Indeno(1,2,3-cd)pyrene	0.0810	µg/L	0.0810	µg/L	M	5.178E-06	mg/Kg-day	0.0300	mg/Kg-day	- -	mg/m3	0.000173
	Tetrachloroethene	13	µg/L	13	µg/L	M	0.000831	mg/Kg-day	0.01000	mg/Kg-day	- -	mg/m3	0.0831
	Trichloroethene	238	µg/L	238	µg/L	M	0.0152	mg/Kg-day	0.00600	mg/Kg-day	- -	mg/m3	2.53
	bis(2-Ethylhexyl)phthalate	17	µg/L	17	µg/L	M	0.00111	mg/Kg-day	0.0200	mg/Kg-day	- -	mg/m3	0.0557
	(Total)												20
Dermal	Aluminum	2,620	µg/L	2,620	µg/L	M	0.000245	mg/Kg-day	0.1000	mg/Kg-day	- -	mg/m3	0.00245
	Barium	186	µg/L	186	µg/L	M	1.738E-05	mg/Kg-day	0.00490	mg/Kg-day	0.0005	mg/m3	0.00355
	Beryllium	2.48	µg/L	2.48	µg/L	M	2.311E-07	mg/Kg-day	2.000E-05	mg/Kg-day	0.02	mg/m3	0.0116
	Iron	12,800	µg/L	12,800	µg/L	M	0.00119	mg/Kg-day	0.0450	mg/Kg-day	- -	mg/m3	0.0265
	Manganese	3,160	µg/L	3,160	µg/L	M	0.000295	mg/Kg-day	0.000960	mg/Kg-day	0.00005	mg/m3	0.307
	Mercury	0.266	µg/L	0.266	µg/L	M	2.483E-08	mg/Kg-day	3.000E-06	mg/Kg-day	0.0003	mg/m3	0.00828
	Nickel	46	µg/L	46	µg/L	M	4.321E-07	mg/Kg-day	0.00540	mg/Kg-day	- -	mg/m3	8.002E-05
	Zinc	321	µg/L	321	µg/L	M	2.996E-05	mg/Kg-day	0.0600	mg/Kg-day	- -	mg/m3	0.000499
	1,1,2,2-Tetrachloroethane	2,000	µg/L	2,000	µg/L	M	0.00168	mg/Kg-day	0.0420	mg/Kg-day	- -	mg/m3	0.0400
	1,1,2-Trichloroethane	2.10	µg/L	2.10	µg/L	M	1.646E-06	mg/Kg-day	0.00324	mg/Kg-day	- -	mg/m3	0.000508
	1,2-Dichloroethene (total)	93	µg/L	93	µg/L	M	8.680E-05	mg/Kg-day	0.00900	mg/Kg-day	- -	mg/m3	0.00964
	1,3,5-Trinitrobenzene	0.183	µg/L	0.183	µg/L	M	9.863E-09	mg/Kg-day	0.0195	mg/Kg-day	- -	mg/m3	5.058E-07
	Acetone	32	µg/L	32	µg/L	M	1.677E-06	mg/Kg-day	0.0830	mg/Kg-day	- -	mg/m3	2.021E-05

TABLE H-T38-7.18.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Area T38
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
	Benzo(b)fluoranthene	0.247	µg/L	0.247	µg/L	M	2.766E-05	mg/Kg-day	0.00930	mg/Kg-day	--	mg/m3	0.00297
	Carbon tetrachloride	53	µg/L	53	µg/L	M	0.000109	mg/Kg-day	0.000455	mg/Kg-day	--	mg/m3	0.239
	Chloroform	9.20	µg/L	9.20	µg/L	M	7.642E-06	mg/Kg-day	0.00200	mg/Kg-day	--	mg/m3	0.00382
	Chrysene	0.0509	µg/L	0.0509	µg/L	M	3.848E-06	mg/Kg-day	0.00930	mg/Kg-day	--	mg/m3	0.000414
	Indeno(1,2,3-cd)pyrene	0.0810	µg/L	0.0810	µg/L	M	1.436E-05	mg/Kg-day	0.00930	mg/Kg-day	--	mg/m3	0.00154
	Tetrachloroethene	13	µg/L	13	µg/L	M	5.824E-05	mg/Kg-day	0.01000	mg/Kg-day	--	mg/m3	0.00582
	Trichloroethene	238	µg/L	238	µg/L	M	0.000355	mg/Kg-day	0.000900	mg/Kg-day	--	mg/m3	0.394
	bis(2-Ethylhexyl)phthalate	17	µg/L	17	µg/L	M	5.365E-05	mg/Kg-day	0.00380	mg/Kg-day	--	mg/m3	0.0141
	(Total)												1.07
												Total Hazard Index Across All Exposure Routes/Pathways	21

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-T38-8.1.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current
Medium: Surface Soil
Exposure Medium: Air
Exposure Point: Area T38
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Chromium (Total)	150	mg/kg	1.500E-05	µg/m3	R	5.032E-08	mg/Kg-day	41	1/(mg/Kg-day)	2.063E-06
											2.063E-06
										Total Cancer Risk Across All Exposure Routes/Pathways	2.063E-06

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

TABLE H-T38-8.2.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Air
Exposure Point: Area T38
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Chromium (Total)	150	mg/kg	1.500E-05	µg/m3	R	1.048E-06	mg/Kg-day	41	1/(mg/Kg-day)	4.298E-05
											4.298E-05
										Total Cancer Risk Across All Exposure Routes/Pathways	4.298E-05

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

TABLE H-T38-8.3.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Air
Exposure Point: Area T38
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Chromium (Total)	150	mg/kg	3.000E-05	µg/m3	R	8.387E-08	mg/Kg-day	41	1/(mg/Kg-day)	3.439E-06
											3.439E-06
										Total Cancer Risk Across All Exposure Routes/Pathways	3.439E-06

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

TABLE H-T38-8.4.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Air
Exposure Point: Area T38
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Chromium (Total)	54	mg/kg	5.360E-06	µg/m3	R	3.746E-07	mg/Kg-day	41	1/(mg/Kg-day)	1.536E-05
											1.536E-05
										Total Cancer Risk Across All Exposure Routes/Pathways	1.536E-05

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

TABLE H-T38-8.5.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Air
Exposure Point: Area T38
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Chromium (Total)	54	mg/kg	1.072E-05	µg/m3	R	2.997E-08	mg/Kg-day	41	1/(mg/Kg-day)	1.229E-06
											1.229E-06
										Total Cancer Risk Across All Exposure Routes/Pathways	1.229E-06

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

TABLE H-T38-8.6.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Area T38
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1,2,2-Tetrachloroethane	2,000	µg/L	2,000	µg/L	M	0.00699	mg/Kg-day	0.2	1/(mg/Kg-day)	0.00140
	1,1,2-Trichloroethane	2.10	µg/L	2.10	µg/L	M	7.339E-06	mg/Kg-day	0.057	1/(mg/Kg-day)	4.183E-07
	Benzo(b)fluoranthene	0.0247	µg/L	0.0247	µg/L	M	8.632E-08	mg/Kg-day	7.3	1/(mg/Kg-day)	6.301E-07
	Carbon tetrachloride	53	µg/L	53	µg/L	M	0.000185	mg/Kg-day	0.13	1/(mg/Kg-day)	2.408E-05
	Chloroform	9.20	µg/L	9.20	µg/L	M	3.215E-05	mg/Kg-day	0.0061	1/(mg/Kg-day)	1.961E-07
	Chrysene	5.090E-05	µg/L	5.090E-05	µg/L	M	1.779E-10	mg/Kg-day	7.3	1/(mg/Kg-day)	1.298E-09
	Indeno(1,2,3-cd)pyrene	0.00810	µg/L	0.00810	µg/L	M	2.831E-08	mg/Kg-day	7.3	1/(mg/Kg-day)	2.066E-07
	Nitroglycerine	2.46	µg/L	2.46	µg/L	M	8.603E-06	mg/Kg-day	0.014	1/(mg/Kg-day)	1.204E-07
	Tetrachloroethene	13	µg/L	13	µg/L	M	4.543E-05	mg/Kg-day	0.052	1/(mg/Kg-day)	2.362E-06
	Trichloroethene	238	µg/L	238	µg/L	M	0.000830	mg/Kg-day	0.011	1/(mg/Kg-day)	9.134E-06
	bis(2-Ethylhexyl)phthalate (Total)	17	µg/L	17	µg/L	M	6.088E-05	mg/Kg-day	0.014	1/(mg/Kg-day)	8.523E-07
											0.00144
Dermal	1,1,2,2-Tetrachloroethane	2,000	µg/L	2,000	µg/L	M	0.000258	mg/Kg-day	0.285714286	1/(mg/Kg-day)	7.369E-05
	1,1,2-Trichloroethane	2.10	µg/L	2.10	µg/L	M	2.527E-07	mg/Kg-day	0.07037037	1/(mg/Kg-day)	1.779E-08
	Benzo(b)fluoranthene	0.0247	µg/L	0.0247	µg/L	M	4.247E-07	mg/Kg-day	23.5483871	1/(mg/Kg-day)	1.000E-05
	Carbon tetrachloride	53	µg/L	53	µg/L	M	1.671E-05	mg/Kg-day	0.2	1/(mg/Kg-day)	3.341E-06
	Chloroform	9.20	µg/L	9.20	µg/L	M	1.173E-06	mg/Kg-day	0.0305	1/(mg/Kg-day)	3.578E-08
	Chrysene	5.090E-05	µg/L	5.090E-05	µg/L	M	5.907E-10	mg/Kg-day	23.5483871	1/(mg/Kg-day)	1.391E-08
	Indeno(1,2,3-cd)pyrene	0.00810	µg/L	0.00810	µg/L	M	2.205E-07	mg/Kg-day	23.5483871	1/(mg/Kg-day)	5.192E-06
	Nitroglycerine	2.46	µg/L	2.46	µg/L	M	7.959E-09	mg/Kg-day	0.028	1/(mg/Kg-day)	2.229E-10
	Tetrachloroethene	13	µg/L	13	µg/L	M	8.940E-06	mg/Kg-day	0.052	1/(mg/Kg-day)	4.649E-07
	Trichloroethene	238	µg/L	238	µg/L	M	5.447E-05	mg/Kg-day	0.073333333	1/(mg/Kg-day)	3.994E-06
	bis(2-Ethylhexyl)phthalate (Total)	17	µg/L	17	µg/L	M	8.236E-06	mg/Kg-day	0.073684211	1/(mg/Kg-day)	6.069E-07
											9.735E-05
										Total Cancer Risk Across All Exposure Routes/Pathways	0.00153

TABLE H-T38-8.6.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Area T38
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

TABLE H-T38-8.7.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Area T38
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1,2,2-Tetrachloroethane	2,000	µg/L	2,000	µg/L	M	0.0299	mg/Kg-day	0.2	1/(mg/Kg-day)	0.00597
	1,1,2-Trichloroethane	2.10	µg/L	2.10	µg/L	M	3.136E-05	mg/Kg-day	0.057	1/(mg/Kg-day)	1.787E-06
	Benzo(b)fluoranthene	0.0247	µg/L	0.0247	µg/L	M	3.688E-07	mg/Kg-day	7.3	1/(mg/Kg-day)	2.692E-06
	Carbon tetrachloride	53	µg/L	53	µg/L	M	0.000791	mg/Kg-day	0.13	1/(mg/Kg-day)	0.000103
	Chloroform	9.20	µg/L	9.20	µg/L	M	0.000137	mg/Kg-day	0.0061	1/(mg/Kg-day)	8.380E-07
	Chrysene	5.090E-05	µg/L	5.090E-05	µg/L	M	7.600E-10	mg/Kg-day	7.3	1/(mg/Kg-day)	5.548E-09
	Indeno(1,2,3-cd)pyrene	0.00810	µg/L	0.00810	µg/L	M	1.209E-07	mg/Kg-day	7.3	1/(mg/Kg-day)	8.829E-07
	Nitroglycerine	2.46	µg/L	2.46	µg/L	M	3.676E-05	mg/Kg-day	0.014	1/(mg/Kg-day)	5.146E-07
	Tetrachloroethene	13	µg/L	13	µg/L	M	0.000194	mg/Kg-day	0.052	1/(mg/Kg-day)	1.009E-05
	Trichloroethene	238	µg/L	238	µg/L	M	0.00355	mg/Kg-day	0.011	1/(mg/Kg-day)	3.903E-05
	bis(2-Ethylhexyl)phthalate (Total)	17	µg/L	17	µg/L	M	0.000260	mg/Kg-day	0.014	1/(mg/Kg-day)	3.642E-06
											0.00613
Dermal	1,1,2,2-Tetrachloroethane	2,000	µg/L	2,000	µg/L	M	0.000451	mg/Kg-day	0.285714286	1/(mg/Kg-day)	0.000129
	1,1,2-Trichloroethane	2.10	µg/L	2.10	µg/L	M	4.417E-07	mg/Kg-day	0.07037037	1/(mg/Kg-day)	3.108E-08
	Benzo(b)fluoranthene	0.0247	µg/L	0.0247	µg/L	M	7.422E-07	mg/Kg-day	23.5483871	1/(mg/Kg-day)	1.748E-05
	Carbon tetrachloride	53	µg/L	53	µg/L	M	2.920E-05	mg/Kg-day	0.2	1/(mg/Kg-day)	5.840E-06
	Chloroform	9.20	µg/L	9.20	µg/L	M	2.050E-06	mg/Kg-day	0.0305	1/(mg/Kg-day)	6.254E-08
	Chrysene	5.090E-05	µg/L	5.090E-05	µg/L	M	1.032E-09	mg/Kg-day	23.5483871	1/(mg/Kg-day)	2.431E-08
	Indeno(1,2,3-cd)pyrene	0.00810	µg/L	0.00810	µg/L	M	3.854E-07	mg/Kg-day	23.5483871	1/(mg/Kg-day)	9.075E-06
	Nitroglycerine	2.46	µg/L	2.46	µg/L	M	1.391E-08	mg/Kg-day	0.028	1/(mg/Kg-day)	3.895E-10
	Tetrachloroethene	13	µg/L	13	µg/L	M	1.563E-05	mg/Kg-day	0.052	1/(mg/Kg-day)	8.125E-07
	Trichloroethene	238	µg/L	238	µg/L	M	9.520E-05	mg/Kg-day	0.073333333	1/(mg/Kg-day)	6.981E-06
	bis(2-Ethylhexyl)phthalate (Total)	17	µg/L	17	µg/L	M	1.440E-05	mg/Kg-day	0.073684211	1/(mg/Kg-day)	1.061E-06
											0.000170
										Total Cancer Risk Across All Exposure Routes/Pathways	0.00631

TABLE H-T38-8.7.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Area T38
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

TABLE H-T38-8.8.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Area T38
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2,2-Tetrachloroethane	2,000	µg/L	2,000	µg/m3	R	0.0192	mg/Kg-day	0.203	1/(mg/Kg-day)	0.00389
	1,1,2-Trichloroethane	2.10	µg/L	2.10	µg/m3	R	2.014E-05	mg/Kg-day	0.057	1/(mg/Kg-day)	1.148E-06
	Carbon tetrachloride	53	µg/L	53	µg/m3	R	0.000508	mg/Kg-day	0.0525	1/(mg/Kg-day)	2.668E-05
	Chloroform	9.20	µg/L	9.20	µg/m3	R	8.822E-05	mg/Kg-day	0.0805	1/(mg/Kg-day)	7.102E-06
	Tetrachloroethene	13	µg/L	13	µg/m3	R	0.000125	mg/Kg-day	0.002	1/(mg/Kg-day)	2.493E-07
	Trichloroethene	238	µg/L	238	µg/m3	R	0.00228	mg/Kg-day	0.006	1/(mg/Kg-day)	1.367E-05
	(Total)										0.00394
										Total Cancer Risk Across All Exposure Routes/Pathways	0.00394

