

**LONGHORN ARMY
AMMUNITION PLANT**

KARNACK, TEXAS

**ADMINISTRATIVE
RECORD**

VOLUME 6 of 7

Year - 2004

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Prepared for:

**Department of the Army
Longhorn Army Ammunition Plant**

**LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
ADMINISTRATIVE RECORD - CHRONOLOGICAL INDEX**

VOLUME 6 of 7

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Note: *Volume 6 of 7, Year 2004, Letter A, Bate Stamp Numbers Are Out of Date Sequence, due to receiving this report after the July 2004 update to the Admin. Record. (This report should have been inserted in Volume 1 of 1, Year 2003, between letters E & F.)*

A: Title: Final Report (continued) - Baseline Human Health and Screening Ecological Risk
 Assessment: - Report for Group 4 Sites, Sites 04, 08, 35A, 35B, 35C, 46, 47, 48, 50,
 60, 67, Goose Prairie Creek, Sauder's Branch, Central Creek, and Caddo Lake – for
 the Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas
 Author: Jacobs Engineering Group, Inc., Oak Ridge, Tennessee
 Recipient: U.S. Army Corps of Engineers (USACE), Tulsa District
 Date: June, 2003
 Bate Stamp: 034025 – 034540

Appendix B

Estimation of Concentrations In Fish Tissue

B.1.0 INTRODUCTION

The accumulation of constituents in fish tissue involves the fundamental processes of bioconcentration, bioaccumulation, and biomagnification. Bioconcentration refers to the uptake of constituents by an organism from the surrounding medium through gill membranes or other external body surfaces (EPA 1991). The bioconcentration factor (BCF) describes the measure of a constituent's tendency to bioconcentrate. Tissue concentrations increase until the rate of excretion is equal to the rate of uptake. This is referred to as equilibrium. At equilibrium, the body burden in the organism may be many times the concentration in the medium. The BCF is calculated by dividing the constituent concentration in the exposed organism's tissue by the constituent concentration in the medium when equilibrium has been reached. In fish, the BCF accounts for the uptake of constituents from water passing across the gills (through both dissolved and suspended particulate concentrations).

The process of bioaccumulation is similar; however, bioaccumulation is a broader term that describes the uptake of constituents from an organism's surrounding medium as well as from its food (Clark et al. 1988). Bioaccumulation means that over time a constituent is taken up and stored in the organism faster than it is broken down or excreted. Bioaccumulation is most commonly described by the bioaccumulation factor (BAF), which is derived by dividing the constituent concentration in the exposed organism's tissue by the constituent concentration in the medium. In fish, the BAF accounts for the uptake of constituents from water passing across the gills (through both dissolved and suspended particulate concentrations), as well as from the consumption of various foods including invertebrates and other fish.

Bioaccumulation that occurs specifically from the sediment is described by the biota-to-sediment accumulation factor (BSAF), which accounts for the transfer of constituents from the sediment to the lipid or fatty tissues found in an organism. The BSAF is commonly applied to the uptake of highly lipophilic or "fat loving" compounds, such as dioxins/furans and polychlorinated biphenyls (PCBs) which also have a strong affinity for binding to sediment or suspended particulates in the water.

A third broader term, biomagnification, takes into account the relationship between the constituent concentration in an organism and the trophic transfer of constituents between organisms. Biomagnification is the process that results in the accumulation of a constituent in the organism at higher levels than are found in its own food. Biomagnification occurs when a constituent becomes more concentrated as it is passed up the food chain. The passage of constituents up the food chain is called trophic transfer and can occur within the same group of organisms or between different groups of organisms. Transfer data are presently limited to verifying constituent uptake that is specific to biomagnification.

B.2.0 METHODOLOGY

The exposure point concentrations (EPCs) for recreationally caught fish from LHAAP Group 4 waterways (Goose Prairie Creek, Central Creek, Saunder's Branch, and Caddo Lake) were modeled using

constituent concentrations as measured directly in the environmental medium (i.e., surface water or sediment). Depending on the availability of uptake modeling criteria for specific constituents, the constituent concentrations in fish tissue were modeled using estimated dissolved-phase surface water concentrations or measured total (bulk) sediment concentrations. If a particular constituent was detected in both surface water and sediment, the higher (or maximum) of the two modeled concentrations was used as the EPC for fish. If a constituent was detected in only one medium, then the fish EPC modeled from that medium was used. The following tables contain the models and calculations for each of the Group 4 Sites:

- Goose Prairie Creek—Tables B-1 through B-3
- Central Creek—Tables B-4 through B-6
- Saunder's Branch—Tables B-7 through B-9
- Caddo Lake—Tables B-10 and B-11

Based on dialogue with the U.S. Environmental Protection Agency (EPA) Region 6 and on discussions presented in the Group 2 Risk Assessment Work Plan (Weston 1998), the recommended fish EPC modeling methodology was taken from the *Protocol for Screening Level Human Health Risk Assessment at Hazardous Waste Combustion Facilities* (EPA 1998). Supplemental EPA Region 6 guidance from the *Screening Level Ecological Risk Assessment Protocol, Appendix C - Media-to-Receptor BCF Values* (EPA 1999) was referenced when needed. Additional guidance from sources outside of EPA Region 6, including Oak Ridge National Laboratory *Risk Assessment Information System* website (http://risk.lsd.ornl.gov/rap_hp.shtml) and the *Texas Natural Resource Conservation Commission Risk Reduction Program (TRRP) Rule (30 TAC 350)* and website [<http://www.tnrcc.state.tx.us/permitting/trrp.htm>] (TNRCC 2001), was also consulted. Methodology specific to calculating fish EPCs from surface water are discussed in Section B.2.1. Methodology specific to calculating fish EPCs from sediment is discussed in Section B.2.2.

B.2.1 SURFACE WATER

Constituent-specific dissolved phase surface water concentrations were used as the recommended concentrations for modeling constituent concentrations from surface water to fish. Dissolved phase surface water concentrations were estimated from measured total surface water concentrations as follows (EPA 1998):

$$C_{dw} = \frac{C_{wctot}}{1 + Kd_{sw} \times TSS \times 1 \times 10^{-6}}$$

where:

- C_{dw} = Dissolved phase water concentration in milligrams of constituent per liter of water (mg/L).
- C_{wctot} = Total water concentration in milligrams of constituent per liter of water (mg/L).

Kd_{sw} =	Suspended sediments/surface water partition coefficient in liter of water per kilogram of suspended sediment (L/kg).
TSS =	Total suspended solids concentration in milligram of suspended solids per liter of water (mg/L). A value of 10 mg/L is recommended in the absence of site-specific data (EPA, 1998).
1×10^{-6} =	Units conversion factor in kilograms per milligram (kg/mg).

The suspended sediment/surface water partition coefficient (Kd_{sw}) describes the partitioning of a constituent between surface water and suspended solids or sediments. If a Kd_{sw} was not available for an organic constituent, it was calculated as follows (EPA 1998):

$$Kd_{sw} = f_{oc,sw} \times K_{oc}$$

where:

$f_{oc,sw}$ =	Fraction organic carbon in the surface water (unitless)
K_{oc} =	Soil organic carbon-water partition coefficient (mL/g)

Kd_{sw} values for metals (except cyanide) were obtained from EPA and ORNL sources (EPA 1998; RAIS 2002). If a Kd_{sw} was not available for a specific metal, the soil-water partition coefficient (Kd_s) for that metal was used. The Kd_s describes the partitioning of a constituent between soil pore-water and soil particles. The Kd_{sw} was assumed to be the same as the Kd_s because organic carbon does not play a major role in the sorption of metals (EPA 1998). The Kd_{sw} for cyanide was calculated in a similar manner to organics by using the above equation.

It should be noted that the use of experimentally derived physical-chemical parameters such as soil-water (Kd_s) and suspended sediment-surface water (Kd_{sw}) partition coefficients add a wide range of uncertainty to the fish tissue concentration estimates. The primary uncertainty in the use of experimentally derived parameters is that site-specific information such as chemical speciation (especially for metals) and sediment or soil type is not taken into consideration. More specific areas of uncertainty between the use of experimentally derived and site-specific parameters include but are not limited to organic carbon content, temperature, pH, conductivity, and redox potential. In site-specific situations these parameters are maintained under controlled conditions; in the natural environment they are not.

Fish tissue concentrations were modeled from dissolved phase surface water concentrations using both measured and estimated BCFs as referenced in Appendix A of EPA (1998). If a BCF was not available in Appendix A, it was calculated using the octanol-water coefficient (K_{ow}) as follows (EPA 1999):

$$BCF_{fish} = 10^{(-0.23 + 0.76 \times \log K_{ow})}$$

where:

$$\begin{aligned} BCF_{fish} &= \text{Fish bioconcentration factor (L/kg)} \\ K_{ow} &= \text{Octanol-water partition coefficient (unitless)} \end{aligned}$$

K_{ow} values were obtained first from EPA Region 6 guidance or other guidance documents previously discussed. As recommended by EPA (1998), the BCF approach was used for all organics with a log K_{ow} of less than 4.0 and all inorganic constituents for which measured BCFs were available, except for lead and mercury, which tend to bioaccumulate.

Fish tissue concentrations were estimated from dissolved phase surface water using the BCF approach as follows:

$$C_{fish} = C_{dw} \times BCF$$

where:

$$\begin{aligned} C_{fish} &= \text{Fish tissue concentration in milligram constituent per kilogram wet weight fish tissue (mg/kg).} \\ C_{dw} &= \text{Dissolved phase water concentration in milligram constituent per liter of water (mg/L).} \\ BCF &= \text{Bioconcentration factor in milligram constituent per kilogram wet weight fish tissue per milligram constituent per liter of water (L/kg).} \end{aligned}$$

Fish tissue concentrations for organic constituents with a log K_{ow} greater than 4.0 (excluding dioxins/furans) as well as inorganic lead and mercury were modeled from surface water total concentrations using BAFs as available from Appendix A of EPA 1998. Since mercury was not detected in any of the Group 4 surface waters, it was not modeled using the BAF approach. Constituents with a log K_{ow} of greater than or equal to 4.0 can significantly partition into the suspended sediment organic carbon (or particulate phase) of the water column (EPA 1998). Therefore, BAFs should be based on total water concentrations.

Fish tissue concentrations were estimated from surface water total concentrations using the BAF approach as follows:

$$C_{fish} = C_{total} \times BAF$$

where:

$$\begin{aligned} C_{fish} &= \text{Fish tissue concentration in milligram constituent per kilogram of fish tissue (mg/kg).} \\ C_{total} &= \text{Total phase water concentration in milligram constituent per liter of water (mg/L).} \end{aligned}$$

$BAF =$ Bioaccumulation factor in milligram constituent per kilogram wet weight fish tissue per milligram constituent per liter of water (L/kg)

B.2.2 SEDIMENT

Measured sediment concentrations from the Group 4 Sites were used to model constituent concentrations from bulk sediment to fish as referenced in Appendix C of the *Screening Level Ecological Risk Assessment Protocol* (EPA 1999). In the absence of available sediment-to-fish BAFs, uptake criteria were based on sediment-to-benthic invertebrate BCFs. Invertebrate BCF values were estimated for all organics (excluding dioxins/furans) using the regression model developed for sediment-to-benthic invertebrate bioconcentration as follows:

$$\log BCF = (0.819 \times \log K_{ow}) - 1.146$$

where:

$K_{ow} =$ Constituent-specific octanol-water partition coefficient (unitless).
 $BCF =$ Bioconcentration factor in milligram constituent per kilogram wet weight fish tissue per milligram constituent per kilogram dry weight sediment (unitless).

Measured sediment-to-benthic invertebrate BCF values were used for all inorganic constituents if they were available. For inorganic constituents with no available field or laboratory data, the recommended BCF values were estimated as the arithmetic average of the available BCF values for other inorganics with measured values (EPA 1999).

Fish tissue concentrations for highly lipophilic constituents, including dioxins/furans and PCBs, were estimated from bulk sediment using the BSAF as follows (EPA 1998):

$$C_{fish} = \frac{C_{sb} \times f_{lipid} \times BSAF}{OC_{sed}}$$

where:

$C_{fish} =$ Fish concentration in milligram constituent per kilogram wet weight fish (mg/kg).
 $C_{sb} =$ Sediment concentration in milligram constituent per kilogram dry weight sediment (mg/kg).
 $f_{lipid} =$ Fish fraction of lipid content (unitless).
 $BSAF =$ Biota-to-sediment accumulation factor in milligram constituent per kilogram wet weight lipid-normalized fish tissue per milligram constituent per kilogram dry weight sediment (unitless).
 $OC_{sed} =$ Fraction of organic carbon in sediment (unitless).

The BSAF accounts for the transfer of constituents from the sediment to the lipid or fatty tissues in an organism and is recommended for modeling dioxin-like compounds (including PCBs) from sediment to fish because of their lipophilic nature (EPA 1998). The lipid content (f_{lipid}) was assumed to be 7 percent, which is consistent with EPA Region 6 guidance (EPA 1998). The BSAF for 2,3,7,8-TCDD and 2,3,7,8-TCDF was used to represent the highest amount of chlorination as suggested by EPA (1998).

B.3.0 REFERENCES

- Clark, T., K. Clark, S. Paterson, and D. Mackay. 1988. Wildlife Monitoring, Modeling, and Fugacity. *Environ. Sci. Technol.*, 22:120-127.
- EPA (U.S. Environmental Protection Agency). 1991. EPA Office of Water. *Assessment and Control of Bioconcentratable Contaminants in Surface Water*, Draft (March 1991).
- EPA. 1998. EPA Region 6. *Protocol for Screening Level Human Health Risk Assessment at Hazardous Waste Combustion Facilities* (July 1998).
- EPA. 1999. EPA Region 6. *Screening Level Ecological Risk Assessment Protocol Appendix C - Media-to-Receptor BCF Values* (August 1999).
- RAIS (Risk Assessment Information System). 2002. Oak Ridge National Laboratory Website: http://risk.lsd.ornl.gov/rap_hp.shtml.
- TNRCC (Texas Natural Resource Conservation Commission). 2001. *Texas Risk Reduction Program (TRRP) Rule (30 TAC 350), Protective Concentration Levels (PCLs) for Chemicals of Concern (COCs)*.
- Weston (Roy F. Weston, Inc.). 1998. Group 2 Baseline Risk Assessment Work Plan. Longhorn Army Ammunition Plant. Prepared for U.S. Army Corps of Engineers.

Table B-1
Goose Prairie Creek Exposure Point Concentration Calculations for Surface Water to Fish Tissue
Group 4 RA, LHAAP, Karnack, Texas

COPC	EPC _{sw} mg/L	EPC _{sw} Basis	K _{d,sw} cm ³ /g	K _{oc} mL/g	Log K _{ow} unitless	EPC _{sw dissolved} mg/L	BCF _{fish} L/kg-FW	BAF _{fish} L/kg-FW	EPC _{sw} → EPC _{fish} mg/kg-FW
Dioxins/Furans									
2,3,7,8-TCDD	1.08E-09	95% UCL	2.02E+05 a	---	---	3.58E-10 d	4.24E+03 d	NA	1.51E-06
Explosives									
2,4,6-Trinitrotoluene	0.0412	Maximum	1.88E+00 a	---	---	4.12E-02 e	9.68E+00 a	NA	3.99E-01
2-Amino-4,6-dinitrotoluene	0.0075	Maximum	4.22E+01 e	5.62E+02 c	2.80E+00 c	7.50E-03 e	7.91E+01 e	NA	5.93E-01
RDx (used BCF for 2,4,6-Trinitrotoluene)	0.0121	Maximum	5.38E-01 e	7.17E+00 b	8.70E-01 b	1.21E-02 e	9.68E+00 a	NA	1.17E-01
Metals									
Aluminum	1.97	95% UCL	1.50E+03 b	---	---	1.94E+00 d	2.70E+00 d	NA	5.24E+00
Antimony	0.0455	95% UCL	4.50E+01 a	---	---	4.55E-02 e	4.00E+01 a	---	1.82E+00
Arsenic	ND	---	2.90E+01 a	---	---	ND	---	---	ND
Barium	ND	---	4.10E+01 a	---	---	ND	---	---	ND
Beryllium	ND	---	7.90E+02 a	---	---	ND	---	---	ND
Cadmium	ND	---	7.50E+01 a	---	---	ND	---	---	ND
Chromium	ND	---	1.80E+06 a	---	---	ND	---	---	ND
Cobalt	ND	---	4.50E+01 b	---	---	ND	---	---	ND
Copper	ND	---	4.28E+02 b	---	---	ND	---	---	ND
Cyanide	ND	---	6.68E-01 e	8.90E+00 b	---	ND	---	---	ND
Lead	0.0327	95% UCL	9.00E+02 a	---	---	3.24E-02 d	9.00E-02 d	8.00E+00 a	2.59E-01
Manganese	0.456	95% UCL	6.50E+01 b	---	---	4.56E-01 e	4.00E+02 b	NA	1.82E+02
Mercury (as methyl mercury)	ND	---	1.00E+03 a	---	---	ND	---	---	ND
Nickel	ND	---	6.50E+01 a	---	---	ND	---	---	ND
Selenium	ND	---	5.00E+00 a	---	---	ND	---	---	ND
Silver	ND	---	8.30E+00 a	---	---	ND	---	---	ND
Strontium	0.138	95% UCL	3.50E+01 b	---	---	1.38E-01 e	6.00E+01 b	NA	8.28E+00
Thallium	0.0031	Maximum	7.10E+01 a	---	---	3.10E-03 e	1.00E+02 b	NA	3.10E-01
Vanadium	ND	---	1.00E+03 b	---	---	ND	---	---	ND
Zinc	ND	---	6.20E+01 a	---	---	ND	---	---	ND
Non-Metallic Anion									
Perchlorate	0.023	Maximum	3.16E-01 c	NA	0.00E+00 c	2.30E-02 e	5.89E-01 e	NA	1.35E-02
PCBs									
Aroclor 1254 (used BSAF for 2,3,7,8-TCDD)	ND	---	7.37E+03 a	---	---	ND	---	---	ND
Semi-Volatile Organics									
2,4-Dinitrotoluene	0.0039	Maximum	3.83E+00 a	---	---	3.90E-03 e	5.92E+00 a	NA	2.31E-02
2,6-Dinitrotoluene	0.011	Maximum	3.14E+00 a	---	---	1.10E-02 e	5.92E+00 a	NA	6.51E-02
Bis(2-ethylhexyl)phthalate	0.53	Maximum	1.13E+06 e	1.51E+07 b	---	4.30E-02 d	7.00E+01 d	3.60E+02 a	1.91E+02
Di-n-butyl phthalate	ND	---	1.18E+02 a	---	5.20E+00 b	ND	---	---	ND
Naphthalene	ND	---	8.93E+01 a	---	---	ND	---	---	ND
Volatile Organics									
1,1-Dichloroethene	ND	---	4.88E+00 a	---	2.12E+00 a	ND	---	---	ND
Acetone	5.34	Maximum	7.13E-02 a	---	---	5.34E+00 e	4.00E-01 a	NA	2.14E+00
cis-1,2-Dichloroethene	ND	---	3.73E+01 a	---	2.20E+00 b	ND	---	---	ND
Methylene chloride	ND	---	7.50E-01 a	---	---	ND	---	---	ND
4-Isopropyltoluene (p-Cymene)	ND	---	NA	2.29E+03 c	4.14E+00 c	ND	---	---	ND
Toluene	ND	---	1.05E+01 a	---	2.69E+00 b	ND	---	---	ND
Trichloroethene	0.0121	Maximum	7.05E+00 a	---	2.29E+00 b	1.21E-02 e	4.16E+01 a	NA	5.03E-01
Vinyl chloride	0.005	Maximum	8.32E-01 a	---	---	5.00E-03 e	4.37E+00 a	NA	2.18E-02

a = EPA. 1998. EPA Region 6. *Protocol for Screening Level Human Health Risk Assessment at Hazardous Waste Combustion Facilities*. July 1998.
b = RAIS. 2002. Oak Ridge National Laboratory Website: http://risk.lsd.ornl.gov/rp_hp.shtml.
c = TCEQ. 2001. Texas Risk Reduction Program (TRRP Rule (30 TAC 350), Protective Concentration Levels (PCLs) for Chemicals of Concern (COCs).
d = EPA. 1999. EPA Region 6. *Screening Level Ecological Risk Assessment Protocol Appendix C - Media-to-Receptor BCF Value s*. August 1999.
e = Calculated using EPA, RAIS, or TCEQ data

$$K_{d,sw} = f_{oc,sw} \times K_{oc}$$

$$f_{oc,sw} = 0.075$$

$$K_{oc} = \text{chemical-specific}$$

$$EPC_{dissolved} = EPC_{total} / (1 + K_{d,sw} \times TSS \times 10^{-6})$$

$$K_{d,sw} = \text{see above}$$

$$TSS = 10 \text{ mg/L}$$

$$BCF_{fish} = 10^{(0.23 + 0.75 \times \log K_{ow})}$$

$$BAF_{fish} = BCF_{fish} \times FCM$$

$$BCF_{fish} = \text{chemical-specific}$$

$$FCM = \text{food chain multiplier}$$

$$EPC_{sw} \rightarrow EPC_{fish} = BCF \times EPC_{SW(dissolved)}$$

$$\text{Or, if BAF is used, } EPC_{sw} \rightarrow EPC_{fish} = BAF \times EPC_{SW(total)}$$

BAF = bioaccumulation factor

BCF = bioconcentration factor

BSAF = biota-to-sediment accumulation factor for fish

COPC = Contaminant of potential concern

EPA = U.S. Environmental Protection Agency

EPC = exposure point concentration

FW = fresh weight

K_{oc} = organic carbon based partitioning coefficient

K_{d,sw} = suspended sediment/surface water partitioning coefficient in liter of water per kg of suspended sediment

K_{ow} = octanol-water partition coefficient

LHAAP = Longhorn Army Ammunition Plant

NA = Modeling factors were not available or not appropriate for this constituent.