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

TABLE H-T38-8.9.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Area T38
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1,2,2-Tetrachloroethane	2,000	µg/L	2,000	µg/L	M	0.0299	mg/Kg-day	0.2	1/(mg/Kg-day)	0.00597
	1,1,2-Trichloroethane	2.10	µg/L	2.10	µg/L	M	3.136E-05	mg/Kg-day	0.057	1/(mg/Kg-day)	1.787E-06
	Benzo(b)fluoranthene	0.0247	µg/L	0.0247	µg/L	M	3.688E-07	mg/Kg-day	7.3	1/(mg/Kg-day)	2.692E-06
	Carbon tetrachloride	53	µg/L	53	µg/L	M	0.000791	mg/Kg-day	0.13	1/(mg/Kg-day)	0.000103
	Chloroform	9.20	µg/L	9.20	µg/L	M	0.000137	mg/Kg-day	0.0061	1/(mg/Kg-day)	8.380E-07
	Chrysene	5.090E-05	µg/L	5.090E-05	µg/L	M	7.600E-10	mg/Kg-day	7.3	1/(mg/Kg-day)	5.548E-09
	Indeno(1,2,3-cd)pyrene	0.00810	µg/L	0.00810	µg/L	M	1.209E-07	mg/Kg-day	7.3	1/(mg/Kg-day)	8.829E-07
	Nitroglycerine	2.46	µg/L	2.46	µg/L	M	3.676E-05	mg/Kg-day	0.014	1/(mg/Kg-day)	5.146E-07
	Tetrachloroethene	13	µg/L	13	µg/L	M	0.000194	mg/Kg-day	0.052	1/(mg/Kg-day)	1.009E-05
	Trichloroethene	238	µg/L	238	µg/L	M	0.00355	mg/Kg-day	0.011	1/(mg/Kg-day)	3.903E-05
	bis(2-Ethylhexyl)phthalate	17	µg/L	17	µg/L	M	0.000260	mg/Kg-day	0.014	1/(mg/Kg-day)	3.642E-06
	(Total)										0.00613
Dermal	1,1,2,2-Tetrachloroethane	2,000	µg/L	2,000	µg/L	M	0.000451	mg/Kg-day	0.285714286	1/(mg/Kg-day)	0.000129
	1,1,2-Trichloroethane	2.10	µg/L	2.10	µg/L	M	4.417E-07	mg/Kg-day	0.07037037	1/(mg/Kg-day)	3.108E-08
	Benzo(b)fluoranthene	0.0247	µg/L	0.0247	µg/L	M	7.422E-07	mg/Kg-day	23.5483871	1/(mg/Kg-day)	1.748E-05
	Carbon tetrachloride	53	µg/L	53	µg/L	M	2.920E-05	mg/Kg-day	0.2	1/(mg/Kg-day)	5.840E-06
	Chloroform	9.20	µg/L	9.20	µg/L	M	2.050E-06	mg/Kg-day	0.0305	1/(mg/Kg-day)	6.254E-08
	Chrysene	5.090E-05	µg/L	5.090E-05	µg/L	M	1.032E-09	mg/Kg-day	23.5483871	1/(mg/Kg-day)	2.431E-08
	Indeno(1,2,3-cd)pyrene	0.00810	µg/L	0.00810	µg/L	M	3.854E-07	mg/Kg-day	23.5483871	1/(mg/Kg-day)	9.075E-06
	Nitroglycerine	2.46	µg/L	2.46	µg/L	M	1.391E-08	mg/Kg-day	0.028	1/(mg/Kg-day)	3.895E-10
	Tetrachloroethene	13	µg/L	13	µg/L	M	1.563E-05	mg/Kg-day	0.052	1/(mg/Kg-day)	8.125E-07
	Trichloroethene	238	µg/L	238	µg/L	M	9.520E-05	mg/Kg-day	0.073333333	1/(mg/Kg-day)	6.981E-06
	bis(2-Ethylhexyl)phthalate	17	µg/L	17	µg/L	M	1.440E-05	mg/Kg-day	0.07368421	1/(mg/Kg-day)	1.061E-06
	(Total)										0.000170
										Total Cancer Risk Across All Exposure Routes/Pathways	0.00631

TABLE H-T38-8.9.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Area T38
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

TABLE H-T38-10.1.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Area T38	Aluminum	--	--	--	--	Aluminum	CNS	0.00727	--	0.000879	0.00815
			Chromium	--	--	--	--	Chromium	none	0.00939	--	0.00568	0.0151
			Vanadium	--	--	--	--	Vanadium	none	0.00388	--	0.00469	0.00857
			(Total)	--	--	--	--	(Total)	--	0.0205	--	0.0112	0.0318
	Air	Area T38	Aluminum	--	--	--	--	Aluminum	--	--	0.0260	--	0.0260
			Chromium	--	2.063E-06	--	2.063E-06	Chromium	respiratory system	--	0.00493	--	0.00493
			Vanadium	--	--	--	--	Vanadium	--	--	--	--	--
			(Total)	--	2.063E-06	--	2.063E-06	(Total)	--	--	0.0309	--	0.0309
						Total Risk Across Surface Soil	2.063E-06					Total Hazard Index Across Surface Soil	0.0627
						Total Risk Across All Media and All Exposure Routes	2.063E-06					Total Hazard Index Across All Media and All Exposure Routes	0.0627

Total CNS HI = 0.00815
Total respiratory system HI = 0.00493

TABLE H-T38-10.2.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Area T38	Aluminum	--	--	--	--
			Chromium	--	--	--	--
			Vanadium	--	--	--	--
			(Total)	--	--	--	--
						Total Risk Across Surface Soil	--
						Total Risk Across All Media and All Exposure Routes	0.000E+00

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Aluminum	CNS	0.00613	--	0.000129	0.00625
Chromium	none	0.00791	--	0.000831	0.00875
Vanadium	none	0.00327	--	0.000687	0.00396
(Total)	--	0.0173	--	0.00165	0.0190
				Total Hazard Index Across Surface Soil	0.0190
				Total Hazard Index Across All Media and All Exposure Routes	0.0190

Total CNS HI = 0.00625

TABLE H-T38-10.3.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current/Future
Receptor Population: Hunter
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Tissue	Area T38	Chromium	--	--	--	--	Chromium	none	1.877E-05	--	--	1.877E-05
			(Total)	--	--	--	--	(Total)	--	1.877E-05	--	--	1.877E-05
						Total Risk Across Surface Soil	--					Total Hazard Index Across Surface Soil	1.877E-05
						Total Risk Across All Media and All Exposure Routes	0.000E+00					Total Hazard Index Across All Media and All Exposure Routes	1.877E-05

TABLE H-T38-10.4.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Area T38	Aluminum	--	--	--	--	Aluminum	CNS	0.0379	--	0.000199	0.0381
			Chromium	--	--	--	--	Chromium	none	0.0489	--	0.00128	0.0502
			Vanadium	--	--	--	--	Vanadium	none	0.0202	--	0.00106	0.0213
			(Total)	--	--	--	--	(Total)	--	0.107	--	0.00254	0.110
	Air	Area T38	Aluminum	--	--	--	--	Aluminum	--	--	0.541	--	0.541
			Chromium	--	4.298E-05	--	4.298E-05	Chromium	respiratory system	--	0.103	--	0.103
			Vanadium	--	--	--	--	Vanadium	--	--	--	--	--
			(Total)	--	4.298E-05	--	4.298E-05	(Total)	--	--	0.644	--	0.644
Subsurface Soil	Soil	Area T38	Aluminum	--	--	--	--	Aluminum	CNS	0.0724	--	0.000380	0.0728
			Chromium	--	--	--	--	Chromium	none	0.0175	--	0.000459	0.0179
			Vanadium	--	--	--	--	Vanadium	none	0.00926	--	0.000486	0.00975
			(Total)	--	--	--	--	(Total)	--	0.0992	--	0.00133	0.100
	Air	Area T38	Aluminum	--	--	--	--	Aluminum	--	--	1.03	--	1.03
			Chromium	--	1.536E-05	--	1.536E-05	Chromium	respiratory system	--	0.0367	--	0.0367
			Vanadium	--	--	--	--	Vanadium	--	--	--	--	--
			(Total)	--	1.536E-05	--	1.536E-05	(Total)	--	--	1.07	--	1.07
Groundwater	Groundwater	Area T38	Aluminum	--	--	--	--	Aluminum	CNS	0.0256	--	0.00105	0.0267
			Barium	--	--	--	--	Barium	kidney	0.0260	--	0.00152	0.0276
			Beryllium	--	--	--	--	Beryllium	GI system	0.0121	--	0.00497	0.0171
			Manganese	--	--	--	--	Manganese	CNS	1.29	--	0.132	1.42
			Mercury	--	--	--	--	Mercury	kidney	0.00868	--	0.00356	0.0122
			Nickel	--	--	--	--	Nickel	whole body	0.0227	--	3.440E-05	0.0227
			Zinc	--	--	--	--	Zinc	blood	0.0105	--	0.000215	0.0107
			1,1,2,2-Tetrachloroethane	0.00140	--	7.369E-05	0.00147	1,1,2,2-Tetrachloroethane	--	0.326	--	0.0172	0.343
			1,1,2-Trichloroethane	4.183E-07	--	1.779E-08	4.361E-07	1,1,2-Trichloroethane	blood	0.00514	--	0.000218	0.00536
			1,2-Dichloroethene (total)	--	--	--	--	1,2-Dichloroethene (total)	liver	0.101	--	0.00415	0.105
			1,3,5-Trinitrobenzene	--	--	--	--	1,3,5-Trinitrobenzene	spleen	5.975E-05	--	2.174E-07	5.997E-05
			Acetone	--	--	--	--	Acetone	liver, kidney	0.00309	--	8.685E-06	0.00310
			Benzo(b)fluoranthene	6.301E-07	--	1.000E-05	1.063E-05	Benzo(b)fluoranthene	--	8.056E-05	--	0.00128	0.00136
			Carbon tetrachloride	2.408E-05	--	3.341E-06	2.742E-05	Carbon tetrachloride	liver	0.741	--	0.103	0.844
			Chloroform	1.961E-07	--	3.578E-08	2.319E-07	Chloroform	liver	0.00900	--	0.00164	0.0106
			Chrysene	1.298E-09	--	1.391E-08	1.521E-08	Chrysene	--	1.660E-05	--	0.000178	0.000194
			Indeno(1,2,3-cd)pyrene	2.066E-07	--	5.192E-06	5.399E-06	Indeno(1,2,3-cd)pyrene	--	2.642E-05	--	0.000664	0.000690
			Nitroglycerine	1.204E-07	--	2.229E-10	1.207E-07	Nitroglycerine	--	--	--	--	--
			Tetrachloroethene	2.362E-06	--	4.649E-07	2.827E-06	Tetrachloroethene	liver	0.0127	--	0.00250	0.0152
			Trichloroethene	9.134E-06	--	3.994E-06	1.313E-05	Trichloroethene	--	0.387	--	0.169	0.557
			bis(2-Ethylhexyl)phthalate	8.523E-07	--	6.069E-07	1.459E-06	bis(2-Ethylhexyl)phthalate	liver	0.00852	--	0.00607	0.0146
			(Total)	0.00144	--	9.735E-05	0.00153	(Total)	--	2.99	--	0.450	3.44

Total Risk Across Surface Soil	4.298E-05
Total Risk Across Subsurface Soil	1.536E-05
Total Risk Across Groundwater	0.00153
Total Risk Across All Media and All Exposure Routes	0.00159

Total Hazard Index Across Surface Soil	0.753
Total Hazard Index Across Subsurface Soil	1.17
Total Hazard Index Across Groundwater	3.44
Total Hazard Index Across All Media and All Exposure Routes	5.36

TABLE H-T38-10.4.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
												Total CNS HI =	1.56
												Total respiratory system HI =	0.139
												Total kidney HI =	0.0429
												Total GI system HI =	0.0171
												Total whole body HI =	0.0227
												Total blood HI =	0.0160
												Total liver HI =	0.992
												Total spleen HI =	5.997E-05

TABLE H-T38-10.5.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Area T38	Aluminum	--	--	--	--	Aluminum	CNS	0.0718	--	0.00130	0.0731
			Barium	--	--	--	--	Barium	kidney	0.0729	--	0.00189	0.0748
			Beryllium	--	--	--	--	Beryllium	GI system	0.0339	--	0.00616	0.0401
			Manganese	--	--	--	--	Manganese	CNS	3.61	--	0.164	3.77
			Mercury	--	--	--	--	Mercury	kidney	0.0243	--	0.00441	0.0287
			Nickel	--	--	--	--	Nickel	whole body	0.0634	--	4.264E-05	0.0635
			Zinc	--	--	--	--	Zinc	blood	0.0293	--	0.000266	0.0296
			1,1,2,2-Tetrachloroethane	0.00597	--	0.000129	0.00610	1,1,2,2-Tetrachloroethane	--	0.913	--	0.0213	0.935
			1,1,2-Trichloroethane	1.787E-06	--	3.108E-08	1.818E-06	1,1,2-Trichloroethane	blood	0.0144	--	0.000271	0.0147
			1,2-Dichloroethene (total)	--	--	--	--	1,2-Dichloroethene (total)	liver	0.283	--	0.00514	0.288
			1,3,5-Trinitrobenzene	--	--	--	--	1,3,5-Trinitrobenzene	spleen	0.000167	--	2.695E-07	0.000168
			Acetone	--	--	--	--	Acetone	liver, kidney	0.00865	--	1.077E-05	0.00866
			Benzo(b)fluoranthene	2.692E-06	--	1.748E-05	2.017E-05	Benzo(b)fluoranthene	--	0.000226	--	0.00158	0.00181
			Carbon tetrachloride	0.000103	--	5.840E-06	0.000109	Carbon tetrachloride	liver	2.07	--	0.127	2.20
			Chloroform	8.380E-07	--	6.254E-08	9.005E-07	Chloroform	liver	0.0252	--	0.00204	0.0272
			Chrysene	5.548E-09	--	2.431E-08	2.986E-08	Chrysene	--	4.648E-05	--	0.000220	0.000267
			Indeno(1,2,3-cd)pyrene	8.829E-07	--	9.075E-06	9.958E-06	Indeno(1,2,3-cd)pyrene	--	7.397E-05	--	0.000823	0.000897
			Nitroglycerine	5.146E-07	--	3.895E-10	5.150E-07	Nitroglycerine	--	--	--	--	--
			Tetrachloroethene	1.009E-05	--	8.125E-07	1.091E-05	Tetrachloroethene	liver	0.0356	--	0.00310	0.0387
			Trichloroethene	3.903E-05	--	6.981E-06	4.601E-05	Trichloroethene	--	1.08	--	0.210	1.30
			bis(2-Ethylhexyl)phthalate	3.642E-06	--	1.061E-06	4.702E-06	bis(2-Ethylhexyl)phthalate	liver	0.0239	--	0.00752	0.0314
			(Total)	0.00613	--	0.000170	0.00631	(Total)	--	8.37	--	0.557	8.92
	Air	Area T38	1,1,2,2-Tetrachloroethane	--	0.00389	--	0.00389	1,1,2,2-Tetrachloroethane	--	--	--	--	--
			1,1,2-Trichloroethane	--	1.148E-06	--	1.148E-06	1,1,2-Trichloroethane	--	--	--	--	--
			1,2-Dichloroethene (total)	--	--	--	--	1,2-Dichloroethene (total)	--	--	--	--	--
			Acetone	--	--	--	--	Acetone	--	--	--	--	--
			Carbon tetrachloride	--	2.668E-05	--	2.668E-05	Carbon tetrachloride	--	--	2.55	--	2.55
			Chloroform	--	7.102E-06	--	7.102E-06	Chloroform	--	--	2.93	--	2.93
			Tetrachloroethene	--	2.493E-07	--	2.493E-07	Tetrachloroethene	--	--	0.00324	--	0.00324
			Trichloroethene	--	1.367E-05	--	1.367E-05	Trichloroethene	--	--	--	--	--
			(Total)	--	0.00394	--	0.00394	(Total)	--	--	5.48	--	5.48

Total Risk Across Groundwater	0.0102
Total Risk Across All Media and All Exposure Routes	0.0102

Total Hazard Index Across Groundwater	14
Total Hazard Index Across All Media and All Exposure Routes	14

Total CNS HI =	3.84
Total kidney HI =	0.112
Total GI system HI =	0.0401
Total whole body HI =	0.0635

TABLE H-T38-10.5.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
												Total blood HI =	0.0442
												Total liver HI =	2.60
												Total spleen HI =	0.000168

TABLE H-T38-10.6.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Area T38	Aluminum	--	--	--	--	Aluminum	CNS	0.495	--	0.00312	0.498
			Chromium	--	--	--	--	Chromium	none	0.639	--	0.0201	0.659
			Vanadium	--	--	--	--	Vanadium	none	0.264	--	0.0166	0.281
			(Total)	--	--	--	--	(Total)	--	1.40	--	0.0399	1.44
Subsurface Soil		Area T38	Aluminum	--	--	--	--	Aluminum	CNS	0.946	--	0.00596	0.952
			Chromium	--	--	--	--	Chromium	none	0.228	--	0.00720	0.236
			Vanadium	--	--	--	--	Vanadium	none	0.121	--	0.00763	0.129
			(Total)	--	--	--	--	(Total)	--	1.30	--	0.0208	1.32
Groundwater	Groundwater	Area T38	Aluminum	--	--	--	--	Aluminum	CNS	0.167	--	0.00245	0.170
			Barium	--	--	--	--	Barium	kidney	0.170	--	0.00355	0.174
			Beryllium	--	--	--	--	Beryllium	GI system	0.0792	--	0.0116	0.0907
			Manganese	--	--	--	--	Manganese	CNS	8.42	--	0.307	8.72
			Mercury	--	--	--	--	Mercury	kidney	0.0567	--	0.00828	0.0650
			Nickel	--	--	--	--	Nickel	whole body	0.148	--	8.002E-05	0.148
			Zinc	--	--	--	--	Zinc	blood	0.0684	--	0.000499	0.0689
			1,1,2,2-Tetrachloroethane	0.00597	--	0.000129	0.00610	1,1,2,2-Tetrachloroethane	--	2.13	--	0.0400	2.17
			1,1,2-Trichloroethane	1.787E-06	--	3.108E-08	1.818E-06	1,1,2-Trichloroethane	blood	0.0336	--	0.000508	0.0341
			1,2-Dichloroethene (total)	--	--	--	--	1,2-Dichloroethene (total)	liver	0.661	--	0.00964	0.670
			1,3,5-Trinitrobenzene	--	--	--	--	1,3,5-Trinitrobenzene	spleen	0.000390	--	5.058E-07	0.000391
			Acetone	--	--	--	--	Acetone	liver, kidney	0.0202	--	2.021E-05	0.0202
			Benzo(b)fluoranthene	2.692E-06	--	1.748E-05	2.017E-05	Benzo(b)fluoranthene	--	0.000526	--	0.00297	0.00350
			Carbon tetrachloride	0.000103	--	5.840E-06	0.000109	Carbon tetrachloride	liver	4.84	--	0.239	5.08
			Chloroform	8.380E-07	--	6.254E-08	9.005E-07	Chloroform	liver	0.0588	--	0.00382	0.0626
			Chrysene	5.548E-09	--	2.431E-08	2.986E-08	Chrysene	--	0.000108	--	0.000414	0.000522
			Indeno(1,2,3-cd)pyrene	8.829E-07	--	9.075E-06	9.958E-06	Indeno(1,2,3-cd)pyrene	--	0.000173	--	0.00154	0.00172
			Nitroglycerine	5.146E-07	--	3.895E-10	5.150E-07	Nitroglycerine	--	--	--	--	--
			Tetrachloroethene	1.009E-05	--	8.125E-07	1.091E-05	Tetrachloroethene	liver	0.0831	--	0.00582	0.0889
			Trichloroethene	3.903E-05	--	6.981E-06	4.601E-05	Trichloroethene	--	2.53	--	0.394	2.93
			bis(2-Ethylhexyl)phthalate	3.642E-06	--	1.061E-06	4.702E-06	bis(2-Ethylhexyl)phthalate	liver	0.0557	--	0.0141	0.0698
			(Total)	0.00613	--	0.000170	0.00631	(Total)	--	20	--	1.05	21

Total Risk Across Surface Soil	--
Total Risk Across Subsurface Soil	--
Total Risk Across Groundwater	0.00631
Total Risk Across All Media and All Exposure Routes	0.00631

Total Hazard Index Across Surface Soil	1.44
Total Hazard Index Across Subsurface Soil	1.32
Total Hazard Index Across Groundwater	21
Total Hazard Index Across All Media and All Exposure Routes	23

Total CNS HI =	10
Total kidney HI =	0.259

TABLE H-T38-10.6.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
												Total GI system HI =	0.0907
												Total whole body HI =	0.148
												Total blood HI =	0.103
												Total liver HI =	5.99
												Total spleen HI =	0.000391

TABLE H-T38-10.7.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Area T38	Aluminum	--	--	--	--	Aluminum	CNS	0.0757	--	0.00199	0.0777
			Chromium	--	--	--	--	Chromium	none	0.0147	--	0.00193	0.0166
			Vanadium	--	--	--	--	Vanadium	none	0.0520	--	0.0136	0.0656
			(Total)	--	--	--	--	(Total)	--	0.142	--	0.0176	0.160
	Air	Area T38	Aluminum	--	--	--	--	Aluminum	--	--	1.08	--	1.08
			Chromium	--	3.439E-06	--	3.439E-06	Chromium	respiratory system	--	0.205	--	0.205
			Vanadium	--	--	--	--	Vanadium	--	--	--	--	--
			(Total)	--	3.439E-06	--	3.439E-06	(Total)	--	--	1.29	--	1.29
Subsurface Soil	Soil	Area T38	Aluminum	--	--	--	--	Aluminum	CNS	0.145	--	0.00380	0.149
			Chromium	--	--	--	--	Chromium	none	0.00524	--	0.000688	0.00593
			Vanadium	--	--	--	--	Vanadium	none	0.0238	--	0.00625	0.0301
			(Total)	--	--	--	--	(Total)	--	0.174	--	0.0107	0.185
	Air	Area T38	Aluminum	--	--	--	--	Aluminum	--	--	2.07	--	2.07
			Chromium	--	1.229E-06	--	1.229E-06	Chromium	respiratory system	--	0.0734	--	0.0734
			Vanadium	--	--	--	--	Vanadium	--	--	--	--	--
			(Total)	--	1.229E-06	--	1.229E-06	(Total)	--	--	2.14	--	2.14

Total Risk Across Surface Soil	3.439E-06
Total Risk Across Subsurface Soil	1.229E-06
Total Risk Across All Media and All Exposure Routes	4.667E-06

Total Hazard Index Across Surface Soil	1.45
Total Hazard Index Across Subsurface Soil	2.33
Total Hazard Index Across All Media and All Exposure Routes	3.77

Total CNS HI =	0.226
Total respiratory system HI =	0.279

TABLE H-RJ-1.
SELECTION OF EXPOSURE PATHWAYS
FORT McCLELLAN RI, ANNISTON, ALABAMA

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	Soil	Soil	Site 6 Range J Agent Training Area	Industrial Worker	Adult	Ingestion	On-Site	Quant	
						Dermal	On-Site	Quant	
				Resident	Child	Ingestion	On-Site	Quant	
						Dermal	On-Site	Quant	
				Construction Worker	Adult	Ingestion	On-Site	Quant	
						Dermal	On-Site	Quant	
		Air		Industrial Worker	Adult	Inhalation	On-Site	Quant	
				Construction Worker	Adult	Inhalation	On-Site	Quant	
	Groundwater	Groundwater		Industrial Worker[b]	Adult	Ingestion	On-Site	Quant	
						Dermal	On-Site	Quant	
				Resident	Adult	Ingestion	On-Site	Quant	
						Dermal	On-Site	Quant	
					Child	Ingestion	On-Site	Quant	
						Dermal	On-Site	Quant	
		Air		Resident	Adult	Inhalation	On-Site	Quant	

[a] Age adjusted values will be used for the adolescent receptor.
[b] Industrial worker is used to define a groundskeeper scenario.

TABLE H-RJ-3.1.
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Range J

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,1,2,2-Tetrachloroethane	µg/L	1.50	--	4.40		µg/L	4.40	Max	Shapiro (2)	4.40	Max	Shapiro (2)
Acetone	µg/L	6.56	--	27	D	µg/L	27	Max	Shapiro (2)	27	Max	Shapiro (2)
Carbon tetrachloride	µg/L	469	--	2,000		µg/L	2,000	Max	Shapiro (2)	2,000	Max	Shapiro (2)
Chloroform	µg/L	7.83	--	31		µg/L	31	Max	Shapiro (2)	31	Max	Shapiro (2)
Tetrachloroethene	µg/L	1.32	--	3.90		µg/L	3.90	Max	Shapiro (2)	3.90	Max	Shapiro (2)
Trichloroethene	µg/L	2.17	--	5.00		µg/L	5.00	Max	Shapiro (2)	5.00	Max	Shapiro (2)

Qualifiers: Refer to Table H-1 for supporting information on flags and qualifiers.

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

Shapiro (1) - Shapiro goodness-of-fit test determines data are lognormally distributed

Shapiro (2) - The maximum detected value was < 95% UCL; it was therefore used as the EPC rather than the 95% UCL

Shapiro (3) - Shapiro goodness-of-fit test determines data are normally distributed

TABLE H-RJ-5.1.
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (2)	Adjusted Dermal RfD (3)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (4) (MM/DD/YY)
1,1,2,2-Tetrachloroethane	Chronic	0.06	mg/kg-day	0.7	0.042	mg/Kg-day	--	--	NCEA	
	Subchronic	0.06	mg/kg-day	0.7	0.042	mg/Kg-day	--	--	--	--
Acetone	Chronic	0.1	mg/kg-day	0.83	0.083	mg/Kg-day	liver, kidney	1000	IRIS	02/28/00
	Subchronic	1	mg/kg-day	0.83	0.83	mg/Kg-day	liver, kidney	100	HEAST	07/31/97
Carbon tetrachloride	Chronic	0.0007	mg/kg-day	0.65	0.000455	mg/Kg-day	liver	1000	IRIS	02/28/00
	Subchronic	0.0007	mg/kg-day	0.65	0.000455	mg/Kg-day	liver	--	--	--
Chloroform	Chronic	0.01	mg/kg-day	0.2	0.002	mg/Kg-day	liver	1000	IRIS	02/28/00
	Subchronic	0.01	mg/kg-day	0.2	0.002	mg/Kg-day	liver	1000	HEAST	07/31/97
Tetrachloroethene	Chronic	0.01	mg/kg-day	1	0.01	mg/Kg-day	liver	1000	IRIS	02/28/00
	Subchronic	0.1	mg/kg-day	1	0.1	mg/Kg-day	liver	100	HEAST	07/31/97
Trichloroethene	Chronic	0.006	mg/kg-day	0.15	0.0009	mg/Kg-day	--	3000	NCEA	03/05/92
	Subchronic	0.006	mg/kg-day	0.15	0.0009	mg/Kg-day	--	--	--	--

N/A = Not Applicable

(1) This table only includes RfDs for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical was a COPC, but does not appear on this table, no toxicity values were available to evaluate noncarcinogenic effects from oral or dermal exposures.

(2) Refer to RAGS, Part A

(3) The adjusted chronic RfD for the dermal route was calculated by multiplying the chronic oral RfD by the gastrointestinal absorption factor.

(4) This column represents the latest date at which IRIS, HEAST, or NCEA values were updated.

TABLE H-RJ-5.2.
NON-CANCER TOXICITY DATA -- INHALATION
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Chronic/ Subchronic	Value Inhalation RfC (2)	Units	Adjusted Inhalation RfD (3)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfC:RfD: Target Organ	Dates (4) (MM/DD/YY)
Carbon tetrachloride	Chronic	--	mg/m3	0.000570	mg/kg-day	--	--	NCEA	
	Subchronic	--	mg/m3	0.000570	mg/kg-day	--	--	--	--
Chloroform	Chronic	--	mg/m3	8.600E-05	mg/kg-day	--	--	NCEA	
	Subchronic	--	mg/m3	8.600E-05	mg/kg-day	--	--	--	--
Tetrachloroethene	Chronic	--	mg/m3	0.110	mg/kg-day	--	--	NCEA	
	Subchronic	--	mg/m3	0.110	mg/kg-day	--	--	--	--

N/A = Not Applicable

(1) This table only includes RfCs for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical was a COPC, but does not appear on this table, no toxicity values were available to evaluate noncarcinogenic effects from inhalation exposures.

(2) "- -" indicates that an RfC is currently not available.

(3) Inhalation RfCs have been converted to inhalation RfDs by multiplying by 20m3/day and dividing by 70 kg.

(4) This column represents the latest date at which IRIS, HEAST, or NCEA values were updated.

TABLE H-RJ-5.3.
NON-CANCER TOXICITY DATA -- SPECIAL CASE CHEMICALS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Chronic/ Subchronic	Value	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of Primary Target Organ	Date (2) (MM/DD/YY)

(1) This table only includes values for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical was a COPC, but does not appear on this table, no toxicity values were available to evaluate noncarcinogenic effects.

(2) This column represents the latest date at which IRIS, HEAST, or NCEA values were updated.

TABLE H-RJ-6.1.
CANCER TOXICITY DATA -- ORAL/DERMAL
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Oral Cancer Slope Factor	Oral to Dermal Adjustment Factor	Adjusted Dermal Cancer Slope Factor (2)	Units	Weight of Evidence/ Cancer Guideline Description (3)	Source (4)	Date (5) (MM/DD/YY)
1,1,2,2-Tetrachloroethane	0.2	0.7	0.286	1/(mg/Kg-day)	[C]	IRIS	02/28/00
Carbon tetrachloride	0.13	0.65	0.200	1/(mg/Kg-day)	[B2]	IRIS	02/28/00
Chloroform	0.0061	0.2	0.0305	1/(mg/Kg-day)	[B2]	IRIS	02/28/00
Tetrachloroethene	0.052	1	0.0520	1/(mg/Kg-day)	--	NCEA	
Trichloroethene	0.011	0.15	0.0733	1/(mg/Kg-day)	--	NCEA	03/05/92

(1) This table only includes CSFs for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical was a COPC, but does not appear on this table, no toxicity values were available to evaluate carcinogenic effects from oral or dermal exposures.

(2) The adjusted slope factor for the dermal route was calculated by dividing the oral slope factor by the gastrointestinal absorption factor.

(3) EPA Group:

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 a human carcinogen

E - Evidence of noncarcinogenicity

(4) This column represents the latest date at which IRIS, HEAST, or NCEA values were updated.

TABLE H-RJ-6.2.
CANCER TOXICITY DATA -- INHALATION
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Unit Risk	Units	Adjustment	Inhalation Cancer Slope Factor (2)	Units	Weight of Evidence/ Cancer Guideline Description (3)	Source (4)	Date (5) (MM/DD/YY)
1,1,2,2-Tetrachloroethane	0.000058	µg/m3	3500	0.203	1/(mg/kg-day)	[C]	IRIS	02/28/00
Carbon tetrachloride	0.000015	µg/m3	3500	0.0525	1/(mg/kg-day)	[B2]	IRIS	02/28/00
Chloroform	0.000023	µg/m3	3500	0.0805	1/(mg/kg-day)	[B2]	IRIS	02/28/00
Tetrachloroethene	--	µg/m3	--	0.00200	1/(mg/kg-day)	--	NCEA	
Trichloroethene	0.0000017	µg/m3	3500	0.00600	1/(mg/kg-day)	--	NCEA	03/05/92

(2) The slope factor for the inhalation route was calculated by multiplying the unit risk by the adjustment factor.

(3) EPA Group:

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 a human carcinogen

E - Evidence of noncarcinogenicity

TABLE H-RJ-6.3.
CANCER TOXICITY DATA -- SPECIAL CASE CHEMICALS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Value	Units	Source	Date (2) MM/DD/YY

(1) This table only includes CSFs for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical

TABLE H-RJ-7.1.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Range J
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	1,1,2,2-Tetrachloroethane	4.40	µg/L	4.40	µg/L	M	4.305E-05	mg/Kg-day	0.0600	mg/Kg-day	- -	mg/m3	0.000718
	Acetone	27	µg/L	27	µg/L	M	0.000264	mg/Kg-day	0.1000	mg/Kg-day	- -	mg/m3	0.00264
	Carbon tetrachloride	2,000	µg/L	2,000	µg/L	M	0.0196	mg/Kg-day	0.000700	mg/Kg-day	- -	mg/m3	28
	Chloroform	31	µg/L	31	µg/L	M	0.000303	mg/Kg-day	0.01000	mg/Kg-day	- -	mg/m3	0.0303
	Tetrachloroethene	3.90	µg/L	3.90	µg/L	M	3.816E-05	mg/Kg-day	0.01000	mg/Kg-day	- -	mg/m3	0.00382
	Trichloroethene	5.00	µg/L	5.00	µg/L	M	4.892E-05	mg/Kg-day	0.00600	mg/Kg-day	- -	mg/m3	0.00815
	(Total)												28
Dermal	1,1,2,2-Tetrachloroethane	4.40	µg/L	4.40	µg/L	M	1.589E-06	mg/Kg-day	0.0420	mg/Kg-day	- -	mg/m3	3.782E-05
	Acetone	27	µg/L	27	µg/L	M	6.166E-07	mg/Kg-day	0.0830	mg/Kg-day	- -	mg/m3	7.429E-06
	Carbon tetrachloride	2,000	µg/L	2,000	µg/L	M	0.00177	mg/Kg-day	0.000455	mg/Kg-day	- -	mg/m3	3.88
	Chloroform	31	µg/L	31	µg/L	M	1.107E-05	mg/Kg-day	0.00200	mg/Kg-day	- -	mg/m3	0.00553
	Tetrachloroethene	3.90	µg/L	3.90	µg/L	M	7.510E-06	mg/Kg-day	0.01000	mg/Kg-day	- -	mg/m3	0.000751
	Trichloroethene	5.00	µg/L	5.00	µg/L	M	3.209E-06	mg/Kg-day	0.000900	mg/Kg-day	- -	mg/m3	0.00357
	(Total)												3.89
												Total Hazard Index Across All Exposure Routes/Pathways	32

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-RJ-7.2.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Range J
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	1,1,2,2-Tetrachloroethane	4.40	µg/L	4.40	µg/L	M	0.000121	mg/Kg-day	0.0600	mg/Kg-day	- -	mg/m3	0.00201
	Acetone	27	µg/L	27	µg/L	M	0.000740	mg/Kg-day	0.1000	mg/Kg-day	- -	mg/m3	0.00740
	Carbon tetrachloride	2,000	µg/L	2,000	µg/L	M	0.0548	mg/Kg-day	0.000700	mg/Kg-day	- -	mg/m3	78
	Chloroform	31	µg/L	31	µg/L	M	0.000849	mg/Kg-day	0.01000	mg/Kg-day	- -	mg/m3	0.0849
	Tetrachloroethene	3.90	µg/L	3.90	µg/L	M	0.000107	mg/Kg-day	0.01000	mg/Kg-day	- -	mg/m3	0.0107
	Trichloroethene	5.00	µg/L	5.00	µg/L	M	0.000137	mg/Kg-day	0.00600	mg/Kg-day	- -	mg/m3	0.0228
	(Total)												78
Dermal	1,1,2,2-Tetrachloroethane	4.40	µg/L	4.40	µg/L	M	1.969E-06	mg/Kg-day	0.0420	mg/Kg-day	- -	mg/m3	4.688E-05
	Acetone	27	µg/L	27	µg/L	M	7.643E-07	mg/Kg-day	0.0830	mg/Kg-day	- -	mg/m3	9.208E-06
	Carbon tetrachloride	2,000	µg/L	2,000	µg/L	M	0.00219	mg/Kg-day	0.000455	mg/Kg-day	- -	mg/m3	4.81
	Chloroform	31	µg/L	31	µg/L	M	1.372E-05	mg/Kg-day	0.00200	mg/Kg-day	- -	mg/m3	0.00686
	Tetrachloroethene	3.90	µg/L	3.90	µg/L	M	9.309E-06	mg/Kg-day	0.01000	mg/Kg-day	- -	mg/m3	0.000931
	Trichloroethene	5.00	µg/L	5.00	µg/L	M	3.978E-06	mg/Kg-day	0.000900	mg/Kg-day	- -	mg/m3	0.00442
	(Total)												4.82
												Total Hazard Index Across All Exposure Routes/Pathways	83