ND = Constituent was not detected or not selected as a COPC in this medium.

PCB = polychlorinated biphenyl

RA = risk assessment

RAIS = Risk Assessment Information System

RDx = cyclonite (explosive)

sw = surface water

TCDD = tetrachlorodibenzo-p-dioxin

TCEQ = Texas Commission on Environmental Quality

TSS = total suspended solids

UCL = upper confidence level

--- = Constituent was not detected or not selected at this location or modeling factors were not available or not necessary.

Table B-2
Goose Prairie Creek Exposure Point Concentration Calculations for Sediment to Fish Tissue
Group 4 RA, LHAAP, Karnack, Texas

COPC	EPC _{sed} mg/kg	EPC _{sed} Basis	Log K _{ow} unitless	BSAF _{fish} kg/kg	BCF _{benthos} kg/kg	EPC _{sed} → EPC _{fish} mg/kg-FW
Dioxins/Furans						
2,3,7,8-TCDD	0.0000126	Maximum	---	9.00E-02 a	NA	2.65E-06
Explosive						
2,4,6-Trinitrotoluene	ND	---	---	---	---	ND
2-Amino-4,6-dinitrotoluene	ND	---	2.80E+00 c	---	---	ND
RDX (used BCF for 2,4,6-Trinitrotoluene)	ND	---	8.70E-01 b	---	---	ND
Metals						
Aluminum	6480	95% UCL	---	NA	9.00E-01 d	5.83E+03
Antimony	ND	---	---	---	---	ND
Arsenic	4.18	95% UCL	---	NA	9.00E-01 d	3.76E+00
Barium	145	95% UCL	---	NA	9.00E-01 d	1.31E+02
Beryllium	1.2	95% UCL	---	NA	9.00E-01 d	1.08E+00
Cadmium	ND	---	---	---	---	ND
Chromium	30	95% UCL	---	NA	3.90E-01 d	1.17E+01
Cobalt	13.7	95% UCL	---	NA	9.00E-01 d	1.23E+01
Copper	11.6	95% UCL	---	NA	3.00E-01 d	3.48E+00
Cyanide	0.9479	Maximum	---	NA	9.00E-01 d	8.53E-01
Lead	19.5	95% UCL	---	NA	6.30E-01 d	1.23E+01
Manganese	363	95% UCL	---	NA	9.00E-01 d	3.27E+02
Mercury (as methyl mercury)	0.13	Maximum	---	NA	4.80E-01 d	6.24E-02
Nickel	28.9	95% UCL	---	NA	9.00E-01 d	2.60E+01
Selenium	5.08	Maximum	---	NA	9.00E-01 d	4.57E+00
Silver	2.4	Maximum	---	NA	9.00E-01 d	2.16E+00
Strontium	82	Maximum	---	NA	9.00E-01 d	7.38E+01
Thallium	ND	---	---	---	---	ND
Vanadium	35.5	95% UCL	---	NA	9.00E-01 d	3.20E+01
Zinc	62.8	95% UCL	---	NA	5.70E-01 d	3.58E+01
Non-Metallic Anion						
Perchlorate	ND	---	0.00E+00 c	---	---	ND
PCBs						
Aroclor 1254 (used BSAF for 2,3,7,8-TCDD)	0.039	Maximum	---	9.00E-02 a	5.30E-01 d	8.19E-03
Semi-Volatile Organics						
2,4-Dinitrotoluene	ND	---	---	---	---	ND
2,6-Dinitrotoluene	ND	---	---	---	---	ND
Bis(2-ethylhexyl)phthalate	ND	---	---	---	---	ND
Di-n-butyl phthalate	1.545	Maximum	5.20E+00 b	NA	1.30E+03 d	2.00E+03
Naphthalene	0.0085	Maximum	---	NA	1.61E+00 d	1.37E-02
Volatile Organics						
1,1-Dichloroethene	0.0012	Maximum	2.12E+00 a	NA	3.90E+00 d	4.68E-03
Acetone	0.0465	Maximum	---	NA	5.00E-02 d	2.33E-03
cis-1,2-Dichloroethene	0.115	Maximum	2.20E+00 b	NA	4.53E+00 d	5.21E-01
Methylene chloride	ND	---	---	---	---	ND
4-Isopropyltoluene (p-Cymene)	0.0412	Maximum	4.14E+00 c	NA	1.76E+02 d	7.24E+00
Toluene	0.0036	Maximum	2.69E+00 b	NA	1.14E+01 d	4.11E-02
Trichloroethene	0.0379	Maximum	2.29E+00 b	NA	5.36E+00 d	2.03E-01
Vinyl chloride	0.0668	Maximum	---	NA	6.20E-01 d	4.14E-02

a = EPA. 1998. EPA Region 6. *Protocol for Screening Level Human Health Risk Assessment at Hazardous Waste Combustion Facilities*. July 1998.

b = RAIS. 2002. Oak Ridge National Laboratory Website: http://risk.lsd.ornl.gov/rap_hp.shtml.

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$$BAF_{fish} = BCF_{fish} \times FCM$$

$$BCF_{fish} = \text{chemical-specific}$$

$$FCM = \text{food chain multiplier}$$

$$BCF_{benthos} = 10^{(0.819 \times \log K_{ow} - 1.146)}$$

$$EPC_{sed} \rightarrow EPC_{fish} = BCF_{benthos} \times EPC_{sed}$$

$$\text{Or, if BSAF is known: } EPC_{sed} \rightarrow EPC_{fish} = BSAF \times EPC_{sed} \times f_{lipid} / OC_{sed}$$

$$EPC_{sed} = \text{chemical-specific}$$

$$OC_{sed} = 3\% = 0.03$$

$$f_{lipid} = 7\% = 0.07$$

BAF = bioaccumulation factor

BCF = bioconcentration factor

BSAF = biota-to-sediment accumulation factor for fish

COPC = contaminant of potential concern

EPA = U.S. Environmental Protection Agency

EPC = exposure point concentration

f_{lipid} = fish fraction of lipid content (unitless)

FW = fresh weight

K_{ow} = octanol-water partition coefficient

LHAAP = Longhorn Army Ammunition Plant

NA = Modeling factors were not available or not appropriate for this constituent.

ND = Constituent was not detected or not selected as a COPC in this medium.

OC_{sed} = fraction of organic carbon in sediment

PCB = polychlorinated biphenyl

RA = risk assessment

RAIS = Risk Assessment Information System

RDX = cyclonite (explosive)

sed = sediment

TCDD = tetrachlorodibenzo-p-dioxin

TCEQ = Texas Commission on Environmental Quality

UCL = upper confidence level

--- = Constituent was not detected or not selected at this location or modeling factors were not available or not necessary.

Table B-3
Goose Prairie Creek Exposure Point Concentrations for Fish Tissue
Group 4 RA, LHAAP, Karnack, Texas

COPC	EPC _{sw} →EPC _{fish} mg/kg-FW	EPC _{sed} →EPC _{fish} mg/kg-FW	EPC _{fish} ^a mg/kg-FW
Dioxins/Furans			
2,3,7,8-TCDD	1.51E-06	2.65E-06	2.65E-06
Explosive			
2,4,6-Trinitrotoluene	3.99E-01	ND	3.99E-01
2-Amino-4,6-dinitrotoluene	5.93E-01	ND	5.93E-01
RDX (used BCF for 2,4,6-Trinitrotoluene)	1.17E-01	ND	1.17E-01
Metals			
Aluminum	5.24E+00	5.83E+03	5.83E+03
Antimony	1.82E+00	ND	1.82E+00
Arsenic	ND	3.76E+00	3.76E+00
Barium	ND	1.31E+02	1.31E+02
Beryllium	ND	1.08E+00	1.08E+00
Cadmium	ND	ND	---
Chromium	ND	1.17E+01	1.17E+01
Cobalt	ND	1.23E+01	1.23E+01
Copper	ND	3.48E+00	3.48E+00
Cyanide	ND	8.53E-01	8.53E-01
Lead	2.59E-01	1.23E+01	1.23E+01
Manganese	1.82E+02	3.27E+02	3.27E+02
Mercury (as methyl mercury)	ND	6.24E-02	6.24E-02
Nickel	ND	2.60E+01	2.60E+01
Selenium	ND	4.57E+00	4.57E+00
Silver	ND	2.16E+00	2.16E+00
Strontium	8.28E+00	7.38E+01	7.38E+01
Thallium	3.10E-01	ND	3.10E-01
Vanadium	ND	3.20E+01	3.20E+01
Zinc	ND	3.58E+01	3.58E+01
Non-Metallic Anion			
Perchlorate	1.35E-02	ND	1.35E-02
PCBs			
Aroclor 1254 (used BSAF for 2,3,7,8-TCDD)	ND	8.19E-03	8.19E-03
Semi-Volatile Organics			
2,4-Dinitrotoluene	2.31E-02	ND	2.31E-02
2,6-Dinitrotoluene	6.51E-02	ND	6.51E-02
Bis(2-ethylhexyl)phthalate	1.91E+02	ND	1.91E+02
Di-n-butyl phthalate	ND	2.00E+03	2.00E+03
Naphthalene	ND	1.37E-02	1.37E-02
Volatile Organics			
1,1-Dichloroethene	ND	4.68E-03	4.68E-03
Acetone	2.14E+00	2.33E-03	2.14E+00
cis-1,2-Dichloroethene	ND	5.21E-01	5.21E-01
Methylene chloride	ND	ND	---
4-Isopropyltoluene (p-Cymene)	ND	7.24E+00	7.24E+00
Toluene	ND	4.11E-02	4.11E-02
Trichloroethene	5.03E-01	2.03E-01	5.03E-01
Vinyl chloride	2.18E-02	4.14E-02	4.14E-02

^a Exposure point concentrations for fish from Goose Prairie Creek were based on uptake from surface water or sediment, whichever concentration was greater.