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-RJ-7.3.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Range J
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Carbon tetrachloride	2,000	µg/L	2,000	µg/m3	R	0.0548	mg/Kg-day	0.000570	mg/Kg-day	--	mg/m3	96
	Chloroform	31	µg/L	31	µg/m3	R	0.000849	mg/Kg-day	8.600E-05	mg/Kg-day	--	mg/m3	9.88
	Tetrachloroethene	3.90	µg/L	3.90	µg/m3	R	0.000107	mg/Kg-day	0.110	mg/Kg-day	--	mg/m3	0.000971
	(Total)												106
												Total Hazard Index Across All Exposure Routes/Pathways	106

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-RJ-7.4.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Range J
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	1,1,2,2-Tetrachloroethane	4.40	µg/L	4.40	µg/L	M	0.000281	mg/Kg-day	0.0600	mg/Kg-day	--	mg/m3	0.00469
	Acetone	27	µg/L	27	µg/L	M	0.00173	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.0173
	Carbon tetrachloride	2,000	µg/L	2,000	µg/L	M	0.128	mg/Kg-day	0.000700	mg/Kg-day	--	mg/m3	183
	Chloroform	31	µg/L	31	µg/L	M	0.00198	mg/Kg-day	0.01000	mg/Kg-day	--	mg/m3	0.198
	Tetrachloroethene	3.90	µg/L	3.90	µg/L	M	0.000249	mg/Kg-day	0.01000	mg/Kg-day	--	mg/m3	0.0249
	Trichloroethene	5.00	µg/L	5.00	µg/L	M	0.000320	mg/Kg-day	0.00600	mg/Kg-day	--	mg/m3	0.0533
	(Total)												183
Dermal	1,1,2,2-Tetrachloroethane	4.40	µg/L	4.40	µg/L	M	3.696E-06	mg/Kg-day	0.0420	mg/Kg-day	--	mg/m3	8.800E-05
	Acetone	27	µg/L	27	µg/L	M	1.435E-06	mg/Kg-day	0.0830	mg/Kg-day	--	mg/m3	1.728E-05
	Carbon tetrachloride	2,000	µg/L	2,000	µg/L	M	0.00411	mg/Kg-day	0.000455	mg/Kg-day	--	mg/m3	9.03
	Chloroform	31	µg/L	31	µg/L	M	2.575E-05	mg/Kg-day	0.00200	mg/Kg-day	--	mg/m3	0.0129
	Tetrachloroethene	3.90	µg/L	3.90	µg/L	M	1.747E-05	mg/Kg-day	0.01000	mg/Kg-day	--	mg/m3	0.00175
	Trichloroethene	5.00	µg/L	5.00	µg/L	M	7.467E-06	mg/Kg-day	0.000900	mg/Kg-day	--	mg/m3	0.00830
	(Total)												9.05
												Total Hazard Index Across All Exposure Routes/Pathways	192

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-RJ-8.1.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Range J
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1,2,2-Tetrachloroethane	4.40	µg/L	4.40	µg/L	M	1.538E-05	mg/Kg-day	0.2	1/(mg/Kg-day)	3.075E-06
	Carbon tetrachloride	2,000	µg/L	2,000	µg/L	M	0.00699	mg/Kg-day	0.13	1/(mg/Kg-day)	0.000909
	Chloroform	31	µg/L	31	µg/L	M	0.000108	mg/Kg-day	0.0061	1/(mg/Kg-day)	6.608E-07
	Tetrachloroethene	3.90	µg/L	3.90	µg/L	M	1.363E-05	mg/Kg-day	0.052	1/(mg/Kg-day)	7.087E-07
	Trichloroethene	5.00	µg/L	5.00	µg/L	M	1.747E-05	mg/Kg-day	0.011	1/(mg/Kg-day)	1.922E-07
	(Total)										0.000913
Dermal	1,1,2,2-Tetrachloroethane	4.40	µg/L	4.40	µg/L	M	5.674E-07	mg/Kg-day	0.285714286	1/(mg/Kg-day)	1.621E-07
	Carbon tetrachloride	2,000	µg/L	2,000	µg/L	M	0.000630	mg/Kg-day	0.2	1/(mg/Kg-day)	0.000126
	Chloroform	31	µg/L	31	µg/L	M	3.953E-06	mg/Kg-day	0.0305	1/(mg/Kg-day)	1.206E-07
	Tetrachloroethene	3.90	µg/L	3.90	µg/L	M	2.682E-06	mg/Kg-day	0.052	1/(mg/Kg-day)	1.395E-07
	Trichloroethene	5.00	µg/L	5.00	µg/L	M	1.146E-06	mg/Kg-day	0.073333333	1/(mg/Kg-day)	8.406E-08
	(Total)										0.000127
										Total Cancer Risk Across All Exposure Routes/Pathways	0.00104

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

TABLE H-RJ-8.2.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Range J
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1,2,2-Tetrachloroethane	4.40	µg/L	4.40	µg/L	M	6.570E-05	mg/Kg-day	0.2	1/(mg/Kg-day)	1.314E-05
	Carbon tetrachloride	2,000	µg/L	2,000	µg/L	M	0.0299	mg/Kg-day	0.13	1/(mg/Kg-day)	0.00388
	Chloroform	31	µg/L	31	µg/L	M	0.000463	mg/Kg-day	0.0061	1/(mg/Kg-day)	2.824E-06
	Tetrachloroethene	3.90	µg/L	3.90	µg/L	M	5.823E-05	mg/Kg-day	0.052	1/(mg/Kg-day)	3.028E-06
	Trichloroethene	5.00	µg/L	5.00	µg/L	M	7.466E-05	mg/Kg-day	0.011	1/(mg/Kg-day)	8.212E-07
	(Total)										0.00390
Dermal	1,1,2,2-Tetrachloroethane	4.40	µg/L	4.40	µg/L	M	9.916E-07	mg/Kg-day	0.285714286	1/(mg/Kg-day)	2.833E-07
	Carbon tetrachloride	2,000	µg/L	2,000	µg/L	M	0.00110	mg/Kg-day	0.2	1/(mg/Kg-day)	0.000220
	Chloroform	31	µg/L	31	µg/L	M	6.909E-06	mg/Kg-day	0.0305	1/(mg/Kg-day)	2.107E-07
	Tetrachloroethene	3.90	µg/L	3.90	µg/L	M	4.688E-06	mg/Kg-day	0.052	1/(mg/Kg-day)	2.438E-07
	Trichloroethene	5.00	µg/L	5.00	µg/L	M	2.003E-06	mg/Kg-day	0.073333333	1/(mg/Kg-day)	1.469E-07
	(Total)										0.000221
										Total Cancer Risk Across All Exposure Routes/Pathways	0.00412

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

TABLE H-RJ-8.3.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: Range J
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2,2-Tetrachloroethane	4.40	µg/L	4.40	µg/m3	R	4.219E-05	mg/Kg-day	0.203	1/(mg/Kg-day)	8.565E-06
	Carbon tetrachloride	2,000	µg/L	2,000	µg/m3	R	0.0192	mg/Kg-day	0.0525	1/(mg/Kg-day)	0.00101
	Chloroform	31	µg/L	31	µg/m3	R	0.000297	mg/Kg-day	0.0805	1/(mg/Kg-day)	2.393E-05
	Tetrachloroethene	3.90	µg/L	3.90	µg/m3	R	3.740E-05	mg/Kg-day	0.002	1/(mg/Kg-day)	7.479E-08
	Trichloroethene	5.00	µg/L	5.00	µg/m3	R	4.795E-05	mg/Kg-day	0.006	1/(mg/Kg-day)	2.877E-07
	(Total)										0.00104
										Total Cancer Risk Across All Exposure Routes/Pathways	0.00104

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

TABLE H-RJ-8.4.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Range J
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1,2,2-Tetrachloroethane	4.40	µg/L	4.40	µg/L	M	6.570E-05	mg/Kg-day	0.2	1/(mg/Kg-day)	1.314E-05
	Carbon tetrachloride	2,000	µg/L	2,000	µg/L	M	0.0299	mg/Kg-day	0.13	1/(mg/Kg-day)	0.00388
	Chloroform	31	µg/L	31	µg/L	M	0.000463	mg/Kg-day	0.0061	1/(mg/Kg-day)	2.824E-06
	Tetrachloroethene	3.90	µg/L	3.90	µg/L	M	5.823E-05	mg/Kg-day	0.052	1/(mg/Kg-day)	3.028E-06
	Trichloroethene	5.00	µg/L	5.00	µg/L	M	7.466E-05	mg/Kg-day	0.011	1/(mg/Kg-day)	8.212E-07
	(Total)										0.00390
Dermal	1,1,2,2-Tetrachloroethane	4.40	µg/L	4.40	µg/L	M	9.916E-07	mg/Kg-day	0.285714286	1/(mg/Kg-day)	2.833E-07
	Carbon tetrachloride	2,000	µg/L	2,000	µg/L	M	0.00110	mg/Kg-day	0.2	1/(mg/Kg-day)	0.000220
	Chloroform	31	µg/L	31	µg/L	M	6.909E-06	mg/Kg-day	0.0305	1/(mg/Kg-day)	2.107E-07
	Tetrachloroethene	3.90	µg/L	3.90	µg/L	M	4.688E-06	mg/Kg-day	0.052	1/(mg/Kg-day)	2.438E-07
	Trichloroethene	5.00	µg/L	5.00	µg/L	M	2.003E-06	mg/Kg-day	0.073333333	1/(mg/Kg-day)	1.469E-07
	(Total)										0.000221
										Total Cancer Risk Across All Exposure Routes/Pathways	0.00412

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

TABLE H-RJ-10.1.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Range J	1,1,2,2-Tetrachloroethane	3.075E-06	--	1.621E-07	3.237E-06	1,1,2,2-Tetrachloroethane	--	0.000718	--	3.782E-05	0.000755
			Acetone	--	--	--	--	Acetone	liver, kidney	0.00264	--	7.429E-06	0.00265
			Carbon tetrachloride	0.000909	--	0.000126	0.00103	Carbon tetrachloride	liver	28	--	3.88	32
			Chloroform	6.608E-07	--	1.206E-07	7.814E-07	Chloroform	liver	0.0303	--	0.00553	0.0359
			Tetrachloroethene	7.087E-07	--	1.395E-07	8.482E-07	Tetrachloroethene	liver	0.00382	--	0.000751	0.00457
			Trichloroethene	1.922E-07	--	8.406E-08	2.763E-07	Trichloroethene	--	0.00815	--	0.00357	0.0117
			(Total)	0.000913	--	0.000127	0.00104	(Total)	--	28	--	3.89	32
						Total Risk Across Groundwater	0.00104					Total Hazard Index Across Groundwater	32
						Total Risk Across All Media and All Exposure Routes	0.00104					Total Hazard Index Across All Media and All Exposure Routes	32

Total liver HI = 32
Total kidney HI = 0.00265

TABLE H-RJ-10.2.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Range J	1,1,2,2-Tetrachloroethane	1.314E-05	--	2.833E-07	1.342E-05
			Acetone	--	--	--	--
			Carbon tetrachloride	0.00388	--	0.000220	0.00410
			Chloroform	2.824E-06	--	2.107E-07	3.034E-06
			Tetrachloroethene	3.028E-06	--	2.438E-07	3.272E-06
			Trichloroethene	8.212E-07	--	1.469E-07	9.681E-07
			(Total)	0.00390	--	0.000221	0.00412
	Air	Range J	1,1,2,2-Tetrachloroethane	--	8.565E-06	--	8.565E-06
			Acetone	--	--	--	--
			Carbon tetrachloride	--	0.00101	--	0.00101
			Chloroform	--	2.393E-05	--	2.393E-05
			Tetrachloroethene	--	7.479E-08	--	7.479E-08
			Trichloroethene	--	2.877E-07	--	2.877E-07
			(Total)	--	0.00104	--	0.00104
						Total Risk Across Groundwater	0.00516
						Total Risk Across All Media and All Exposure Routes	0.00516

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
1,1,2,2-Tetrachloroethane	--	0.00201	--	4.688E-05	0.00206
Acetone	liver, kidney	0.00740	--	9.208E-06	0.00741
Carbon tetrachloride	liver	78	--	4.81	83
Chloroform	liver	0.0849	--	0.00686	0.0918
Tetrachloroethene	liver	0.0107	--	0.000931	0.0116
Trichloroethene	--	0.0228	--	0.00442	0.0273
(Total)	--	78	--	4.82	83
1,1,2,2-Tetrachloroethane	--	--	--	--	--
Acetone	--	--	--	--	--
Carbon tetrachloride	--	--	96	--	96
Chloroform	--	--	9.88	--	9.88
Tetrachloroethene	--	--	0.000971	--	0.000971
Trichloroethene	--	--	--	--	--
(Total)	--	--	106	--	106
				Total Hazard Index Across Groundwater	189
				Total Hazard Index Across All Media and All Exposure Routes	189

Total liver HI = 83
Total kidney HI = 0.00741

TABLE H-RJ-10.3.RME
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Range J	1,1,2,2-Tetrachloroethane	1.314E-05	--	2.833E-07	1.342E-05	1,1,2,2-Tetrachloroethane	--	0.00469	--	8.800E-05	0.00478
			Acetone	--	--	--	--	Acetone	liver, kidney	0.0173	--	1.728E-05	0.0173
			Carbon tetrachloride	0.00388	--	0.000220	0.00410	Carbon tetrachloride	liver	183	--	9.03	192
			Chloroform	2.824E-06	--	2.107E-07	3.034E-06	Chloroform	liver	0.198	--	0.0129	0.211
			Tetrachloroethene	3.028E-06	--	2.438E-07	3.272E-06	Tetrachloroethene	liver	0.0249	--	0.00175	0.0267
			Trichloroethene	8.212E-07	--	1.469E-07	9.681E-07	Trichloroethene	--	0.0533	--	0.00830	0.0616
			(Total)	0.00390	--	0.000221	0.00412	(Total)	--	183	--	9.05	192
							Total Risk Across Groundwater: 0.00412						Total Hazard Index Across Groundwater: 192
							Total Risk Across All Media and All Exposure Routes: 0.00412						Total Hazard Index Across All Media and All Exposure Routes: 192

Total liver HI = 192
Total kidney HI = 0.0173

TABLE H-DIA-1.
SELECTION OF EXPOSURE PATHWAYS
FORT McCLELLAN RI, ANNISTON, ALABAMA

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	Soil	Soil	Site 7 Detection and Identification Area	Industrial Worker	Adult	Ingestion	On-Site	Quant	Potential for exposure based on future land use.
						Dermal	On-Site	Quant	Potential for exposure based on future land use.
				Resident	Child	Ingestion	On-Site	Quant	Residents could live onsite in future.
						Dermal	On-Site	Quant	Residents could live onsite in future.
				Construction Worker	Adult	Ingestion	On-Site	Quant	Potential for exposure based on future land use.
						Dermal	On-Site	Quant	Potential for exposure based on future land use.
		Air		Industrial Worker	Adult	Inhalation	On-Site	Quant	Potential for exposure based on future land use.
				Construction Worker	Adult	Inhalation	On-Site	Quant	Potential for exposure based on future land use.

[a] Age adjusted values will be used for the adolescent receptor.
[b] Industrial worker is used to define a groundskeeper scenario.

TABLE H-DIA-3.1.
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Subsurface Soil
Exposure Medium: Soil
Exposure Point: DI Area

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Aluminum	mg/kg	27,789	- -	38,000		mg/kg	38,000	Max	Shapiro (2)	38,000	Max	Shapiro (2)
Chromium	mg/kg	34	- -	42		mg/kg	42	Max	Shapiro (2)	42	Max	Shapiro (2)
Iron	mg/kg	61,833	- -	97,000	D	mg/kg	97,000	Max	Shapiro (2)	97,000	Max	Shapiro (2)
Lead	mg/kg	19	- -	52		mg/kg	52	Max	Shapiro (2)	52	Max	Shapiro (2)

Qualifiers: Refer to Table H-1 for supporting information on flags and qualifiers.

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

Shapiro (1) - Shapiro goodness-of-fit test determines data are lognormally distributed

Shapiro (2) - The maximum detected value was < 95% UCL; it was therefore used as the EPC rather than the 95% UCL

Shapiro (3) - Shapiro goodness-of-fit test determines data are normally distributed

TABLE H-DIA-5.1.
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (2)	Adjusted Dermal RfD (3)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (4) (MM/DD/YY)
Aluminum	Chronic	1	mg/kg-day	0.1	0.1	mg/Kg-day	CNS	100	NCEA	08/26/96
	Subchronic	1	mg/kg-day	0.1	0.1	mg/Kg-day	CNS	--	--	--
Chromium	Chronic	0.003	mg/kg-day	0.02	0.00006	mg/Kg-day	none	900	IRIS	02/28/00
	Subchronic	0.02	mg/kg-day	0.02	0.0004	mg/Kg-day	none	100	HEAST	07/31/97
Iron	Chronic	--	mg/kg-day	0.15	0.045	mg/Kg-day	--	--	--	--
	Subchronic	--	mg/kg-day	0.15	0.045	mg/Kg-day	--	--	--	--

N/A = Not Applicable

(1) This table only includes RfDs for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical was a COPC, but does not appear on this table, no toxicity values were available to evaluate noncarcinogenic effects from oral or dermal exposures.