$EPC_{sw} \rightarrow EPC_{fish} = BCF \times EPC_{SW(dissolved)}$
 Or, if BAF is used: $EPC_{sw} \rightarrow EPC_{fish} = BAF \times EPC_{SW(total)}$

BAF = bioaccumulation factor
 BCF = bioconcentration factor
 BSAF = biota-to-sediment accumulation factor for fish
 COPC = contaminant of potential concern
 EPC = exposure point concentration
 f_{lipid} = fish fraction of lipid content (unitless)
 FW = fresh weight
 LHAAP = Longhorn Army Ammunition Plant
 ND = Constituent was not detected or not selected as a COPC in this medium.

$EPC_{sed} \rightarrow EPC_{fish} = BCF_{benthos} \times EPC_{sed}$
 Or, if BSAF is known: $EPC_{sed} \rightarrow EPC_{fish} = BSAF \times EPC_{sed} \times f_{lipid} / OC_{sed}$
 EPC_{sed} = chemical-specific
 $OC_{sed} = 3\% = 0.03$
 $f_{lipid} = 7\% = 0.07$

OC_{sed} = fraction of organic carbon in sediment
 PCB = polychlorinated biphenyl
 RA = risk assessment
 RDX = cyclonite (explosive)
 sed = sediment
 sw = surface water
 TCDD = tetrachlorodibenzo-p-dioxin
 --- = Constituent was not detected or not selected at this location.

Table B-4
Central Creek Exposure Point Concentration Calculations for Surface Water to Fish Tissue
Group 4 RA, LHAAP, Karnack, Texas

COPC	EPC _{sw} mg/L	EPC _{sw} Basis	K _{dsw} cm ³ /g	K _{oc} mL/g	Log K _{ow} unitless	EPC _{sw dissolved} mg/L	BCF _{fish} L/kg-FW	BAF _{fish} L/kg-FW	EPC _{sw} →EPC _{fish} mg/kg-FW
Dioxins/Furans									
2,3,7,8-TCDD	1.31E-09	Maximum	2.02E+05 a	---	---	4.34E-10 e	4.24E+03 d	NA	1.84E-06
Explosive									
2,4,6-Trinitrotoluene	ND	---	1.88E+00 a	---	---	ND	---	---	ND
2-Amino-4,6-dinitrotoluene	ND	---	4.22E+01 e	5.62E+02 c	2.80E+00 c	ND	---	---	ND
RDX (used BCF for 2,4,6-Trinitrotoluene)	ND	---	5.38E-01 e	7.17E+00 b	8.70E-01 b	ND	---	---	ND
Metals									
Aluminum	ND	---	1.50E+03 b	---	---	ND	---	---	ND
Antimony	0.027	Maximum	4.50E+01 a	---	---	2.70E-02 e	4.00E+01 a	NA	1.08E+00
Arsenic	ND	---	2.90E+01 a	---	---	ND	---	---	ND
Barium	ND	---	4.10E+01 a	---	---	ND	---	---	ND
Beryllium	ND	---	7.90E+02 a	---	---	ND	---	---	ND
Cadmium	ND	---	7.50E+01 a	---	---	ND	---	---	ND
Chromium	ND	---	1.80E+06 a	---	---	ND	---	---	ND
Cobalt	ND	---	4.50E+01 b	---	---	ND	---	---	ND
Copper	ND	---	4.28E+02 b	---	---	ND	---	---	ND
Cyanide	ND	---	6.68E-01 e	8.90E+00 b	---	ND	---	---	ND
Lead	ND	---	9.00E+02 a	---	---	ND	---	---	ND
Manganese	2.39	Maximum	6.50E+01 b	---	---	2.39E+00 e	4.00E+02 b	NA	9.55E+02
Mercury (as methyl mercury)	ND	---	1.00E+03 a	---	---	ND	---	---	ND
Nickel	ND	---	6.50E+01 a	---	---	ND	---	---	ND
Selenium	ND	---	5.00E+00 a	---	---	ND	---	---	ND
Silver	ND	---	8.30E+00 a	---	---	ND	---	---	ND
Strontium	0.44	Maximum	3.50E+01 b	---	---	4.40E-01 e	6.00E+01 b	NA	2.64E+01
Thallium	ND	---	7.10E+01 a	---	---	ND	---	---	ND
Vanadium	ND	---	1.00E+03 b	---	---	ND	---	---	ND
Zinc	ND	---	6.20E+01 a	---	---	ND	---	---	ND
Non-Metallic Anion									
Perchlorate	ND	---	3.16E-01 c	NA	0.00E+00 c	ND	---	---	ND
PCBs									
Aroclor 1254 (used BSAF for 2,3,7,8-TCDD)	ND	---	7.37E+03 a	---	---	ND	---	---	ND
Semi-Volatile Organics									
2,4-Dinitrotoluene	ND	---	3.83E+00 a	---	---	ND	---	---	ND
2,6-Dinitrotoluene	ND	---	3.14E+00 a	---	---	ND	---	---	ND
Bis(2-ethylhexyl)phthalate	ND	---	1.13E+06 e	1.51E+07 b	---	ND	---	---	ND
Di-n-butyl phthalate	ND	---	1.18E+02 a	---	5.20E+00 b	ND	---	---	ND
Naphthalene	ND	---	8.93E+01 a	---	---	ND	---	---	ND
Volatile Organics									
1,1-Dichloroethene	ND	---	4.88E+00 a	---	2.12E+00 a	ND	---	---	ND
Acetone	ND	---	7.13E-02 a	---	---	ND	---	---	ND
cis-1,2-Dichloroethene	ND	---	3.73E+01 a	---	2.20E+00 b	ND	---	---	ND
Methylene chloride	0.017	Maximum	7.50E-01 a	---	---	1.70E-02 e	5.30E+00 a	NA	9.01E-02
4-Isopropyltoluene (p-Cymene)	ND	---	NA	2.29E+03 c	4.14E+00 c	ND	---	---	ND
Toluene	ND	---	1.05E+01 a	---	2.69E+00 b	ND	---	---	ND
Trichloroethene	ND	---	7.05E+00 a	---	2.29E+00 b	ND	---	---	ND
Vinyl chloride	ND	---	8.32E-01 a	---	---	ND	---	---	ND

a = EPA. 1998. EPA Region 6. *Protocol for Screening Level Human Health Risk Assessment at Hazardous Waste Combustion Facilities*. July 1998.

b = RAIS. 2002. Oak Ridge National Laboratory Website: http://risk.lsd.ornl.gov/rp_hp.shtml.

c = TCEQ. 2001. Texas Risk Reduction Program (TRRP Rule (30 TAC 350), Protective Concentration Levels (PCLs) for Chemicals of Concern (COCs).

d = EPA. 1999. EPA Region 6. *Screening Level Ecological Risk Assessment Protocol Appendix C - Media-to-Receptor BCF Values*. August 1999.

e = Calculated using EPA, RAIS, or TCEQ data.

$$K_{dsw} = f_{oc,sw} \times K_{oc}$$

$$f_{oc,sw} = 0.075$$

$$K_{oc} = \text{chemical-specific}$$

$$EPC_{dissolved} = EPC_{total} / (1 + K_{dsw} \times TSS \times 10^{-6})$$

$$K_{dsw} = \text{see above}$$

$$TSS = 10 \text{ mg/L}$$

$$BCF_{fish} = 10^{(-0.23 + 0.76 \times \log K_{ow})}$$

$$BAF_{fish} = BCF_{fish} \times FCM$$

$$BCF_{fish} = \text{chemical-specific}$$

$$FCM = \text{food chain multiplier}$$

$$EPC_{sw \rightarrow fish} = BCF \times EPC_{SW(dissolved)}$$

$$\text{Or, if BAF is used: } EPC_{sw \rightarrow fish} = BAF \times EPC_{SW(total)}$$

BAF = bioaccumulation factor

BCF = bioconcentration factor

BSAF = biota-to-sediment accumulation factor for fish

COPC = contaminant of potential concern

EPA = U.S. Environmental Protection Agency

EPC = exposure point concentration

FW = fresh weight

K_{dsw} = suspended sediment/surface water partitioning coefficient
in liter of water per kg of suspended sediment

K_{oc} = organic carbon based partitioning coefficient

K_{ow} = octanol-water partition coefficient

LHAAP = Longhorn Army Ammunitions Plant

NA = Modeling factors were not available or not appropriate for this constituent.

ND = Constituent was not detected or not selected as a COPC in this medium.

PCB = polychlorinated biphenyl

RA = risk assessment

RAIS = Risk Assessment Information System

RDX = cyclonite (explosive)

sw = surface water

TCDD = tetrachlorodibenzo-p-dioxin

TCEQ = Texas Commission on Environmental Quality

--- = Constituent was not detected or not selected at this location
or modeling factors were not available or not necessary.

Table B-5
Central Creek Exposure Point Concentration Calculations for Sediment to Fish Tissue
Group 4 RA, LHAAP, Karnack, Texas

COPC	EPC _{sed} mg/kg	EPC _{sed} Basis	Log K _{ow} unitless	BSAF _{fish} kg/kg	BCF _{benthos} kg/kg	EPC _{sed} → EPC _{fish} mg/kg-FW
Dioxins/Furans						
2,3,7,8-TCDD	0.000000342	Maximum	---	9.00E-02 a	NA	7.18E-08
Explosive						
2,4,6-Trinitrotoluene	ND	---	---	---	---	ND
2-Amino-4,6-dinitrotoluene	ND	---	2.80E+00 c	---	---	ND
RDX (used BCF for 2,4,6-Trinitrotoluene)	ND	---	8.70E-01 b	---	---	ND
Metals						
Aluminum	5200	Maximum	---	NA	9.00E-01 c	4.68E+03
Antimony	ND	---	---	---	---	ND
Arsenic	3.25	95% UCL	---	NA	9.00E-01 c	2.93E+00
Barium	90	Maximum	---	NA	9.00E-01 c	8.10E+01
Beryllium	1.02	Maximum	---	NA	9.00E-01 c	9.18E-01
Cadmium	6.27	Maximum	---	NA	3.40E+00 c	2.13E+01
Chromium	24	Maximum	---	NA	3.90E-01 c	9.36E+00
Cobalt	15	Maximum	---	NA	9.00E-01 c	1.35E+01
Copper	10.3	Maximum	---	NA	3.00E-01 c	3.09E+00
Cyanide	ND	---	---	---	---	ND
Lead	13.6	Maximum	---	NA	6.30E-01 c	8.57E+00
Manganese	423	Maximum	---	NA	9.00E-01 c	3.81E+02
Mercury (as methyl mercury)	ND	---	---	---	---	ND
Nickel	25	Maximum	---	NA	9.00E-01 c	2.25E+01
Selenium	1.9	Maximum	---	NA	9.00E-01 c	1.71E+00
Silver	ND	---	---	---	---	ND
Strontium	27	Maximum	---	NA	9.00E-01 c	2.43E+01
Thallium	ND	---	---	---	---	ND
Vanadium	27	Maximum	---	NA	9.00E-01 c	2.43E+01
Zinc	49	Maximum	---	NA	5.70E-01 c	2.79E+01
Non-Metallic Anion						
Perchlorate	ND	---	0.00E+00 c	---	---	ND
PCBs						
Aroclor 1254 (used BSAF for 2,3,7,8-TCDD)	ND	---	---	---	---	ND
Semi-Volatile Organics						
2,4-Dinitrotoluene	ND	---	---	---	---	ND
2,6-Dinitrotoluene	ND	---	---	---	---	ND
Bis(2-ethylhexyl)phthalate	ND	---	---	---	---	ND
Di-n-butyl phthalate	ND	---	5.20E+00 b	---	---	ND
Naphthalene	ND	---	---	---	---	ND
Volatile Organics						
1,1-Dichloroethene	ND	---	2.12E+00 a	---	---	ND
Acetone	ND	---	---	---	---	ND
cis-1,2-Dichloroethene	ND	---	2.20E+00 b	---	---	ND
Methylene chloride	ND	---	---	---	---	ND
4-Isopropyltoluene (p-Cymene)	ND	---	4.14E+00 c	---	---	ND
Toluene	ND	---	2.69E+00 b	---	---	ND
Trichloroethene	ND	---	2.29E+00 b	---	---	ND
Vinyl chloride	ND	---	---	---	---	ND

a - EPA. 1998. EPA Region 6. *Protocol for Screening Level Human Health Risk Assessment at Hazardous Waste Combustion Facilities*. July 1998.

b - RAIS. 2002. Oak Ridge National Laboratory Website: http://risk.lsd.ornl.gov/rap_hp.shtml.

c - TCEQ. 2001. Texas Risk Reduction Program (TRRP) Rule (30 TAC 350), Protective Concentration Levels (PCLs) for Chemicals of Concern (COCs).

$$BCF_{benthos} = 10^{(0.819 \times \log K_{ow} - 1.146)}$$

$$EPC_{sed} \rightarrow EPC_{fish} = BCF_{benthos} \times EPC_{sed}$$

$$\text{Or, if BSAF is known; } EPC_{sed} \rightarrow EPC_{fish} = BSAF \times EPC_{sed} \times f_{lipid} / OC_{sed}$$

$$EPC_{sed} = \text{chemical-specific}$$

$$OC_{sed} = 3\% = 0.03$$

$$f_{lipid} = 7\% = 0.07$$

BCF = bioconcentration factor

BSAF = biota-to-sediment accumulation factor for fish

COPC = Contaminant of potential concern

EPA = U.S. Environmental Protection Agency

EPC = exposure point concentration

FW = fresh weight

f_{lipid} = fish fraction of lipid content (unitless)

K_{ow} = octanol-water partition coefficient

LHAAP = Longhorn Army Ammunitions Plant

NA = Modeling factors were not available or not appropriate for this constituent.

ND = Constituent was not detected or not selected as a COPC in this medium.

OC_{sed} = fraction of organic carbon in sediment

PCB = polychlorinated biphenyl

RA = risk assessment

RAIS = Risk Assessment Information System

RDX = cyclonite (explosive)

sed = sediment

TCDD = tetrachlorodibenzo-p-dioxin

TCEQ = Texas Commission on Environmental Quality

UCL = upper confidence level

--- = Constituent was not detected or not selected at this location or modeling factors were not available or not necessary.

Table B-6
Central Creek Exposure Point Concentrations for Fish Tissue
Group 4 RA, LHAAP, Karnack, Texas

COPC	EPC _{sw} → EPC _{fish} mg/kg-FW	EPC _{sed} → EPC _{fish} mg/kg-FW	EPC _{fish} ^a mg/kg-FW
<i>Dioxins/Furans</i>			
2,3,7,8-TCDD	1.84E-06	7.18E-08	1.84E-06
<i>Explosive</i>			
2,4,6-Trinitrotoluene	ND	ND	---
2-Amino-4,6-dinitrotoluene	ND	ND	---
RDX (used BCF for 2,4,6-Trinitrotoluene)	ND	ND	---
<i>Metals</i>			
Aluminum	ND	4.68E+03	4.68E+03
Antimony	1.08E+00	ND	1.08E+00
Arsenic	ND	2.93E+00	2.93E+00
Barium	ND	8.10E+01	8.10E+01
Beryllium	ND	9.18E-01	9.18E-01
Cadmium	ND	2.13E+01	2.13E+01
Chromium	ND	9.36E+00	9.36E+00
Cobalt	ND	1.35E+01	1.35E+01
Copper	ND	3.09E+00	3.09E+00
Cyanide	ND	ND	---
Lead	ND	8.57E+00	8.57E+00
Manganese	9.55E+02	3.81E+02	9.55E+02
Mercury (as methyl mercury)	ND	ND	---
Nickel	ND	2.25E+01	2.25E+01
Selenium	ND	1.71E+00	1.71E+00
Silver	ND	ND	---
Strontium	2.64E+01	2.43E+01	2.64E+01
Thallium	ND	ND	---
Vanadium	ND	2.43E+01	2.43E+01
Zinc	ND	2.79E+01	2.79E+01
<i>Non-Metallic Anion</i>			
Perchlorate	ND	ND	---
<i>PCBs</i>			
Aroclor 1254 (used BSAF for 2,3,7,8-TCDD)	ND	ND	---
<i>Semi-Volatile Organics</i>			
2,4-Dinitrotoluene	ND	ND	---
2,6-Dinitrotoluene	ND	ND	---
Bis(2-ethylhexyl)phthalate	ND	ND	---
Di-n-butyl phthalate	ND	ND	---
Naphthalene	ND	ND	---
<i>Volatile Organics</i>			
1,1-Dichloroethene	ND	ND	---
Acetone	ND	ND	---
cis-1,2-Dichloroethene	ND	ND	---
Methylene chloride	9.01E-02	ND	9.01E-02
4-Isopropyltoluene (p-Cymene)	ND	ND	---
Toluene	ND	ND	---
Trichloroethene	ND	ND	---
Vinyl chloride	ND	ND	---

^a Exposure point concentrations for fish from Central Creek were based on uptake from surface water or sediment, whichever concentration was greater.

EPC_{fish} = Exposure point concentration for fish tissue expressed in mg/kg-FW.

EPC_{sw} → EPC_{fish} = BCF × EPC_{SW(dissolved)}

Or, if BAF is used; EPC_{sw} → EPC_{fish} = BAF × EPC_{SW(total)}

EPC_{sed} → EPC_{fish} = BCF_{benibos} × EPC_{sed}

Or, if BSAF is known; EPC_{sed} → EPC_{fish} = BSAF × EPC_{sed} × f_{lipid} / OC_{sed}

EPC_{sed} = chemical-specific

OC_{sed} = 3% = 0.03

f_{lipid} = 7% = 0.07

BAF = bioaccumulation factor

BCF = bioconcentration factor

BSAF = biota-to-sediment accumulation factor for fish

COPC = contaminant of potential concern

EPC = exposure point concentration

f_{lipid} = fish fraction of lipid content (unitless)

FW = fresh weight

LHAAP = Longhorn Army Ammunition Plant

ND = Constituent was not detected or not selected as a COPC in this medium.

OC_{sed} = fraction of organic carbon in sediment

PCB = polychlorinated biphenyl

RA = risk assessment

RDX = cyclonite (explosive)

sed = sediment

sw = surface water

TCDD = tetrachlorodibenzo-p-dioxin

--- = Constituent was not detected or not selected at this location or modeling factors were not available or not necessary.

Table B-7
Saunders Branch Exposure Point Concentration Calculations for Surface Water to Fish Tissue
Group 4 RA, LHAAP, Karnack, Texas

COPC	EPC _{sw} mg/L	EPC _{sw} Basis	Kd _{sw} cm ² /g	K _{oc} mL/g	Log K _{ow} unitless	EPC _{sw} ^{desolved} mg/L	BCF _{fish} L/kg-FW	BAF _{fish} L/kg-FW	EPC _{sw} →EPC _{fish} mg/kg-FW
Dioxin/Furan									
2,3,7,8-TCDD	ND	---	2.02E+05 a	---	---	ND	---	---	ND
Explosive									
2,4,6-Trinitrotoluene	ND	---	1.88E+00 a	---	---	ND	---	---	ND
2-Amino-4,6-dinitrotoluene	ND	---	4.22E+01 d	5.62E+02 c	2.80E+00 c	ND	---	---	ND
RDX (used BCF for 2,4,6-Trinitrotoluene)	ND	---	5.38E-01 d	7.17E+00 b	8.70E-01 b	ND	---	---	ND
Metals									
Aluminum	ND	---	1.50E+03 b	---	---	ND	---	---	ND
Antimony	0.018	Maximum	4.50E+01 a	---	---	1.80E-02 d	4.00E+01 a	NA	7.20E-01
Arsenic	ND	---	2.90E+01 a	---	---	ND	---	---	ND
Barium	ND	---	4.10E+01 a	---	---	ND	---	---	ND
Beryllium	ND	---	7.90E+02 a	---	---	ND	---	---	ND
Cadmium	ND	---	7.50E+01 a	---	---	ND	---	---	ND
Chromium	ND	---	1.80E+06 a	---	---	ND	---	---	ND
Cobalt	ND	---	4.50E+01 b	---	---	ND	---	---	ND
Copper	ND	---	4.28E+02 b	---	---	ND	---	---	ND
Cyanide	ND	---	6.68E-01 d	8.90E+00 b	---	ND	---	---	ND
Lead	ND	---	9.00E+02 a	---	---	ND	---	---	ND
Manganese	0.259	Maximum	6.50E-01 b	---	---	2.59E-01 d	4.00E+02 b	NA	1.04E+02
Mercury (as methyl mercury)	ND	---	1.00E+03 a	---	---	ND	---	---	ND
Nickel	ND	---	6.50E+01 a	---	---	ND	---	---	ND
Selenium	ND	---	5.00E+00 a	---	---	ND	---	---	ND
Silver	ND	---	8.30E+00 a	---	---	ND	---	---	ND
Strontium	0.06	Maximum	3.50E+01 b	---	---	6.00E-02 d	6.00E+01 b	NA	3.60E+00
Thallium	ND	---	7.10E+01 a	---	---	ND	---	---	ND
Vanadium	ND	---	1.00E+03 b	---	---	ND	---	---	ND
Zinc	ND	---	6.20E+01 a	---	---	ND	---	---	ND
Non-Metallic Anion									
Perchlorate	ND	---	3.16E-01 c	NA	0.00E+00 c	ND	---	---	ND
PCBs									
Aroclor 1254 (used BSAF for 2,3,7,8-TCDD)	ND	---	7.37E+03 a	---	---	ND	---	---	ND
Semi-Volatile Organics									
2,4-Dinitrotoluene	ND	---	3.83E+00 a	---	---	ND	---	---	ND
2,6-Dinitrotoluene	ND	---	3.14E+00 a	---	---	ND	---	---	ND
Bis(2-ethylhexyl)phthalate	ND	---	1.13E+06 d	1.51E+07 b	---	ND	---	---	ND
Di-n-butyl phthalate	ND	---	1.18E+02 a	---	5.20E+00 b	ND	---	---	ND
Naphthalene	ND	---	8.93E+01 a	---	---	ND	---	---	ND
Volatile Organics									
1,1-Dichloroethene	ND	---	4.88E+00 a	---	2.12E+00 a	ND	---	---	ND
Acetone	ND	---	7.13E-02 a	---	---	ND	---	---	ND
cis-1,2-Dichloroethene	ND	---	3.73E+01 a	---	2.20E+00 b	ND	---	---	ND
Methylene chloride	ND	---	7.50E-01 a	---	---	ND	---	---	ND
4-Isopropyltoluene (p-Cymene)	ND	---	NA	2.29E+03 c	4.14E+00 c	ND	---	---	ND
Toluene	ND	---	1.05E+01 a	---	2.69E+00 b	ND	---	---	ND
Trichloroethene	ND	---	7.05E+00 a	---	2.29E+00 b	ND	---	---	ND
Vinyl Chloride	ND	---	8.32E-01 a	---	---	ND	---	---	ND