(2) Refer to RAGS, Part A

(3) The adjusted chronic RfD for the dermal route was calculated by multiplying the chronic oral RfD by the gastrointestinal absorption factor.

(4) This column represents the latest date at which IRIS, HEAST, or NCEA values were updated.

TABLE H-DIA-5.2.
NON-CANCER TOXICITY DATA -- INHALATION
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Chronic/ Subchronic	Value Inhalation RfC (2)	Units	Adjusted Inhalation RfD (3)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfC:RfD: Target Organ	Dates (4) (MM/DD/YY)
Aluminum	Chronic	--	mg/m3	0.00140	mg/kg-day	--	--	NCEA	
	Subchronic	--	mg/m3	0.00140	mg/kg-day	--	--	--	--
Chromium	Chronic	0.0001	mg/m3	2.857E-05	mg/kg-day	respiratory system	300	IRIS	02/28/00
	Subchronic	0.0001	mg/m3	2.857E-05	mg/kg-day	respiratory system	--	--	--

N/A = Not Applicable

(1) This table only includes RfCs for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical was a COPC, but does not appear on this table, no toxicity values were available to evaluate noncarcinogenic effects from inhalation exposures.

(2) "- -" indicates that an RfC is currently not available.

(3) Inhalation RfCs have been converted to inhalation RfDs by multiplying by 20m3/day and dividing by 70 kg.

(4) This column represents the latest date at which IRIS, HEAST, or NCEA values were updated.

TABLE H-DIA-5.3.
NON-CANCER TOXICITY DATA -- SPECIAL CASE CHEMICALS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Chronic/ Subchronic	Value	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of Primary Target Organ	Date (2) (MM/DD/YY)

(1) This table only includes values for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical was a COPC, but does not appear on this table, no toxicity values were available to evaluate noncarcinogenic effects.

(2) This column represents the latest date at which IRIS, HEAST, or NCEA values were updated.

TABLE H-DIA-6.1.
CANCER TOXICITY DATA -- ORAL/DERMAL
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Oral Cancer Slope Factor	Oral to Dermal Adjustment Factor	Adjusted Dermal Cancer Slope Factor (2)	Units	Weight of Evidence/ Cancer Guideline Description (3)	Source (4)	Date (5) (MM/DD/YY)

(1) This table only includes CSFs for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical was a COPC, but does not appear on this table, no toxicity values were available to evaluate carcinogenic effects from oral or dermal exposures.

(2) The adjusted slope factor for the dermal route was calculated by dividing the oral slope factor by the gastrointestinal absorption factor.

(3) EPA Group:

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 a human carcinogen

E - Evidence of noncarcinogenicity

(4) This column represents the latest date at which IRIS, HEAST, or NCEA values were updated.

TABLE H-DIA-6.2.
CANCER TOXICITY DATA -- INHALATION
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Unit Risk	Units	Adjustment	Inhalation Cancer Slope Factor (2)	Units	Weight of Evidence/ Cancer Guideline Description (3)	Source (4)	Date (5) (MM/DD/YY)
Chromium	0.012	µg/m3	3500	41	1/(mg/kg-day)	[A]	HEAST	07/31/97

(2) The slope factor for the inhalation route was calculated by multiplying the unit risk by the adjustment factor.

(3) EPA Group:

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 a human carcinogen

E - Evidence of noncarcinogenicity

TABLE H-DIA-6.3.
CANCER TOXICITY DATA -- SPECIAL CASE CHEMICALS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Value	Units	Source	Date (2) MM/DD/YY
Lead	--	1/(mg/kg-day)	--	--
	--	1/(mg/kg-day)	--	--
	--	1/(mg/kg-day)	--	--

(1) This table only includes CSFs for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical

TABLE H-DIA-7.1.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Soil
Exposure Point: DI Area
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	38,000	mg/kg	38,000	mg/kg	M	0.0372	mg/Kg-day	1.000	mg/Kg-day	- -	mg/m3	0.0372
	Chromium	42	mg/kg	42	mg/kg	M	4.149E-05	mg/Kg-day	0.00300	mg/Kg-day	0.0001	mg/m3	0.0138
	(Total)												0.0510
Dermal	Aluminum	38,000	mg/kg	38,000	mg/kg	M	1.952E-05	mg/Kg-day	0.1000	mg/Kg-day	- -	mg/m3	0.000195
	Chromium	42	mg/kg	42	mg/kg	M	2.178E-08	mg/Kg-day	6.000E-05	mg/Kg-day	0.0001	mg/m3	0.000363
	Iron	97,000	mg/kg	97,000	mg/kg	M	4.983E-05	mg/Kg-day	0.0450	mg/Kg-day	- -	mg/m3	0.00111
	(Total)												0.00167
												Total Hazard Index Across All Exposure Routes/Pathways	0.0527

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-DIA-7.2.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Air
Exposure Point: DI Area
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Aluminum	38,000	mg/kg	0.00380	µg/m3	R	0.000744	mg/Kg-day	0.00140	mg/Kg-day	- -	mg/m3	0.531
	Chromium	42	mg/kg	4.240E-06	µg/m3	R	8.297E-07	mg/Kg-day	2.857E-05	mg/Kg-day	0.0001	mg/m3	0.0290
	(Total)												0.560
												Total Hazard Index Across All Exposure Routes/Pathways	0.560

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-DIA-7.3.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Soil
Exposure Point: DI Area
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	38,000	mg/kg	38,000	mg/kg	M	0.486	mg/Kg-day	1.000	mg/Kg-day	--	mg/m3	0.486
	Chromium	42	mg/kg	42	mg/kg	M	0.000542	mg/Kg-day	0.00300	mg/Kg-day	0.0001	mg/m3	0.181
	(Total)												0.667
Dermal	Aluminum	38,000	mg/kg	38,000	mg/kg	M	0.000306	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.00306
	Chromium	42	mg/kg	42	mg/kg	M	3.415E-07	mg/Kg-day	6.000E-05	mg/Kg-day	0.0001	mg/m3	0.00569
	Iron	97,000	mg/kg	97,000	mg/kg	M	0.000781	mg/Kg-day	0.0450	mg/Kg-day	--	mg/m3	0.0174
	(Total)												0.0261
												Total Hazard Index Across All Exposure Routes/Pathways	0.693

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-DIA-7.4.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Soil
Exposure Point: DI Area
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	38,000	mg/kg	38,000	mg/kg	M	0.0744	mg/Kg-day	1.000	mg/Kg-day	- -	mg/m3	0.0744
	Chromium	42	mg/kg	42	mg/kg	M	8.297E-05	mg/Kg-day	0.00300	mg/Kg-day	0.0001	mg/m3	0.0277
	(Total)												0.102
Dermal	Aluminum	38,000	mg/kg	38,000	mg/kg	M	0.000195	mg/Kg-day	0.1000	mg/Kg-day	- -	mg/m3	0.00195
	Chromium	42	mg/kg	42	mg/kg	M	2.178E-07	mg/Kg-day	6.000E-05	mg/Kg-day	0.0001	mg/m3	0.00363
	Iron	97,000	mg/kg	97,000	mg/kg	M	0.000498	mg/Kg-day	0.0450	mg/Kg-day	- -	mg/m3	0.0111
	(Total)												0.0167
												Total Hazard Index Across All Exposure Routes/Pathways	0.119

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-DIA-7.5.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Air
Exposure Point: DI Area
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Aluminum	38,000	mg/kg	0.00760	µg/m3	R	0.00149	mg/Kg-day	0.00140	mg/Kg-day	- -	mg/m3	1.06
	Chromium (Total)	42	mg/kg	8.480E-06	µg/m3	R	1.659E-06	mg/Kg-day	2.857E-05	mg/Kg-day	0.0001	mg/m3	0.0581
													1.12
												Total Hazard Index Across All Exposure Routes/Pathways	1.12

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-DIA-8.1.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Air
Exposure Point: DI Area
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Chromium (Total)	42	mg/kg	4.240E-06	µg/m3	R	2.963E-07	mg/Kg-day	41	1/(mg/Kg-day)	1.215E-05
											1.215E-05
										Total Cancer Risk Across All Exposure Routes/Pathways	1.215E-05

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

TABLE H-DIA-8.2.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Air
Exposure Point: DI Area
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Chromium (Total)	42	mg/kg	8.480E-06	µg/m3	R	2.371E-08	mg/Kg-day	41	l/(mg/Kg-day)	9.720E-07
											9.720E-07
										Total Cancer Risk Across All Exposure Routes/Pathways	9.720E-07

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

TABLE H-DIA-10.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Soil	DI Area	Aluminum	--	--	--	--	Aluminum	CNS	0.0372	--	0.000195	0.0374
			Chromium	--	--	--	--	Chromium	none	0.0138	--	0.000363	0.0142
			(Total)	--	--	--	--	(Total)	--	0.0510	--	0.000558	0.0516
	Air	DI Area	Aluminum	--	--	--	--	Aluminum	--	--	0.531	--	0.531
			Chromium	--	1.215E-05	--	1.215E-05	Chromium	respiratory system	--	0.0290	--	0.0290
			(Total)	--	1.215E-05	--	1.215E-05	(Total)	--	--	0.560	--	0.560
						Total Risk Across Subsurface Soil	1.215E-05					Total Hazard Index Across Subsurface Soil	0.612
						Total Risk Across All Media and All Exposure Routes	1.215E-05					Total Hazard Index Across All Media and All Exposure Routes	0.612

Total CNS HI = 0.0374
Total respiratory system HI = 0.0290

TABLE H-DIA-10.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soi	Soil	DI Area	Aluminum	--	--	--	--	Aluminum	CNS	0.486	--	0.00306	0.489
			Chromium	--	--	--	--	Chromium	none	0.181	--	0.00569	0.186
			(Total)	--	--	--	--	(Total)	--	0.667	--	0.00875	0.675
						Total Risk Across Subsurface Soil	--					Total Hazard Index Across Subsurface Soil	0.675
						Total Risk Across All Media and All Exposure Routes	0.000E+00					Total Hazard Index Across All Media and All Exposure Routes	0.675

Total CNS HI = 0.489

TABLE H-DIA-10.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Soil	DI Area	Aluminum	--	--	--	--	Aluminum	CNS	0.0744	--	0.00195	0.0763
			Chromium	--	--	--	--	Chromium	none	0.00415	--	0.000545	0.00469
			(Total)	--	--	--	--	(Total)	--	0.0785	--	0.00250	0.0810
	Air	DI Area	Aluminum	--	--	--	--	Aluminum	--	--	1.06	--	1.06
			Chromium	--	9.720E-07	--	9.720E-07	Chromium	respiratory system	--	0.0581	--	0.0581
			(Total)	--	9.720E-07	--	9.720E-07	(Total)	--	--	1.12	--	1.12
							Total Risk Across Subsurface Soil: 9.720E-07						Total Hazard Index Across Subsurface Soil: 1.20
							Total Risk Across All Media and All Exposure Routes: 9.720E-07						Total Hazard Index Across All Media and All Exposure Routes: 1.20

Total CNS HI = 0.0763
Total respiratory system HI = 0.0581

TABLE H-RL-1.
SELECTION OF EXPOSURE PATHWAYS
FORT McCLELLAN RI, ANNISTON, ALABAMA

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	Soil	Soil	Site 8 Range L (Lima Pond) Chemical Munitions Disposal Area	Industrial Worker	Adult	Ingestion	On-Site	Quant	
						Dermal	On-Site	Quant	
		Air		Industrial Worker	Adult	Inhalation	On-Site	Quant	
Current/Future	Soil	Soil		Recreational	Adolescent[a]	Ingestion	On-Site	Quant	
						Dermal	On-Site	Quant	
		Tissue		Hunter	Adolescent[a]	Ingestion	On-Site	Quant	
	Sediment	Sediment		Recreational	Adolescent[a]	Ingestion	On-Site	Quant	
						Dermal	On-Site	Quant	
	Surface Water	Surface Water		Recreational	Adolescent[a]	Dermal	On-Site	Quant	
Future	Soil	Soil		Industrial Worker	Adult	Ingestion	On-Site	Quant	
						Dermal	On-Site	Quant	
				Resident	Child	Ingestion	On-Site	Quant	
						Dermal	On-Site	Quant	
				Construction Worker	Adult	Ingestion	On-Site	Quant	
						Dermal	On-Site	Quant	
		Air		Industrial Worker	Adult	Inhalation	On-Site	Quant	
				Construction Worker	Adult	Inhalation	On-Site	Quant	
	Groundwater	Groundwater		Industrial Worker[b]	Adult	Ingestion	On-Site	Quant	
						Dermal	On-Site	Quant	
				Resident	Adult	Ingestion	On-Site	Quant	
						Dermal	On-Site	Quant	
					Child	Ingestion	On-Site	Quant	
						Dermal	On-Site	Quant	
		Air		Resident	Adult	Inhalation	On-Site	Quant	

[a] Age adjusted values will be used for the adolescent receptor.
[b] Industrial worker is used to define a groundskeeper scenario.

TABLE H-RL-3.1.
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Surface Soil
Exposure Medium: Soil
Exposure Point: Range L

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Aluminum	mg/kg	25,395	- -	42,100		mg/kg	42,100	Max	Shapiro (2)	42,100	Max	Shapiro (2)
Chromium	mg/kg	57	- -	73		mg/kg	73	Max	Shapiro (2)	73	Max	Shapiro (2)
Iron	mg/kg	61,900	- -	80,000		mg/kg	80,000	Max	Shapiro (2)	80,000	Max	Shapiro (2)
Lead	mg/kg	65	- -	110		mg/kg	110	Max	Shapiro (2)	110	Max	Shapiro (2)
Manganese	mg/kg	3,043	- -	5,600		mg/kg	5,600	Max	Shapiro (2)	5,600	Max	Shapiro (2)
Nickel	mg/kg	90	- -	166		mg/kg	166	Max	Shapiro (2)	166	Max	Shapiro (2)
Vanadium	mg/kg	63	- -	76		mg/kg	76	Max	Shapiro (2)	76	Max	Shapiro (2)

Qualifiers: Refer to Table H-1 for supporting information on flags and qualifiers.

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

Shapiro (1) - Shapiro goodness-of-fit test determines data are lognormally distributed

Shapiro (2) - The maximum detected value was < 95% UCL; it was therefore used as the EPC rather than the 95% UCL

Shapiro (3) - Shapiro goodness-of-fit test determines data are normally distributed

TABLE H-RL-3.2.
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Subsurface Soil
Exposure Medium: Soil
Exposure Point: Range L

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Aluminum	mg/kg	36,600	- -	52,000		mg/kg	52,000	Max	Shapiro (2)	52,000	Max	Shapiro (2)
Chromium	mg/kg	57	- -	88		mg/kg	88	Max	Shapiro (2)	88	Max	Shapiro (2)
Iron	mg/kg	45,233	- -	58,100		mg/kg	58,100	Max	Shapiro (2)	58,100	Max	Shapiro (2)
Lead	mg/kg	28	- -	52		mg/kg	52	Max	Shapiro (2)	52	Max	Shapiro (2)
Vanadium	mg/kg	80	- -	116		mg/kg	116	Max	Shapiro (2)	116	Max	Shapiro (2)

Qualifiers: Refer to Table H-1 for supporting information on flags and qualifiers.

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

Shapiro (1) - Shapiro goodness-of-fit test determines data are lognormally distributed

Shapiro (2) - The maximum detected value was < 95% UCL; it was therefore used as the EPC rather than the 95% UCL

Shapiro (3) - Shapiro goodness-of-fit test determines data are normally distributed

TABLE H-RL-3.3.
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Range L

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Chromium	mg/kg	57	97	80		mg/kg	80	Max	Shapiro (2)	80	Max	Shapiro (2)
Lead	mg/kg	39	58	64		mg/kg	58	95% UCL-N	Shapiro (3)	58	95% UCL-N	Shapiro (3)

Qualifiers: Refer to Table H-1 for supporting information on flags and qualifiers.