a - EPA. 1998. EPA Region 6. *Protocol for Screening Level Human Health Risk Assessment at Hazardous Waste Combustion Facilities*. July 1998.

b - RAIS. 2002. Oak Ridge National Laboratory Website: http://risk.lsd.ornl.gov/rap_hp.shtml.

c - TCEQ. 2001. Texas Risk Reduction Program (TRRP Rule (30 TAC 350), Protective Concentration Levels (PCLs) for Chemicals of Concern (COCs).

d = Calculated using EPA, RAIS, or TCEQ data.

$$Kd_{sw} = f_{oc,sw} \times K_{oc}$$

$$f_{oc,sw} = 0.075$$

$$K_{oc} = \text{chemical-specific}$$

$$EPC_{desolved} = EPC_{total} / (1 + Kd_{sw} \times TSS \times 10^6)$$

$$Kd_{sw} = \text{see above}$$

$$TSS = 10 \text{ mg/L}$$

$$BAF_{fish} = BCF_{fish} \times FCM$$

$$BCF_{fish} = \text{chem-specific}$$

$$FCM = \text{food chain multiplier}$$

$$EPC_{sw} \rightarrow EPC_{fish} = BCF \times EPC_{sw(desolved)}$$

$$\text{Or, if BAF is used: } EPC_{sw} \rightarrow EPC_{fish} = BAF \times EPC_{sw(total)}$$

BAF = bioaccumulation factor

BCF = bioconcentration factor

BSAF = biota-to-sediment accumulation factor for fish

COPC = contaminant of potential concern

EPA = U.S. Environmental Protection Agency

EPC = exposure point concentration

FW = fresh weight

Kd_{sw} = suspended sediment/surface water partitioning coefficient
in liter of water per kg of suspended sediment

K_{oc} = organic carbon based partitioning coefficient

K_{ow} = octanol-water partition coefficient

LHAAP = Longhorn Army Ammunition Plant

NA = Modeling factors were not available or not appropriate for this constituent.

ND = Constituent was not detected or not selected as a COPC in this medium.

PCB = polychlorinated biphenyl

RA = risk assessment

RAIS = Risk Assessment Information System

RDX = cyclonite (explosive)

sw = surface water

TCDD = tetrachlorodibenzo-p-dioxin

TCEQ = Texas Commission on Environmental Quality

TSS = total suspended solids

--- = Constituent was not detected or not selected at this location
or modeling factors were not available or not necessary.

Table B-8
Saunders Branch Exposure Point Concentration Calculations for Sediment to Fish Tissue
Group 4 RA, LHAAP, Karnack, Texas

COPC	EPC _{sed} mg/kg	EPC _{sed} Basis	Log K _{ow} unitless	BSAF _{fish} kg/kg	BCF _{benthos} kg/kg	EPC _{sed} → EPC _{fish} mg/kg-FW
Dioxins/Furans						
2,3,7,8-TCDD	0.000000357	Maximum	---	9.00E-02 a	NA	7.50E-08
Explosive						
2,4,6-Trinitrotoluene	ND	---	---	---	---	ND
2-Amino-4,6-dinitrotoluene	ND	---	2.80E+00 c	---	---	ND
RDX (used BCF for 2,4,6-Trinitrotoluene)	ND	---	8.70E-01 b	---	---	ND
Metals						
Aluminum	3500	Maximum	---	NA	9.00E-01 d	3.15E+03
Antimony	ND	---	---	---	---	ND
Arsenic	10.2	Maximum	---	NA	9.00E-01 d	9.18E+00
Barium	147.6	Maximum	---	NA	9.00E-01 d	1.33E+02
Beryllium	1.19	Maximum	---	NA	9.00E-01 d	1.07E+00
Cadmium	ND	---	---	---	---	ND
Chromium	40.2	Maximum	---	NA	3.90E-01 d	1.57E+01
Cobalt	ND	---	---	---	---	ND
Copper	3.56	Maximum	---	NA	3.00E-01 d	1.07E+00
Cyanide	ND	---	---	---	---	ND
Lead	29.6	Maximum	---	NA	6.30E-01 d	1.86E+01
Manganese	146	Maximum	---	NA	9.00E-01 d	1.31E+02
Mercury (as methyl mercury)	ND	---	---	---	---	ND
Nickel	13.8	Maximum	---	NA	9.00E-01 d	1.24E+01
Selenium	ND	---	---	---	---	ND
Silver	ND	---	---	---	---	ND
Strontium	ND	---	---	NA	9.00E-01 d	ND
Thallium	ND	---	---	---	---	ND
Vanadium	23	Maximum	---	NA	9.00E-01 d	2.07E+01
Zinc	15	Maximum	---	NA	5.70E-01 d	8.55E+00
Non-Metallic Anion						
Perchlorate	ND	---	0.00E+00 c	---	---	ND
PCBs						
Aroclor 1254 (used BSAF for 2,3,7,8-TCDD)	ND	---	---	---	---	ND
Semi-Volatile Organics						
2,4-Dinitrotoluene	ND	---	---	---	---	ND
2,6-Dinitrotoluene	ND	---	---	---	---	ND
Bis(2-ethylhexyl)phthalate	ND	---	---	---	---	ND
Di-n-butyl phthalate	ND	---	5.20E+00 b	---	---	ND
Naphthalene	ND	---	---	---	---	ND
Volatile Organics						
1,1-Dichloroethene	ND	---	2.12E+00 a	---	---	ND
Acetone	0.055	Maximum	---	NA	5.00E-02 d	2.75E-03
cis-1,2-Dichloroethene	ND	---	2.20E+00 b	---	---	ND
Methylene chloride	ND	---	---	---	---	ND
4-Isopropyltoluene (p-Cymene)	ND	---	4.14E+00 c	---	---	ND
Toluene	0.029	Maximum	2.69E+00 b	NA	1.14E+01 e	3.31E-01
Trichloroethene	ND	---	2.29E+00 b	---	---	ND
Vinyl chloride	ND	---	---	---	---	ND

a = EPA. 1998. EPA Region 6. *Protocol for Screening Level Human Health Risk Assessment at Hazardous Waste Combustion Facilities*. July 1998.

b = RAIS. 2002. Oak Ridge National Laboratory Website: http://risk.lsd.ornl.gov/rap_hp.shtml.

c = TCEQ. 2001. Texas Risk Reduction Program (TRRP Rule (30 TAC 350), Protective Concentration Levels (PCLs) for Chemicals of Concern (COCs).

d = EPA. 1999. EPA Region 6. *Screening Level Ecological Risk Assessment Protocol Appendix C - Media-to-Receptor BCF Value s*. August 1999.

e = Calculated using EPA, RAIS, or TCEQ data.

EPC_{sed} = chemical-specific

BCF_{benthos} = $10^{(0.819 \times \log K_{ow} - 1.146)}$

EPC_{sed} → EPC_{fish} = BCF_{benthos} × EPC_{sed}

Or, if BSAF is known, EPC_{sed} → EPC_{fish} = BSAF × EPC_{sed} × f_{lipid} / OC_{sed}

OC_{sed} = 3% = 0.03

f_{lipid} = 7% = 0.07

BCF = bioconcentration factor

BSAF = biota-to-sediment accumulation factor for fish

COPC = contaminant of potential concern

EPA = U.S. Environmental Protection Agency

EPC = exposure point concentration

f_{lipid} = fish fraction of lipid content (unitless)

FW = fresh weight

K_{ow} = octanol-water partition coefficient

LHAAP = Longhorn Army Ammunition Plant

NA = Modeling factors were not available or not appropriate for this constituent

ND = Constituent was not detected or not selected as a COPC in this medium.

OC_{sed} = fraction of organic carbon in sediment

PCB = polychlorinated biphenyl

RA = risk assessment

RAIS = Risk Assessment Information System

RDX = cyclonite (explosive)

sed = sediment

TCDD = tetrachlorodibenzo-p-dioxin

TCEQ = Texas Commission on Environmental Quality

--- = Constituent was not detected or not selected at this location
or modeling factors were not available or not necessary.

Table B-9
Saunder's Branch Exposure Point Concentrations for Fish Tissue
Group 4 RA, LHAAP, Karnack, Texas

COPC	EPC _{sw} → EPC _{fish} mg/kg-FW	EPC _{sed} → EPC _{fish} mg/kg-FW	EPC _{fish} ^a mg/kg-FW
Dioxins/Furans			
2,3,7,8-TCDD	ND	7.50E-08	7.50E-08
Explosive			
2,4,6-Trinitrotoluene	ND	ND	---
2-Amino-4,6-dinitrotoluene	ND	ND	---
RDX (used BCF for 2,4,6-Trinitrotoluene)	ND	ND	---
Metals			
Aluminum	ND	3.15E+03	3.15E+03
Antimony	7.20E-01	ND	7.20E-01
Arsenic	ND	9.18E+00	9.18E+00
Barium	ND	1.33E+02	1.33E+02
Beryllium	ND	1.07E+00	1.07E+00
Cadmium	ND	ND	---
Chromium	ND	1.57E+01	1.57E+01
Cobalt	ND	ND	---
Copper	ND	1.07E+00	1.07E+00
Cyanide	ND	ND	---
Lead	ND	1.86E+01	1.86E+01
Manganese	1.04E+02	1.31E+02	1.31E+02
Mercury (as methyl mercury)	ND	ND	---
Nickel	ND	1.24E+01	1.24E+01
Selenium	ND	ND	---
Silver	ND	ND	---
Strontium	3.60E+00	ND	3.60E+00
Thallium	ND	ND	---
Vanadium	ND	2.07E+01	2.07E+01
Zinc	ND	8.55E+00	8.55E+00
Non-Metallic Anion			
Perchlorate	ND	ND	---
PCBs			
Aroclor 1254 (used BSAF for 2,3,7,8-TCDD)	ND	ND	---
Semi-Volatile Organics			
2,4-Dinitrotoluene	ND	ND	---
2,6-Dinitrotoluene	ND	ND	---
Bis(2-ethylhexyl)phthalate	ND	ND	---
Di-n-butyl phthalate	ND	ND	---
Naphthalene	ND	ND	---
Volatile Organics			
1,1-Dichloroethene	ND	ND	---
Acetone	ND	2.75E-03	2.75E-03
cis-1,2-Dichloroethene	ND	ND	---
Methylene chloride	ND	ND	---
4-Isopropyltoluene (p-Cymene)	ND	ND	---
Toluene	ND	3.31E-01	3.31E-01
Trichloroethene	ND	ND	---
Vinyl chloride	ND	ND	---

^a Exposure point concentrations for fish from Sauder's Branch were based on uptake from surface water or sediment, whichever concentration was greater.

$EPC_{sw} \rightarrow EPC_{fish} = BCF \times EPC_{SW(dissolved)}$
 Or, if BAF is used; $EPC_{sw} \rightarrow EPC_{fish} = BAF \times EPC_{SW(total)}$

$EPC_{sed} \rightarrow EPC_{fish} = BCF_{benthos} \times EPC_{sed}$
 Or, if BSAF is known; $EPC_{sed} \rightarrow EPC_{fish} = BSAF \times EPC_{sed} \times f_{lipid} / OC_{sed}$
 EPC_{sed} = chemical-specific
 $OC_{sed} = 3\% = 0.03$
 $f_{lipid} = 7\% = 0.07$

BCF = bioconcentration factor
 BSAF = biota-to-sediment accumulation factor for fish
 COPC = contaminant of potential concern
 EPC = exposure point concentration
 f_{lipid} = fish fraction of lipid content (unitless)
 FW = fresh weight
 LHAAP = Longhorn Army Ammunition Plant
 ND = Constituent was not detected or not selected as a COPC in this medium.
 OC_{sed} = fraction of organic carbon in sediment

PCB = polychlorinated biphenyl
 RA = risk assessment
 RDX = cyclonite (explosive)
 sed = sediment
 sw = surface water
 TCDD = tetrachlorodibenzo-p-dioxin
 --- = Constituent was not detected or not selected at this location
 or modeling factors were not available or not necessary.

Table B-10
Caddo Lake Exposure Point Concentration Calculations for Sediment to Fish Tissue
Group 4 RA, LHAAP, Karnack, Texas

COPC	EPC _{sed} mg/kg	EPC _{sed} Basis	Log K _{ow} unitless	BSAF _{fish} kg/kg	BCF _{benthos} kg/kg	EPC _{sed} →EPC _{fish} mg/kg-FW
Dioxins/Furans						
2,3,7,8-TCDD	0.00000799	Maximum	6.64E+00 b	0.09 a	NA	1.68E-06
Explosives						
2,4,6-Trinitrotoluene	ND	---	---	---	---	ND
2-Amino-4,6-dinitrotoluene	ND	---	---	---	---	ND
RDX	ND	---	---	---	---	ND
Metals						
Aluminum	19600	Maximum	---	NA	9.00E-01 c	1.76E+04
Antimony	ND	---	---	---	---	ND
Arsenic	7.52	Maximum	---	NA	9.00E-01 c	6.77E+00
Barium	264	95% UCL	---	NA	9.00E-01 c	2.38E+02
Beryllium	1.74	95% UCL	---	NA	9.00E-01 c	1.57E+00
Cadmium	0.724	95% UCL	---	NA	3.40E+00 c	2.46E+00
Chromium	31.3	95% UCL	---	NA	3.90E-01 c	1.22E+01
Cobalt	17.1	Maximum	---	NA	9.00E-01 c	1.54E+01
Copper	20.5	95% UCL	---	NA	3.00E-01 c	6.15E+00
Cyanide	ND	---	---	---	---	ND
Lead	371	95% UCL	---	NA	6.30E-01 c	2.34E+02
Manganese	488	Maximum	---	NA	9.00E-01 c	4.39E+02
Mercury (as methyl mercury)	1.45	95% UCL	---	NA	4.80E-01 c	6.96E-01
Nickel	23.1	Maximum	---	NA	9.00E-01 c	2.08E+01
Selenium	2.14	95% UCL	---	NA	9.00E-01 c	1.93E+00
Silver	10.7	95% UCL	---	NA	9.00E-01 c	9.63E+00
Strontium	42.5	Maximum	---	NA	9.00E-01 c	3.83E+01
Thallium	1.09	95% UCL	---	NA	9.00E-01 c	9.81E-01
Vanadium	32.2	95% UCL	---	NA	9.00E-01 c	2.90E+01
Zinc	106	95% UCL	---	NA	5.70E-01 c	6.04E+01
Non-Metallic Anion						
Perchlorate	ND	---	---	---	---	ND
PCBs						
Aroclor 1254	ND	---	---	---	---	ND
Semi-Volatile Organics						
2,4-Dinitrotoluene	ND	---	---	---	---	ND
2,6-Dinitrotoluene	ND	---	---	---	---	ND
3-Methylphenol	0.0832	Maximum	9.70E-01 b	NA	4.45E-01 d	3.70E-02
4-Methylphenol	0.0832	Maximum	1.94E+00 b	NA	2.77E+00 d	2.31E-01
Acenaphthylene	0.0943	Maximum	4.07E+00 b	NA	1.59E+00 c	1.50E-01
Anthracene	1.44	Maximum	4.45E+00 b	NA	1.59E+00 c	2.29E+00
Benzo(a)anthracene	2.98	Maximum	5.61E+00 b	NA	1.45E+00 c	4.32E+00
Benzo(a)pyrene	2.59	Maximum	5.98E+00 b	NA	1.59E+00 c	4.12E+00
Benzo(b)fluoranthene	3.02	Maximum	6.84E+00 b	NA	1.59E+00 c	4.80E+00
Benzo(g,h,i)perylene	2.72	Maximum	6.70E+00 b	NA	1.59E+00 c	4.32E+00
Benzo(k)fluoranthene	1.09	Maximum	6.84E+00 b	NA	1.59E+00 c	1.73E+00
Bis(2-ethylhexyl)phthalate	ND	---	---	---	---	ND
Chrysene	2.87	Maximum	5.61E+00 b	NA	1.38E+00 c	3.96E+00
Dibenzo(a,h)anthracene	0.885	Maximum	6.69E+00 b	NA	1.59E+00 c	1.41E+00
Dibenzofuran	0.0781	Maximum	4.12E+00 b	NA	1.59E+00 d	1.24E-01
Di-n-butyl phthalate	ND	---	---	---	---	ND
Ethylbenzene	0.00353	Maximum	3.15E+00 b	NA	2.72E+01 d	9.59E-02
Fluoranthene	5.93	Maximum	5.33E+00 b	NA	1.59E+00 c	9.43E+00
Fluorene	0.453	Maximum	4.21E+00 b	NA	1.59E+00 c	7.20E-01
Naphthalene	ND	---	---	---	---	ND
Phenanthrene	4.67	Maximum	4.55E+00 b	NA	1.59E+00 c	7.43E+00
Phenol	0.0668	Maximum	1.46E+00 b	NA	1.12E+00 d	7.49E-02
Volatile Organics						
1,1-Dichloroethene	ND	---	---	---	---	ND
4-Isopropyltoluene	ND	---	---	---	---	ND
Acetone	1.24	Maximum	-2.40E-01 b	NA	5.00E-02 c	6.20E-02
Carbon disulfide	0.177	Maximum	2.16E+00 b	NA	4.20E+00 d	7.43E-01

Table B-10 (continued)

COPC	EPC _{sed} mg/kg	EPC _{sed} Basis	Log K _{ow} unitless	BSAF _{fish} kg/kg	BCF _{benthos} kg/kg	EPC _{sed} --->EPC _{fish} mg/kg-FW
cis-1,2-Dichloroethene	ND	---	---	---	---	ND
Methylene chloride	ND	---	---	---	---	ND
Toluene	ND	---	---	---	---	ND
Trichloroethene	ND	---	---	---	---	ND
Trichlorofluoromethane	0.0107	Maximum	2.53E+00 b	NA	8.43E+00 d	9.03E-02
Vinyl chloride	ND	---	---	---	---	ND

a = EPA. 1998. EPA Region 6. *Protocol for Screening Level Human Health Risk Assessment at Hazardous Waste Combustion Facilities*. July 1998.

b = RAIS. 2002. Oak Ridge National Laboratory Website: http://risk.lsd.ornl.gov/rap_hp.shtml.

c = EPA. 1999. EPA Region 6. *Screening Level Ecological Risk Assessment Protocol Appendix C - Media-to-Receptor BCF Values*. August 1999.

d = Calculated using EPA or RAIS data.

$$EPC_{sed} \rightarrow EPC_{fish} = BCF_{benthos} \times EPC_{sed}$$

$$\text{Or, if BSAF is known; } EPC_{sed} \rightarrow EPC_{fish} = BSAF \times EPC_{sed} \times f_{lipid} / OC_{sed}$$

$$BCF_{benthos} = 10^{(0.819 \times \log K_{ow} - 1.146)}$$

EPC_{sed} = chemical-specific

$$OC_{sed} = 3\% = 0.03$$

$$f_{lipid} = 7\% = 0.07$$

BCF = bioconcentration factor

BSAF = biota-to-sediment accumulation factor for fish

COPC = contaminant of potential concern

EPA = U.S. Environmental Protection Agency

EPC = exposure point concentration

f_{lipid} = fish fraction of lipid content (unitless)

FW = fresh weight

K_{ow} = octanol-water partition coefficient

LHAAP = Longhorn Army Ammunition Plant

NA = Modeling factors were not available or not appropriate for this constituent.

ND = Constituent was not detected or not selected as a COPC in this medium.