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

Shapiro (1) - Shapiro goodness-of-fit test determines data are lognormally distributed

Shapiro (2) - The maximum detected value was < 95% UCL; it was therefore used as the EPC rather than the 95% UCL

Shapiro (3) - Shapiro goodness-of-fit test determines data are normally distributed

TABLE H-RL-3.4.
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Range L

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Aluminum	µg/L	2,047	12,034	6,800		µg/L	6,800	Max	Shapiro (2)	6,800	Max	Shapiro (2)
Beryllium	µg/L	0.910	2.41	2.41		µg/L	2.41	Max		2.41	Max	
Cadmium (water)	µg/L	1.67	3.00	6.00		µg/L	3.00	95% UCL-T	Shapiro (1)	3.00	95% UCL-T	Shapiro (1)
Cobalt	µg/L	14	38	38		µg/L	38	Max		38	Max	
Iron	µg/L	4,876	7,929	20,300		µg/L	7,929	95% UCL-N	Shapiro (3)	7,929	95% UCL-N	Shapiro (3)
Lead	µg/L	3.01	10.00	10.00		µg/L	10.00	Max		10.00	Max	
Manganese	µg/L	685	59,071	5,260		µg/L	5,260	Max	Shapiro (2)	5,260	Max	Shapiro (2)
Nickel	µg/L	26	131	131		µg/L	131	Max		131	Max	
4,4'-DDE	µg/L	0.00435	0.0244	0.0244	C	µg/L	0.0244	Max		0.0244	Max	
Benzo(a)anthracene	µg/L	0.0220	0.119	0.119		µg/L	0.119	Max		0.119	Max	
Benzo(b)fluoranthene	µg/L	0.0845	0.166	0.275	B	µg/L	0.166	95% UCL-T	Shapiro (1)	0.166	95% UCL-T	Shapiro (1)
Bicarbonate	µg/L	31,000	--	31,000		µg/L	31,000	Max	Shapiro (2)	31,000	Max	Shapiro (2)
Chrysene	µg/L	0.0266	0.0571	0.0792		µg/L	0.0571	95% UCL-T	Shapiro (1)	0.0571	95% UCL-T	Shapiro (1)
Heptachlor	µg/L	0.0181	1.09	0.167	C	µg/L	0.167	Max	Shapiro (2)	0.167	Max	Shapiro (2)
Heptachlor Epoxide	µg/L	0.0147	0.129	0.129	C	µg/L	0.129	Max		0.129	Max	
Indeno(1,2,3-cd)pyrene	µg/L	0.0144	0.0781	0.0781		µg/L	0.0781	Max		0.0781	Max	
Isodrin	µg/L	0.0118	0.111	0.120	BC	µg/L	0.111	95% UCL-T	Shapiro (1)	0.111	95% UCL-T	Shapiro (1)
Nitrate,Nitrite	µg/L	205	--	205		µg/L	205	Max	Shapiro (2)	205	Max	Shapiro (2)
Nitroglycerine	µg/L	1.14	2.49	2.49	Q	µg/L	2.49	Max		2.49	Max	
PCB 1248	µg/L	0.597	4.74	4.74	ZC	µg/L	4.74	Max		4.74	Max	
RDX	µg/L	0.237	0.615	0.615	Q	µg/L	0.615	Max		0.615	Max	
Alkalinity	µg/L	31,000	--	31,000		µg/L	31,000	Max	Shapiro (2)	31,000	Max	Shapiro (2)
Phosphorous	µg/L	47	--	47		µg/L	47	Max	Shapiro (2)	47	Max	Shapiro (2)
Trichloroethene	µg/L	0.543	1.10	1.10		µg/L	1.10	Max		1.10	Max	
bis(2-Ethylhexyl)phthalate	µg/L	7.30	34	34		µg/L	34	Max		34	Max	
delta-BHC	µg/L	0.00206	0.00679	0.00679	CB	µg/L	0.00679	Max		0.00679	Max	

Qualifiers: Refer to Table H-1 for supporting information on flags and qualifiers.

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

Shapiro (1) - Shapiro goodness-of-fit test determines data are lognormally distributed

Shapiro (2) - The maximum detected value was < 95% UCL; it was therefore used as the EPC rather than the 95% UCL

Shapiro (3) - Shapiro goodness-of-fit test determines data are normally distributed

TABLE H-RL-3.5.
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Range L

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic	µg/L	2.16	3.15	3.15		µg/L	3.15	Max		3.15	Max	
Manganese	µg/L	525	1,121	975		µg/L	975	Max	Shapiro (2)	975	Max	Shapiro (2)
Selenium	µg/L	1.80	3.41	3.41		µg/L	3.41	Max		3.41	Max	
1,1,1-Trichloroethane	µg/L	1.05	2.70	2.70		µg/L	2.70	Max		2.70	Max	
2,4,6-Trinitrotoluene	µg/L	0.886	1.99	2.20	C	µg/L	1.99	95% UCL-N	Shapiro (3)	1.99	95% UCL-N	Shapiro (3)
2,4-Dinitrotoluene	µg/L	1.86	4.76	5.41	C	µg/L	4.76	95% UCL-N	Shapiro (3)	4.76	95% UCL-N	Shapiro (3)
2,6-Dinitrotoluene	µg/L	0.925	2.03	2.28	C	µg/L	2.03	95% UCL-N	Shapiro (3)	2.03	95% UCL-N	Shapiro (3)
Biochemical Oxygen Demand	µg/L	2.50	4.00	4.00		µg/L	4.00	Max		4.00	Max	
alpha-BHC	µg/L	0.00225	0.00328	0.00328	C	µg/L	0.00328	Max		0.00328	Max	
delta-BHC	µg/L	0.00435	0.0650	0.00726	C	µg/L	0.00726	Max	Shapiro (2)	0.00726	Max	Shapiro (2)

Qualifiers: Refer to Table H-1 for supporting information on flags and qualifiers.

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

Shapiro (1) - Shapiro goodness-of-fit test determines data are lognormally distributed

Shapiro (2) - The maximum detected value was < 95% UCL; it was therefore used as the EPC rather than the 95% UCL

Shapiro (3) - Shapiro goodness-of-fit test determines data are normally distributed

TABLE H-RL-5.1.
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (2)	Adjusted Dermal RfD (3)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (4) (MM/DD/YY)
Aluminum	Chronic	1	mg/kg-day	0.1	0.1	mg/Kg-day	CNS	100	NCEA	08/26/96
	Subchronic	1	mg/kg-day	0.1	0.1	mg/Kg-day	CNS	--	--	--
Chromium	Chronic	0.003	mg/kg-day	0.02	0.00006	mg/Kg-day	none	900	IRIS	02/28/00
	Subchronic	0.02	mg/kg-day	0.02	0.0004	mg/Kg-day	none	100	HEAST	07/31/97
Iron	Chronic	--	mg/kg-day	0.15	0.045	mg/Kg-day	--	--	--	--
	Subchronic	--	mg/kg-day	0.15	0.045	mg/Kg-day	--	--	--	--
Manganese	Chronic	0.024	mg/kg-day	0.04	0.00096	mg/Kg-day	CNS	1	IRIS	02/28/00
	Subchronic	0.024	mg/kg-day	0.04	0.00096	mg/Kg-day	CNS	--	--	--
	Chronic	0.14	mg/kg-day	0.04	0.0056	mg/Kg-day	CNS	1	IRIS	02/28/00
	Subchronic	0.14	mg/kg-day	0.04	0.0056	mg/Kg-day	CNS	1	HEAST	07/31/97
Nickel	Chronic	0.02	mg/kg-day	0.27	0.0054	mg/Kg-day	whole body	300	IRIS	02/28/00
	Subchronic	0.02	mg/kg-day	0.27	0.0054	mg/Kg-day	whole body	300	HEAST	07/31/97
Vanadium	Chronic	0.009	mg/kg-day	0.01	0.00009	mg/Kg-day	none	100	IRIS	02/28/00
	Subchronic	0.007	mg/kg-day	0.01	0.00007	mg/Kg-day	none	100	HEAST	07/31/97
Beryllium	Chronic	0.002	mg/kg-day	0.01	0.00002	mg/Kg-day	GI system	300	IRIS	02/28/00
	Subchronic	0.005	mg/kg-day	0.01	0.00005	mg/Kg-day	GI system	100	HEAST	07/31/97
Cadmium (water)	Chronic	0.0005	mg/kg-day	0.01	0.000005	mg/Kg-day	kidney	10	IRIS	02/28/00
	Subchronic	0.0005	mg/kg-day	0.01	0.000005	mg/Kg-day	kidney	--	--	--
Cobalt	Chronic	0.06	mg/kg-day	0.8	0.048	mg/Kg-day	--	--	NCEA	
	Subchronic	0.06	mg/kg-day	0.8	0.048	mg/Kg-day	--	--	--	--
Heptachlor	Chronic	0.0005	mg/kg-day	0.72	0.00036	mg/Kg-day	liver	300	IRIS	02/28/00
	Subchronic	0.0005	mg/kg-day	0.72	0.00036	mg/Kg-day	liver	300	HEAST	07/31/97
Heptachlor Epoxide	Chronic	0.000013	mg/kg-day	0.72	0.00000936	mg/Kg-day	liver	1000	IRIS	02/28/00
	Subchronic	0.000013	mg/kg-day	0.72	0.00000936	mg/Kg-day	liver	1000	HEAST	07/31/97
Nitrate,Nitrite	Chronic	0.1	mg/kg-day	0.5	0.05	mg/Kg-day	blood	10	IRIS	07/24/98
	Subchronic	0.1	mg/kg-day	0.5	0.05	mg/Kg-day	blood	10	HEAST	07/31/97
RDX	Chronic	0.003	mg/kg-day	1	0.003	mg/Kg-day	reproductive system	100	IRIS	02/28/00
	Subchronic	0.003	mg/kg-day	1	0.003	mg/Kg-day	reproductive system	100	HEAST	07/31/97
Trichloroethene	Chronic	0.006	mg/kg-day	0.15	0.0009	mg/Kg-day	--	3000	NCEA	03/05/92
	Subchronic	0.006	mg/kg-day	0.15	0.0009	mg/Kg-day	--	--	--	--
bis(2-Ethylhexyl)phthalate	Chronic	0.02	mg/kg-day	0.19	0.0038	mg/Kg-day	liver	1000	IRIS	02/28/00
	Subchronic	0.02	mg/kg-day	0.19	0.0038	mg/Kg-day	liver	--	--	--
Arsenic	Chronic	0.0003	mg/kg-day	0.41	0.000123	mg/Kg-day	skin	3	IRIS	02/28/00
	Subchronic	0.0003	mg/kg-day	0.41	0.000123	mg/Kg-day	skin	3	HEAST	07/31/97
Selenium	Chronic	0.005	mg/kg-day	0.44	0.0022	mg/Kg-day	whole body	3	IRIS	02/28/00

TABLE H-RL-5.1.
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (2)	Adjusted Dermal RfD (3)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (4) (MM/DD/YY)
	Subchronic	0.005	mg/kg-day	0.44	0.0022	mg/Kg-day	whole body	3	HEAST	07/31/97
1,1,1-Trichloroethane	Chronic	0.035	mg/kg-day	0.9	0.0315	mg/Kg-day	--	--	NCEA	
	Subchronic	0.035	mg/kg-day	0.9	0.0315	mg/Kg-day	--	--	--	--
2,4,6-Trinitrotoluene	Chronic	0.0005	mg/kg-day	0.6	0.0003	mg/Kg-day	liver	1000	IRIS	02/28/00
	Subchronic	0.0005	mg/kg-day	0.6	0.0003	mg/Kg-day	liver	1000	HEAST	07/31/97
2,4-Dinitrotoluene	Chronic	0.002	mg/kg-day	0.85	0.0017	mg/Kg-day	CNS	100	IRIS	02/28/00
	Subchronic	0.002	mg/kg-day	0.85	0.0017	mg/Kg-day	CNS	100	HEAST	07/31/97
2,6-Dinitrotoluene	Chronic	0.001	mg/kg-day	0.85	0.00085	mg/Kg-day	CNS, blood, kidney	3000	HEAST	07/31/97
	Subchronic	0.01	mg/kg-day	0.85	0.0085	mg/Kg-day	CNS, blood, kidney	300	HEAST	07/31/97

N/A = Not Applicable

(1) This table only includes RfDs for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical was a COPC, but does not appear on this table, no toxicity values were available to evaluate noncarcinogenic effects from oral or dermal exposures.

(2) Refer to RAGS, Part A

(3) The adjusted chronic RfD for the dermal route was calculated by multiplying the chronic oral RfD by the gastrointestinal absorption factor.

(4) This column represents the latest date at which IRIS, HEAST, or NCEA values were updated.

TABLE H-RL-5.2.
NON-CANCER TOXICITY DATA -- INHALATION
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Chronic/ Subchronic	Value Inhalation RfC (2)	Units	Adjusted Inhalation RfD (3)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfC:RfD: Target Organ	Dates (4) (MM/DD/YY)
Aluminum	Chronic	--	mg/m3	0.00140	mg/kg-day	--	--	NCEA	
	Subchronic	--	mg/m3	0.00140	mg/kg-day	--	--	--	--
Chromium	Chronic	0.0001	mg/m3	2.857E-05	mg/kg-day	respiratory system	300	IRIS	02/28/00
	Subchronic	0.0001	mg/m3	2.857E-05	mg/kg-day	respiratory system	--	--	--
Manganese	Chronic	5.000E-05	mg/m3	1.429E-05	mg/kg-day	CNS	1000	IRIS	02/28/00
	Subchronic	5.000E-05	mg/m3	1.429E-05	mg/kg-day	CNS	--	--	--
	Chronic	5.000E-05	mg/m3	1.429E-05	mg/kg-day	CNS	1000	IRIS	02/28/00
Beryllium	Chronic	0.0200	mg/m3	0.00571	mg/kg-day	respiratory system	10	IRIS	02/28/00
	Subchronic	0.0200	mg/m3	0.00571	mg/kg-day	respiratory system	--	--	--
Cadmium (water)	Chronic	--	mg/m3	5.700E-05	mg/kg-day	--	--	NCEA	
	Subchronic	--	mg/m3	5.700E-05	mg/kg-day	--	--	--	--
1,1,1-Trichloroethane	Chronic	--	mg/m3	0.290	mg/kg-day	--	--	NCEA	
	Subchronic	--	mg/m3	0.290	mg/kg-day	--	--	--	--

N/A = Not Applicable

(1) This table only includes RfCs for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical was a COPC, but does not appear on this table, no toxicity values were available to evaluate noncarcinogenic effects from inhalation exposures.

(2) "- -" indicates that an RfC is currently not available.

(3) Inhalation RfCs have been converted to inhalation RfDs by multiplying by 20m3/day and dividing by 70 kg.

(4) This column represents the latest date at which IRIS, HEAST, or NCEA values were updated.

TABLE H-RL-5.3.
NON-CANCER TOXICITY DATA -- SPECIAL CASE CHEMICALS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Chronic/ Subchronic	Value	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of Primary Target Organ	Date (2) (MM/DD/YY)
Benzo(a)anthracene	Chronic	0.03	mg/Kg-day	--	--	surr.	--
	Subchronic	0.3	mg/Kg-day	--	--	surr.	--
	Chronic	0.0093	mg/Kg-day	--	--	surr.	--
	Subchronic	0.093	mg/Kg-day	--	--	surr.	--
Benzo(b)fluoranthene	Chronic	0.03	mg/Kg-day	--	--	surr.	--
	Subchronic	0.3	mg/Kg-day	--	--	surr.	--
	Chronic	0.0093	mg/Kg-day	--	--	surr.	--
	Subchronic	0.093	mg/Kg-day	--	--	surr.	--
Chrysene	Chronic	0.03	mg/Kg-day	--	--	surr.	--
	Subchronic	0.3	mg/Kg-day	--	--	surr.	--
	Chronic	0.0093	mg/Kg-day	--	--	surr.	--
	Subchronic	0.093	mg/Kg-day	--	--	surr.	--
Indeno(1,2,3-cd)pyrene	Chronic	0.03	mg/Kg-day	--	--	surr.	--
	Subchronic	0.3	mg/Kg-day	--	--	surr.	--
	Chronic	0.0093	mg/Kg-day	--	--	surr.	--
	Subchronic	0.093	mg/Kg-day	--	--	surr.	--

(1) This table only includes values for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical was a COPC, but does not appear on this table, no toxicity values were available to evaluate noncarcinogenic effects.

(2) This column represents the latest date at which IRIS, HEAST, or NCEA values were updated.

TABLE H-RL-6.1.
CANCER TOXICITY DATA -- ORAL/DERMAL
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Oral Cancer Slope Factor	Oral to Dermal Adjustment Factor	Adjusted Dermal Cancer Slope Factor (2)	Units	Weight of Evidence/ Cancer Guideline Description (3)	Source (4)	Date (5) (MM/DD/YY)
4,4'-DDE	0.34	0.7	0.486	1/(mg/Kg-day)	[B2]	IRIS	02/28/00
Heptachlor	4.5	0.72	6.25	1/(mg/Kg-day)	[B2]	IRIS	02/28/00
Heptachlor Epoxide	9.1	0.72	13	1/(mg/Kg-day)	[B2]	IRIS	02/28/00
Nitroglycerine	0.014	0.5	0.0280	1/(mg/Kg-day)	--	NCEA	
RDX	0.11	1	0.110	1/(mg/Kg-day)	[C]	IRIS	02/28/00
Trichloroethene	0.011	0.15	0.0733	1/(mg/Kg-day)	--	NCEA	03/05/92
bis(2-Ethylhexyl)phthalate	0.014	0.19	0.0737	1/(mg/Kg-day)	[B2]	IRIS	02/28/00
Arsenic	1.5	0.41	3.66	1/(mg/Kg-day)	[A]	IRIS	02/28/00
2,4,6-Trinitrotoluene	0.03	0.6	0.0500	1/(mg/Kg-day)	[C]	IRIS	02/28/00
2,4-Dinitrotoluene	0.68	0.85	0.800	1/(mg/Kg-day)	[B2]	IRIS	02/28/00
2,6-Dinitrotoluene	0.68	0.85	0.800	1/(mg/Kg-day)	[B2]	IRIS	02/28/00
alpha-BHC	6.3	0.97	6.49	1/(mg/Kg-day)	[B2]	IRIS	02/28/00

(1) This table only includes CSFs for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical was a COPC, but does not appear on this table, no toxicity values were available to evaluate carcinogenic effects from oral or dermal exposures.

(2) The adjusted slope factor for the dermal route was calculated by dividing the oral slope factor by the gastrointestinal absorption factor.

(3) EPA Group:

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 a human carcinogen

E - Evidence of noncarcinogenicity

(4) This column represents the latest date at which IRIS, HEAST, or NCEA values were updated.

TABLE H-RL-6.2.
CANCER TOXICITY DATA -- INHALATION
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Unit Risk	Units	Adjustment	Inhalation Cancer Slope Factor (2)	Units	Weight of Evidence/ Cancer Guideline Description (3)	Source (4)	Date (5) (MM/DD/YY)
Chromium	0.012	µg/m3	3500	41	1/(mg/kg-day)	[A]	HEAST	07/31/97
Beryllium	0.0024	µg/m3	3500	8.40	1/(mg/kg-day)	[B1]	IRIS	02/28/00
Cadmium (water)	0.0018	µg/m3	3500	6.30	1/(mg/kg-day)	[B1]	IRIS	--
Heptachlor	0.0013	µg/m3	3500	4.55	1/(mg/kg-day)	[B2]	IRIS	02/28/00
Heptachlor Epoxide	0.0026	µg/m3	3500	9.10	1/(mg/kg-day)	[B2]	IRIS	02/28/00
Trichloroethene	0.0000017	µg/m3	3500	0.00600	1/(mg/kg-day)	--	NCEA	03/05/92
Arsenic	0.0043	µg/m3	3500	15	1/(mg/kg-day)	[A]	IRIS	--
alpha-BHC	0.0018	µg/m3	3500	6.30	1/(mg/kg-day)	[B2]	IRIS	02/28/00

(2) The slope factor for the inhalation route was calculated by multiplying the unit risk by the adjustment factor.

(3) EPA Group:

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 a human carcinogen

E - Evidence of noncarcinogenicity

TABLE H-RL-6.3.
CANCER TOXICITY DATA -- SPECIAL CASE CHEMICALS
FORT McCLELLAN RI, ANNISTON, ALABAMA

Chemical of Potential Concern (1)	Value	Units	Source	Date (2) MM/DD/YY
Lead	--	1/(mg/kg-day)	--	--
	--	1/(mg/kg-day)	--	--
	--	1/(mg/kg-day)	--	--
Benzo(a)anthracene	7.30	1/(mg/kg-day)	tef	--
	24	1/(mg/kg-day)	tef	--
Benzo(b)fluoranthene	7.30	1/(mg/kg-day)	tef	--
	24	1/(mg/kg-day)	tef	--
Chrysene	7.30	1/(mg/kg-day)	tef	--
	24	1/(mg/kg-day)	tef	--
Indeno(1,2,3-cd)pyrene	7.30	1/(mg/kg-day)	tef	--
	24	1/(mg/kg-day)	tef	--
PCB 1248	2.00	1/(mg/kg-day)	IRIS	--
	2.22	1/(mg/kg-day)	IRIS	--

(1) This table only includes CSFs for COPCs with EPA-verified, provisional, or surrogate toxicity values. If a chemical

TABLE H-RL-7.1.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current
Medium: Surface Soil
Exposure Medium: Soil
Exposure Point: Range L
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	42,100	mg/kg	42,100	mg/kg	M	0.00791	mg/Kg-day	1.000	mg/Kg-day	--	mg/m3	0.00791
	Chromium	73	mg/kg	73	mg/kg	M	1.379E-05	mg/Kg-day	0.00300	mg/Kg-day	0.0001	mg/m3	0.00460
	Manganese	5,600	mg/kg	5,600	mg/kg	M	0.00105	mg/Kg-day	0.0240	mg/Kg-day	0.00005	mg/m3	0.0438
	Nickel	166	mg/kg	166	mg/kg	M	3.119E-05	mg/Kg-day	0.0200	mg/Kg-day	--	mg/m3	0.00156
	Vanadium	76	mg/kg	76	mg/kg	M	1.424E-05	mg/Kg-day	0.00900	mg/Kg-day	--	mg/m3	0.00158
	(Total)												0.0595
Dermal	Aluminum	42,100	mg/kg	42,100	mg/kg	M	9.557E-05	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.000956
	Chromium	73	mg/kg	73	mg/kg	M	1.666E-07	mg/Kg-day	6.000E-05	mg/Kg-day	0.0001	mg/m3	0.00278
	Iron	80,000	mg/kg	80,000	mg/kg	M	0.000182	mg/Kg-day	0.0450	mg/Kg-day	--	mg/m3	0.00404
	Manganese	5,600	mg/kg	5,600	mg/kg	M	1.271E-05	mg/Kg-day	0.000960	mg/Kg-day	0.00005	mg/m3	0.0132
	Nickel	166	mg/kg	166	mg/kg	M	3.768E-07	mg/Kg-day	0.00540	mg/Kg-day	--	mg/m3	6.978E-05
	Vanadium	76	mg/kg	76	mg/kg	M	1.721E-07	mg/Kg-day	9.000E-05	mg/Kg-day	--	mg/m3	0.00191
	(Total)												0.0230
												Total Hazard Index Across All Exposure Routes/Pathways	0.0825

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-RL-7.2.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current
Medium: Surface Soil
Exposure Medium: Air
Exposure Point: Range L
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Aluminum	42,100	mg/kg	0.00421	µg/m3	R	3.955E-05	mg/Kg-day	0.00140	mg/Kg-day	--	mg/m3	0.0282
	Chromium	73	mg/kg	7.340E-06	µg/m3	R	6.895E-08	mg/Kg-day	2.857E-05	mg/Kg-day	0.0001	mg/m3	0.00241
	Manganese	5,600	mg/kg	0.000560	µg/m3	R	5.260E-06	mg/Kg-day	1.429E-05	mg/Kg-day	0.00005	mg/m3	0.368
	(Total)												0.399
												Total Hazard Index Across All Exposure Routes/Pathways	0.399

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-RL-7.3.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Soil
Exposure Point: Range L
Receptor Population: Recreational User
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	42,100	mg/kg	42,100	mg/kg	M	0.00666	mg/Kg-day	1.000	mg/Kg-day	- -	mg/m3	0.00666
	Chromium	73	mg/kg	73	mg/kg	M	1.162E-05	mg/Kg-day	0.00300	mg/Kg-day	0.0001	mg/m3	0.00387
	Manganese	5,600	mg/kg	5,600	mg/kg	M	0.000886	mg/Kg-day	0.0240	mg/Kg-day	0.00005	mg/m3	0.0369
	Nickel	166	mg/kg	166	mg/kg	M	2.628E-05	mg/Kg-day	0.0200	mg/Kg-day	- -	mg/m3	0.00131
	Vanadium	76	mg/kg	76	mg/kg	M	1.200E-05	mg/Kg-day	0.00900	mg/Kg-day	- -	mg/m3	0.00133
	(Total)												0.0501
Dermal	Aluminum	42,100	mg/kg	42,100	mg/kg	M	1.399E-05	mg/Kg-day	0.1000	mg/Kg-day	- -	mg/m3	0.000140
	Chromium	73	mg/kg	73	mg/kg	M	2.440E-08	mg/Kg-day	6.000E-05	mg/Kg-day	0.0001	mg/m3	0.000407
	Iron	80,000	mg/kg	80,000	mg/kg	M	2.659E-05	mg/Kg-day	0.0450	mg/Kg-day	- -	mg/m3	0.000591
	Manganese	5,600	mg/kg	5,600	mg/kg	M	1.862E-06	mg/Kg-day	0.000960	mg/Kg-day	0.00005	mg/m3	0.00194
	Nickel	166	mg/kg	166	mg/kg	M	5.518E-08	mg/Kg-day	0.00540	mg/Kg-day	- -	mg/m3	1.022E-05
	Vanadium	76	mg/kg	76	mg/kg	M	2.520E-08	mg/Kg-day	9.000E-05	mg/Kg-day	- -	mg/m3	0.000280
	(Total)												0.00337
												Total Hazard Index Across All Exposure Routes/Pathways	0.0535

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-RL-7.4.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Venison
Exposure Point: Range L
Receptor Population: Hunter
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Chromium	73	mg/kg	73	mg/kg	M	2.756E-08	mg/Kg-day	0.00300	mg/Kg-day	0.0001	mg/m3	9.185E-06
	Manganese (food)	5,600	mg/kg	5,600	mg/kg	M	0.00174	mg/Kg-day	0.140	mg/Kg-day	0.00005	mg/m3	0.0125
	Nickel	166	mg/kg	166	mg/kg	M	3.102E-05	mg/Kg-day	0.0200	mg/Kg-day	- -	mg/m3	0.00155
	(Total)												0.0140
												Total Hazard Index Across All Exposure Routes/Pathways	0.0140

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Specify if subchronic.

TABLE H-RL-7.5.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Soil
Exposure Point: Range L
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	42,100	mg/kg	42,100	mg/kg	M	0.0412	mg/Kg-day	1.000	mg/Kg-day	- -	mg/m3	0.0412
	Chromium	73	mg/kg	73	mg/kg	M	7.182E-05	mg/Kg-day	0.00300	mg/Kg-day	0.0001	mg/m3	0.0239
	Manganese	5,600	mg/kg	5,600	mg/kg	M	0.00548	mg/Kg-day	0.0240	mg/Kg-day	0.00005	mg/m3	0.228
	Nickel	166	mg/kg	166	mg/kg	M	0.000162	mg/Kg-day	0.0200	mg/Kg-day	- -	mg/m3	0.00812
	Vanadium	76	mg/kg	76	mg/kg	M	7.417E-05	mg/Kg-day	0.00900	mg/Kg-day	- -	mg/m3	0.00824
	(Total)												0.310
Dermal	Aluminum	42,100	mg/kg	42,100	mg/kg	M	2.163E-05	mg/Kg-day	0.1000	mg/Kg-day	- -	mg/m3	0.000216
	Chromium	73	mg/kg	73	mg/kg	M	3.771E-08	mg/Kg-day	6.000E-05	mg/Kg-day	0.0001	mg/m3	0.000628
	Iron	80,000	mg/kg	80,000	mg/kg	M	4.110E-05	mg/Kg-day	0.0450	mg/Kg-day	- -	mg/m3	0.000913
	Manganese	5,600	mg/kg	5,600	mg/kg	M	2.877E-06	mg/Kg-day	0.000960	mg/Kg-day	0.00005	mg/m3	0.00300
	Nickel	166	mg/kg	166	mg/kg	M	8.527E-08	mg/Kg-day	0.00540	mg/Kg-day	- -	mg/m3	1.579E-05
	Vanadium	76	mg/kg	76	mg/kg	M	3.894E-08	mg/Kg-day	9.000E-05	mg/Kg-day	- -	mg/m3	0.000433
	(Total)												0.00520
												Total Hazard Index Across All Exposure Routes/Pathways	0.315

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-RL-7.6.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Air
Exposure Point: Range L
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Aluminum	42,100	mg/kg	0.00421	µg/m3	R	0.000824	mg/Kg-day	0.00140	mg/Kg-day	--	mg/m3	0.588
	Chromium	73	mg/kg	7.340E-06	µg/m3	R	1.436E-06	mg/Kg-day	2.857E-05	mg/Kg-day	0.0001	mg/m3	0.0503
	Manganese	5,600	mg/kg	0.000560	µg/m3	R	0.000110	mg/Kg-day	1.429E-05	mg/Kg-day	0.00005	mg/m3	7.67
	(Total)												8.31
												Total Hazard Index Across All Exposure Routes/Pathways	8.31

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-RL-7.7.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Soil
Exposure Point: Range L
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	42,100	mg/kg	42,100	mg/kg	M	0.538	mg/Kg-day	1.000	mg/Kg-day	--	mg/m3	0.538
	Chromium	73	mg/kg	73	mg/kg	M	0.000938	mg/Kg-day	0.00300	mg/Kg-day	0.0001	mg/m3	0.313
	Manganese	5,600	mg/kg	5,600	mg/kg	M	0.0716	mg/Kg-day	0.0240	mg/Kg-day	0.00005	mg/m3	2.98
	Nickel	166	mg/kg	166	mg/kg	M	0.00212	mg/Kg-day	0.0200	mg/Kg-day	--	mg/m3	0.106
	Vanadium (Total)	76	mg/kg	76	mg/kg	M	0.000969	mg/Kg-day	0.00900	mg/Kg-day	--	mg/m3	0.108
													4.05
Dermal	Aluminum	42,100	mg/kg	42,100	mg/kg	M	0.000339	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.00339
	Chromium	73	mg/kg	73	mg/kg	M	5.912E-07	mg/Kg-day	6.000E-05	mg/Kg-day	0.0001	mg/m3	0.00985
	Iron	80,000	mg/kg	80,000	mg/kg	M	0.000644	mg/Kg-day	0.0450	mg/Kg-day	--	mg/m3	0.0143
	Manganese	5,600	mg/kg	5,600	mg/kg	M	4.511E-05	mg/Kg-day	0.000960	mg/Kg-day	0.00005	mg/m3	0.0470
	Nickel	166	mg/kg	166	mg/kg	M	1.337E-06	mg/Kg-day	0.00540	mg/Kg-day	--	mg/m3	0.000248
	Vanadium (Total)	76	mg/kg	76	mg/kg	M	6.106E-07	mg/Kg-day	9.000E-05	mg/Kg-day	--	mg/m3	0.00678
													0.0816
												Total Hazard Index Across All Exposure Routes/Pathways	4.13

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-RL-7.8.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Soil
Exposure Point: Range L
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	42,100	mg/kg	42,100	mg/kg	M	0.0824	mg/Kg-day	1.000	mg/Kg-day	--	mg/m3	0.0824
	Chromium	73	mg/kg	73	mg/kg	M	0.000144	mg/Kg-day	0.00300	mg/Kg-day	0.0001	mg/m3	0.0479
	Manganese	5,600	mg/kg	5,600	mg/kg	M	0.0110	mg/Kg-day	0.0240	mg/Kg-day	0.00005	mg/m3	0.457
	Nickel	166	mg/kg	166	mg/kg	M	0.000325	mg/Kg-day	0.0200	mg/Kg-day	--	mg/m3	0.0162
	Vanadium	76	mg/kg	76	mg/kg	M	0.000148	mg/Kg-day	0.00900	mg/Kg-day	--	mg/m3	0.0165
	(Total)												0.620
Dermal	Aluminum	42,100	mg/kg	42,100	mg/kg	M	0.000216	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.00216
	Chromium	73	mg/kg	73	mg/kg	M	3.771E-07	mg/Kg-day	6.000E-05	mg/Kg-day	0.0001	mg/m3	0.00628
	Iron	80,000	mg/kg	80,000	mg/kg	M	0.000411	mg/Kg-day	0.0450	mg/Kg-day	--	mg/m3	0.00913
	Manganese	5,600	mg/kg	5,600	mg/kg	M	2.877E-05	mg/Kg-day	0.000960	mg/Kg-day	0.00005	mg/m3	0.0300
	Nickel	166	mg/kg	166	mg/kg	M	8.527E-07	mg/Kg-day	0.00540	mg/Kg-day	--	mg/m3	0.000158
	Vanadium	76	mg/kg	76	mg/kg	M	3.894E-07	mg/Kg-day	9.000E-05	mg/Kg-day	--	mg/m3	0.00433
	(Total)												0.0520
												Total Hazard Index Across All Exposure Routes/Pathways	0.672

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-RL-7.9.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Air
Exposure Point: Range L
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Aluminum	42,100	mg/kg	0.00842	µg/m3	R	0.00165	mg/Kg-day	0.00140	mg/Kg-day	- -	mg/m3	1.18
	Chromium	73	mg/kg	1.468E-05	µg/m3	R	2.873E-06	mg/Kg-day	2.857E-05	mg/Kg-day	0.0001	mg/m3	0.101
	Manganese (Total)	5,600	mg/kg	0.00112	µg/m3	R	0.000219	mg/Kg-day	1.429E-05	mg/Kg-day	0.00005	mg/m3	15
													17
												Total Hazard Index Across All Exposure Routes/Pathways	17

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-RL-7.10.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Soil
Exposure Point: Range L
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	52,000	mg/kg	52,000	mg/kg	M	0.0509	mg/Kg-day	1.000	mg/Kg-day	- -	mg/m3	0.0509
	Chromium	88	mg/kg	88	mg/kg	M	8.650E-05	mg/Kg-day	0.00300	mg/Kg-day	0.0001	mg/m3	0.0288
	Vanadium	116	mg/kg	116	mg/kg	M	0.000114	mg/Kg-day	0.00900	mg/Kg-day	- -	mg/m3	0.0126
	(Total)												0.0923
Dermal	Aluminum	52,000	mg/kg	52,000	mg/kg	M	2.671E-05	mg/Kg-day	0.1000	mg/Kg-day	- -	mg/m3	0.000267
	Chromium	88	mg/kg	88	mg/kg	M	4.541E-08	mg/Kg-day	6.000E-05	mg/Kg-day	0.0001	mg/m3	0.000757
	Iron	58,100	mg/kg	58,100	mg/kg	M	2.985E-05	mg/Kg-day	0.0450	mg/Kg-day	- -	mg/m3	0.000663
	Vanadium	116	mg/kg	116	mg/kg	M	5.959E-08	mg/Kg-day	9.000E-05	mg/Kg-day	- -	mg/m3	0.000662
	(Total)												0.00235
												Total Hazard Index Across All Exposure Routes/Pathways	0.0947

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-RL-7.11.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Air
Exposure Point: Range L
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Aluminum	52,000	mg/kg	0.00520	µg/m3	R	0.00102	mg/Kg-day	0.00140	mg/Kg-day	--	mg/m3	0.727
	Chromium (Total)	88	mg/kg	8.840E-06	µg/m3	R	1.730E-06	mg/Kg-day	2.857E-05	mg/Kg-day	0.0001	mg/m3	0.0605
													0.787
												Total Hazard Index Across All Exposure Routes/Pathways	0.787

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-RL-7.12.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Soil
Exposure Point: Range L
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	52,000	mg/kg	52,000	mg/kg	M	0.665	mg/Kg-day	1.000	mg/Kg-day	- -	mg/m3	0.665
	Chromium	88	mg/kg	88	mg/kg	M	0.00113	mg/Kg-day	0.00300	mg/Kg-day	0.0001	mg/m3	0.377
	Vanadium	116	mg/kg	116	mg/kg	M	0.00148	mg/Kg-day	0.00900	mg/Kg-day	- -	mg/m3	0.165
	(Total)												1.21
Dermal	Aluminum	52,000	mg/kg	52,000	mg/kg	M	0.000419	mg/Kg-day	0.1000	mg/Kg-day	- -	mg/m3	0.00419
	Chromium	88	mg/kg	88	mg/kg	M	7.120E-07	mg/Kg-day	6.000E-05	mg/Kg-day	0.0001	mg/m3	0.0119
	Iron	58,100	mg/kg	58,100	mg/kg	M	0.000468	mg/Kg-day	0.0450	mg/Kg-day	- -	mg/m3	0.0104
	Vanadium	116	mg/kg	116	mg/kg	M	9.344E-07	mg/Kg-day	9.000E-05	mg/Kg-day	- -	mg/m3	0.0104
	(Total)												0.0368
												Total Hazard Index Across All Exposure Routes/Pathways	1.24

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-RL-7.13.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Soil
Exposure Point: Range L
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	52,000	mg/kg	52,000	mg/kg	M	0.102	mg/Kg-day	1.000	mg/Kg-day	- -	mg/m3	0.102
	Chromium	88	mg/kg	88	mg/kg	M	0.000173	mg/Kg-day	0.00300	mg/Kg-day	0.0001	mg/m3	0.0577
	Vanadium	116	mg/kg	116	mg/kg	M	0.000227	mg/Kg-day	0.00900	mg/Kg-day	- -	mg/m3	0.0252
	(Total)												0.185
Dermal	Aluminum	52,000	mg/kg	52,000	mg/kg	M	0.000267	mg/Kg-day	0.1000	mg/Kg-day	- -	mg/m3	0.00267
	Chromium	88	mg/kg	88	mg/kg	M	4.541E-07	mg/Kg-day	6.000E-05	mg/Kg-day	0.0001	mg/m3	0.00757
	Iron	58,100	mg/kg	58,100	mg/kg	M	0.000298	mg/Kg-day	0.0450	mg/Kg-day	- -	mg/m3	0.00663
	Vanadium	116	mg/kg	116	mg/kg	M	5.959E-07	mg/Kg-day	9.000E-05	mg/Kg-day	- -	mg/m3	0.00662
	(Total)												0.0235
												Total Hazard Index Across All Exposure Routes/Pathways	0.208

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-RL-7.14.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Subsurface Soil
Exposure Medium: Air
Exposure Point: Range L
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Aluminum	52,000	mg/kg	0.0104	µg/m3	R	0.00204	mg/Kg-day	0.00140	mg/Kg-day	- -	mg/m3	1.45
	Chromium	88	mg/kg	1.768E-05	µg/m3	R	3.460E-06	mg/Kg-day	2.857E-05	mg/Kg-day	0.0001	mg/m3	0.121
	(Total)												1.57
												Total Hazard Index Across All Exposure Routes/Pathways	1.57

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-RL-7.15.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Range L
Receptor Population: Recreational User
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Chromium (Total)	80	mg/kg	80	mg/kg	M	6.602E-06	mg/Kg-day	0.00300	mg/Kg-day	0.0001	mg/m3	0.00220
													0.00220
Dermal	Chromium (Total)	80	mg/kg	80	mg/kg	M	1.005E-07	mg/Kg-day	6.000E-05	mg/Kg-day	0.0001	mg/m3	0.00168
													0.00168
												Total Hazard Index Across All Exposure Routes/Pathways	0.00388

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-RL-7.16.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Range L
Receptor Population: Recreational User
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Dermal	Arsenic	3.15	µg/L	3.15	µg/L	M	1.596E-07	mg/Kg-day	0.000123	mg/Kg-day	--	mg/m3	0.00130
	Manganese	975	µg/L	975	µg/L	M	4.939E-05	mg/Kg-day	0.000960	mg/Kg-day	0.00005	mg/m3	0.0514
	Selenium	3.41	µg/L	3.41	µg/L	M	1.727E-07	mg/Kg-day	0.00220	mg/Kg-day	--	mg/m3	7.851E-05
	1,1,1-Trichloroethane	2.70	µg/L	2.70	µg/L	M	2.325E-06	mg/Kg-day	0.0315	mg/Kg-day	--	mg/m3	7.381E-05
	2,4,6-Trinitrotoluene	1.99	µg/L	1.99	µg/L	M	3.127E-07	mg/Kg-day	0.000300	mg/Kg-day	--	mg/m3	0.00104
	2,4-Dinitrotoluene	4.76	µg/L	4.76	µg/L	M	9.158E-07	mg/Kg-day	0.00170	mg/Kg-day	--	mg/m3	0.000539
	2,6-Dinitrotoluene	2.03	µg/L	2.03	µg/L	M	2.566E-07	mg/Kg-day	0.000850	mg/Kg-day	--	mg/m3	0.000302
	(Total)												0.0548
												Total Hazard Index Across All Exposure Routes/Pathways	0.0548

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-RL-7.17.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Range L
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	6,800	µg/L	6,800	µg/L	M	0.0665	mg/Kg-day	1.000	mg/Kg-day	--	mg/m3	0.0665
	Beryllium	2.41	µg/L	2.41	µg/L	M	2.358E-05	mg/Kg-day	0.00200	mg/Kg-day	0.02	mg/m3	0.0118
	Cadmium (water)	3.00	µg/L	3.00	µg/L	M	2.931E-05	mg/Kg-day	0.000500	mg/Kg-day	--	mg/m3	0.0586
	Cobalt	38	µg/L	38	µg/L	M	0.000371	mg/Kg-day	0.0600	mg/Kg-day	--	mg/m3	0.00618
	Manganese	5,260	µg/L	5,260	µg/L	M	0.0515	mg/Kg-day	0.0240	mg/Kg-day	0.00005	mg/m3	2.14
	Nickel	131	µg/L	131	µg/L	M	0.00128	mg/Kg-day	0.0200	mg/Kg-day	--	mg/m3	0.0641
	Benzo(a)anthracene	0.119	µg/L	0.119	µg/L	M	1.164E-06	mg/Kg-day	0.0300	mg/Kg-day	--	mg/m3	3.881E-05
	Benzo(b)fluoranthene	0.166	µg/L	0.166	µg/L	M	1.626E-06	mg/Kg-day	0.0300	mg/Kg-day	--	mg/m3	5.421E-05
	Chrysene	0.0571	µg/L	0.0571	µg/L	M	5.590E-07	mg/Kg-day	0.0300	mg/Kg-day	--	mg/m3	1.863E-05
	Heptachlor	0.167	µg/L	0.167	µg/L	M	1.634E-06	mg/Kg-day	0.000500	mg/Kg-day	--	mg/m3	0.00327
	Heptachlor Epoxide	0.129	µg/L	0.129	µg/L	M	1.262E-06	mg/Kg-day	1.300E-05	mg/Kg-day	--	mg/m3	0.0971
	Indeno(1,2,3-cd)pyrene	0.0781	µg/L	0.0781	µg/L	M	7.642E-07	mg/Kg-day	0.0300	mg/Kg-day	--	mg/m3	2.547E-05
	Nitrate,Nitrite	205	µg/L	205	µg/L	M	0.00201	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.0201
	RDX	0.615	µg/L	0.615	µg/L	M	6.018E-06	mg/Kg-day	0.00300	mg/Kg-day	--	mg/m3	0.00201
	Trichloroethene	1.10	µg/L	1.10	µg/L	M	1.076E-05	mg/Kg-day	0.00600	mg/Kg-day	--	mg/m3	0.00179
	bis(2-Ethylhexyl)phthalate (Total)	34	µg/L	34	µg/L	M	0.000333	mg/Kg-day	0.0200	mg/Kg-day	--	mg/m3	0.0166
													2.49
Dermal	Aluminum	6,800	µg/L	6,800	µg/L	M	0.000273	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.00273
	Beryllium	2.41	µg/L	2.41	µg/L	M	9.668E-08	mg/Kg-day	2.000E-05	mg/Kg-day	0.02	mg/m3	0.00483
	Cadmium (water)	3.00	µg/L	3.00	µg/L	M	1.202E-07	mg/Kg-day	5.000E-06	mg/Kg-day	--	mg/m3	0.0240
	Cobalt	38	µg/L	38	µg/L	M	1.520E-06	mg/Kg-day	0.0480	mg/Kg-day	--	mg/m3	3.168E-05
	Iron	7,929	µg/L	7,929	µg/L	M	0.000318	mg/Kg-day	0.0450	mg/Kg-day	--	mg/m3	0.00707
	Manganese	5,260	µg/L	5,260	µg/L	M	0.000211	mg/Kg-day	0.000960	mg/Kg-day	0.00005	mg/m3	0.220
	Nickel	131	µg/L	131	µg/L	M	5.255E-07	mg/Kg-day	0.00540	mg/Kg-day	--	mg/m3	9.732E-05
	Benzo(a)anthracene	0.119	µg/L	0.119	µg/L	M	3.867E-06	mg/Kg-day	0.00930	mg/Kg-day	--	mg/m3	0.000416
	Benzo(b)fluoranthene	0.166	µg/L	0.166	µg/L	M	8.001E-06	mg/Kg-day	0.00930	mg/Kg-day	--	mg/m3	0.000860
	Chrysene	0.0571	µg/L	0.0571	µg/L	M	1.857E-06	mg/Kg-day	0.00930	mg/Kg-day	--	mg/m3	0.000200
	Heptachlor	0.167	µg/L	0.167	µg/L	M	1.876E-06	mg/Kg-day	0.000360	mg/Kg-day	--	mg/m3	0.00521
	Heptachlor Epoxide	0.129	µg/L	0.129	µg/L	M	2.838E-07	mg/Kg-day	9.360E-06	mg/Kg-day	--	mg/m3	0.0303
	Indeno(1,2,3-cd)pyrene	0.0781	µg/L	0.0781	µg/L	M	5.953E-06	mg/Kg-day	0.00930	mg/Kg-day	--	mg/m3	0.000640
	Nitrate,Nitrite	205	µg/L	205	µg/L	M	8.224E-06	mg/Kg-day	0.0500	mg/Kg-day	--	mg/m3	0.000164
	RDX	0.615	µg/L	0.615	µg/L	M	8.593E-09	mg/Kg-day	0.00300	mg/Kg-day	--	mg/m3	2.864E-06
	Trichloroethene	1.10	µg/L	1.10	µg/L	M	7.061E-07	mg/Kg-day	0.000900	mg/Kg-day	--	mg/m3	0.000785
	bis(2-Ethylhexyl)phthalate	34	µg/L	34	µg/L	M	4.501E-05	mg/Kg-day	0.00380	mg/Kg-day	--	mg/m3	0.0118

TABLE H-RL-7.17.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Range L
Receptor Population: Industrial Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
	(Total)												0.309
												Total Hazard Index Across All Exposure Routes/Pathways	2.80

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.

TABLE H-RL-7.18.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Range L
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum	6,800	µg/L	6,800	µg/L	M	0.186	mg/Kg-day	1.000	mg/Kg-day	--	mg/m3	0.186
	Beryllium	2.41	µg/L	2.41	µg/L	M	6.603E-05	mg/Kg-day	0.00200	mg/Kg-day	0.02	mg/m3	0.0330
	Cadmium (water)	3.00	µg/L	3.00	µg/L	M	8.207E-05	mg/Kg-day	0.000500	mg/Kg-day	--	mg/m3	0.164
	Cobalt	38	µg/L	38	µg/L	M	0.00104	mg/Kg-day	0.0600	mg/Kg-day	--	mg/m3	0.0173
	Manganese	5,260	µg/L	5,260	µg/L	M	0.144	mg/Kg-day	0.0240	mg/Kg-day	0.00005	mg/m3	6.00
	Nickel	131	µg/L	131	µg/L	M	0.00359	mg/Kg-day	0.0200	mg/Kg-day	--	mg/m3	0.179
	Benzo(a)anthracene	0.119	µg/L	0.119	µg/L	M	3.260E-06	mg/Kg-day	0.0300	mg/Kg-day	--	mg/m3	0.000109
	Benzo(b)fluoranthene	0.166	µg/L	0.166	µg/L	M	4.554E-06	mg/Kg-day	0.0300	mg/Kg-day	--	mg/m3	0.000152
	Chrysene	0.0571	µg/L	0.0571	µg/L	M	1.565E-06	mg/Kg-day	0.0300	mg/Kg-day	--	mg/m3	5.218E-05
	Heptachlor	0.167	µg/L	0.167	µg/L	M	4.575E-06	mg/Kg-day	0.000500	mg/Kg-day	--	mg/m3	0.00915
	Heptachlor Epoxide	0.129	µg/L	0.129	µg/L	M	3.534E-06	mg/Kg-day	1.300E-05	mg/Kg-day	--	mg/m3	0.272
	Indeno(1,2,3-cd)pyrene	0.0781	µg/L	0.0781	µg/L	M	2.140E-06	mg/Kg-day	0.0300	mg/Kg-day	--	mg/m3	7.132E-05
	Nitrate,Nitrite	205	µg/L	205	µg/L	M	0.00562	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.0562
	RDX	0.615	µg/L	0.615	µg/L	M	1.685E-05	mg/Kg-day	0.00300	mg/Kg-day	--	mg/m3	0.00562
	Trichloroethene	1.10	µg/L	1.10	µg/L	M	3.014E-05	mg/Kg-day	0.00600	mg/Kg-day	--	mg/m3	0.00502
	bis(2-Ethylhexyl)phthalate (Total)	34	µg/L	34	µg/L	M	0.000932	mg/Kg-day	0.0200	mg/Kg-day	--	mg/m3	0.0466
													6.98
Dermal	Aluminum	6,800	µg/L	6,800	µg/L	M	0.000338	mg/Kg-day	0.1000	mg/Kg-day	--	mg/m3	0.00338
	Beryllium	2.41	µg/L	2.41	µg/L	M	1.198E-07	mg/Kg-day	2.000E-05	mg/Kg-day	0.02	mg/m3	0.00599
	Cadmium (water)	3.00	µg/L	3.00	µg/L	M	1.490E-07	mg/Kg-day	5.000E-06	mg/Kg-day	--	mg/m3	0.0298
	Cobalt	38	µg/L	38	µg/L	M	1.885E-06	mg/Kg-day	0.0480	mg/Kg-day	--	mg/m3	3.926E-05
	Iron	7,929	µg/L	7,929	µg/L	M	0.000394	mg/Kg-day	0.0450	mg/Kg-day	--	mg/m3	0.00876
	Manganese	5,260	µg/L	5,260	µg/L	M	0.000262	mg/Kg-day	0.000960	mg/Kg-day	0.00005	mg/m3	0.272
	Nickel	131	µg/L	131	µg/L	M	6.514E-07	mg/Kg-day	0.00540	mg/Kg-day	--	mg/m3	0.000121
	Benzo(a)anthracene	0.119	µg/L	0.119	µg/L	M	4.793E-06	mg/Kg-day	0.00930	mg/Kg-day	--	mg/m3	0.000515
	Benzo(b)fluoranthene	0.166	µg/L	0.166	µg/L	M	9.918E-06	mg/Kg-day	0.00930	mg/Kg-day	--	mg/m3	0.00107
	Chrysene	0.0571	µg/L	0.0571	µg/L	M	2.301E-06	mg/Kg-day	0.00930	mg/Kg-day	--	mg/m3	0.000247
	Heptachlor	0.167	µg/L	0.167	µg/L	M	2.325E-06	mg/Kg-day	0.000360	mg/Kg-day	--	mg/m3	0.00646
	Heptachlor Epoxide	0.129	µg/L	0.129	µg/L	M	3.518E-07	mg/Kg-day	9.360E-06	mg/Kg-day	--	mg/m3	0.0376
	Indeno(1,2,3-cd)pyrene	0.0781	µg/L	0.0781	µg/L	M	7.379E-06	mg/Kg-day	0.00930	mg/Kg-day	--	mg/m3	0.000793
	Nitrate,Nitrite	205	µg/L	205	µg/L	M	1.019E-05	mg/Kg-day	0.0500	mg/Kg-day	--	mg/m3	0.000204
	RDX	0.615	µg/L	0.615	µg/L	M	1.065E-08	mg/Kg-day	0.00300	mg/Kg-day	--	mg/m3	3.550E-06
	Trichloroethene	1.10	µg/L	1.10	µg/L	M	8.752E-07	mg/Kg-day	0.000900	mg/Kg-day	--	mg/m3	0.000972
	bis(2-Ethylhexyl)phthalate	34	µg/L	34	µg/L	M	5.579E-05	mg/Kg-day	0.00380	mg/Kg-day	--	mg/m3	0.0147

TABLE H-RL-7.18.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Range L
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
	(Total)												0.383
												Total Hazard Index Across All Exposure Routes/Pathways	7.36

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
(2) Specify if subchronic.