OC_{sed} = fraction of organic carbon in sediment

PCB = polychlorinated biphenyl

RA = risk assessment

RAIS = Risk Assessment Information System

RDX = cyclonite (explosive)

sed = sediment

TCDD = tetrachlorodibenzo-p-dioxin

UCL = upper confidence level

--- = Constituent was not detected or not selected at this location
or modeling factors were not available or not necessary.

Table B-11
Caddo Lake Exposure Point Concentrations for Fish Tissue
Group 4 RA, LHAAP, Karnack, Texas

COPC	EPC_{fish} mg/kg-FW
Dioxins/Furans	
2,3,7,8-TCDD	1.68E-06
Explosives	
2,4,6-Trinitrotoluene	ND
2-Amino-4,6-dinitrotoluene	ND
RDX	ND
Metals	
Aluminum	1.76E+04
Antimony	ND
Arsenic	6.77E+00
Barium	2.38E+02
Beryllium	1.57E+00
Cadmium	2.46E+00
Chromium	1.22E+01
Cobalt	1.54E+01
Copper	6.15E+00
Cyanide	ND
Lead	2.34E+02
Manganese	4.39E+02
Mercury (as methyl mercury)	6.96E-01
Nickel	2.08E+01
Selenium	1.93E+00
Silver	9.63E+00
Strontium	3.83E+01
Thallium	9.81E-01
Vanadium	2.90E+01
Zinc	6.04E+01
Non-Metallic Anion	
Perchlorate	ND
PCBs	
Aroclor 1254	ND
Semi-Volatile Organics	
2,4-Dinitrotoluene	ND
2,6-Dinitrotoluene	ND
3-Methylphenol	3.70E-02
4-Methylphenol	2.31E-01
Acenaphthylene	1.50E-01
Anthracene	2.29E+00
Benzo(a)anthracene	4.32E+00
Benzo(a)pyrene	4.12E+00
Benzo(b)fluoranthene	4.80E+00
Benzo(g,h,i)perylene	4.32E+00
Benzo(k)fluoranthene	1.73E+00
Bis(2-ethylhexyl)phthalate	ND
Chrysene	3.96E+00
Dibenzo(a,h)anthracene	1.41E+00
Dibenzofuran	1.24E-01
Di-n-butyl phthalate	ND
Ethylbenzene	9.59E-02
Fluoranthene	9.43E+00
Fluorene	7.20E-01
Naphthalene	ND
Phenanthrene	7.43E+00
Phenol	7.49E-02

Table B-11 (continued)

COPC	EPC _{fish} ^a mg/kg-FW
<i>Volatile Organics</i>	
1,1-Dichloroethene	ND
4-Isopropyltoluene	ND
Acetone	6.20E-02
Carbon disulfide	7.43E-01
cis-1,2-Dichloroethene	ND
Methylene chloride	ND
Toluene	ND
Trichloroethene	ND
Trichlorofluoromethane	9.03E-02
Vinyl chloride	ND

^a Exposure point concentrations for fish from Caddo Lake were based on uptake from sediment only.

COPC = contaminant of potential concern

EPC = exposure point concentration

FW = fresh weight

LHAAP = Longhorn Army Ammunition Plant

ND = Constituent was not detected or not selected as a COPC in this medium.

PCB = polychlorinated biphenyl

RA = risk assessment

RDX = cyclonite (explosive)

TCDD = tetrachlorodibenzo-p-dioxin

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Appendix C

BHHRA Intake and Risk Tables

Table C-1
Set 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Current Trespasser - Site 04 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	3.11E-12	3.27E-13	4.71E-16	NE
<i>Metals</i>				
Manganese	4.76E-04	1.66E-05	7.19E-08	NE
<i>Non-Metallic Anion</i>				
Perchlorate	8.88E-06	3.11E-07	1.34E-09	NE

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-2
Set 1 - RME
Summary of Hazard Quotients and Indices
Current Trespasser - Site 04 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total Hazard Index
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NA
<i>Metals</i>					
Manganese	1.0E-02	5.9E-03	1.4E-03	NE	1.7E-02
<i>Non-Metallic Anion</i>					
Perchlorate	9.9E-03	3.5E-04	NTV	NE	1.0E-02
Totals	2.0E-02	6.2E-03	1.4E-03	0.0E+00	2.8E-02

NA = Not applicable.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-3
Set 1 - RME
Percent Contribution to the Total Hazard Index
Current Trespasser - Site 04 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NA
<i>Metals</i>					
Manganese	36.56	21.33	5.20	NE	63.08
<i>Non-Metallic Anion</i>					
Perchlorate	35.67	1.25	NTV	NE	36.92
Totals	72.2	22.6	5.2	0.0	100.0

NA = Not applicable.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-4
Set 1 -RME
Summary of Exposure Doses (Cancer Effects)
Current Trespasser - Site 04 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	5.34E-13	5.60E-14	8.07E-17	NE
<i>Metals</i>				
Manganese	NC	NC	NC	NE
<i>Non-Metallic Anion</i>				
Perchlorate	1.52E-06	5.33E-08	2.30E-10	NE

NC = Not classified as a carcinogen.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-5
Set 1 -RME
Summary of Potential Cancer Risks
Current Trespasser - Site 04 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total Potential Cancer Risk
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	8.0E-08	1.7E-08	2.7E-12	NE	9.7E-08
<i>Metals</i>					
Manganese	NC	NC	NC	NE	NA
<i>Non-Metallic Anion</i>					
Perchlorate	NTV	NTV	NTV	NE	NA
Totals	8.0E-08	1.7E-08	2.7E-12	0.0E+00	9.7E-08

NA = Not applicable.

NC = Not classified as a carcinogen.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-6
Set 1 -RME
Percent Contribution to the Total Potential Cancer Risk
Current Trespasser - Site 04 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	82.64	17.35	0.00	NE	100.00
<i>Metals</i>					
Manganese	NC	NC	NC	NE	NA
<i>Non-Metallic Anion</i>					
Perchlorate	NTV	NTV	NTV	NE	NA
Totals	82.6	17.4	0.0	0.0	100.0

NA = Not applicable.

NC = Not classified as a carcinogen.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-7
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 04 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	1.56E-11	2.99E-12	2.35E-15	NE	9.13E-11	3.78E-10	NE
Metals							
Manganese	2.38E-03	1.52E-04	3.59E-07	NE	4.82E-03	NE (Kp<=0.01)	NE
Strontium	ND	ND	ND	ND	4.97E-02	NE (Kp<=0.01)	NE
Non-Metallic Anion							
Perchlorate	4.44E-05	2.84E-06	6.72E-09	NE	ND	ND	ND

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-8
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 04 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	NA	NA	NA
<i>Metals</i>										
Manganese	5.1E-02	5.4E-02	7.2E-03	NE	1.0E-01	NE (Kp<=0.01)	NE	1.1E-01	1.0E-01	2.1E-01
Strontium	ND	ND	ND	ND	8.3E-02	NE (Kp<=0.01)	NE	NA	8.3E-02	8.3E-02
<i>Non-Metallic Anion</i>										
Perchlorate	4.9E-02	3.2E-03	NTV	NE	ND	ND	ND	5.3E-02	NA	5.3E-02
Totals	1.0E-01	5.7E-02	7.2E-03	0.0E+00	1.9E-01	0.0E+00	0.0E+00	1.6E-01	1.9E-01	3.5E-01

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-9
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 04 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	0.00	0.00	NA
<i>Metals</i>										
Manganese	14.46	15.43	2.06	NE	29.35	NE (Kp<=0.01)	NE	31.95	29.35	61.30
Strontium	ND	ND	ND	ND	23.69	NE (Kp<=0.01)	NE	0.00	23.69	23.69
<i>Non-Metallic Anion</i>										
Perchlorate	14.11	0.90	NTV	NE	ND	ND	ND	15.02	0.00	15.02
Totals	28.6	16.3	2.1	0.0	53.0	0.0	0.0	47.0	53.0	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-10
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 04 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
<i>Dioxin/Furan</i>							
2,3,7,8-TCDD	5.56E-12	1.07E-12	8.40E-16	NE	3.26E-11	1.35E-10	NE
<i>Metals</i>							
Manganese	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE
Strontium	ND	ND	ND	ND	1.78E-02	NE (Kp<=0.01)	NE
<i>Non-Metallic Anion</i>							
Perchlorate	1.59E-05	1.02E-06	2.40E-09	NE	ND	ND	ND

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-11
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 04 - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	8.3E-07	3.2E-07	2.8E-11	NE	4.9E-06	4.0E-05	NE	1.2E-06	4.5E-05	4.7E-05
<i>Metals</i>										
Manganese	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Strontium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
<i>Non-Metallic Anion</i>										
Perchlorate	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Totals	8.3E-07	3.2E-07	2.8E-11	0.0E+00	4.9E-06	4.0E-05	0.0E+00	1.2E-06	4.5E-05	4.7E-05

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-12
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 04 - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	1.79	0.69	0.00	NE	10.51	87.01	NE	2.48	97.52	100.00
<i>Metals</i>										
Manganese	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Strontium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
<i>Non-Metallic Anion</i>										
Perchlorate	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Totals	1.8	0.7	0.0	0.0	10.5	87.0	0.0	2.5	97.5	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-13
SET 1 - RME
Summary of Exposure Doses (Nontancer Effects)
Future Maintenance Worker - Site 04 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
<i>Dioxin/Furan</i>							
2,3,7,8-TCDD	1.56E-11	2.99E-12	2.35E-15	NE	9.13E-11	3.78E-10	NE
<i>Metals</i>							
Manganese	2.38E-03	1.52E-04	3.59E-07	NE	4.82E-03	NE (Kp<=0.01)	NE
Strontium	ND	ND	ND	ND	4.97E-02	NE (Kp<=0.01)	NE
<i>Non-Metallic Anion</i>							
Perchlorate	1.41E-04	9.02E-06	2.13E-08	NE	ND	ND	ND

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).
 ND = Not detected in associated media or not selected as a chemical of potential concern.
 NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-14
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 04 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
<i>Dioxin/Furan</i> 2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	NA	NA	NA
<i>Metals</i> Manganese	5.1E-02	5.4E-02	7.2E-03	NE	1.0E-01	NE (Kp<=0.01)	NE	1.1E-01	1.0E-01	2.1E-01
Strontium	ND	ND	ND	ND	8.3E-02	NE (Kp<=0.01)	NE	NA	8.3E-02	8.3E-02
<i>Non-Metallic Anion</i> Perchlorate	1.6E-01	1.0E-02	NTV	NE	ND	ND	ND	1.7E-01	NA	1.7E-01
Totals	2.1E-01	6.4E-02	7.2E-03	0.0E+00	1.9E-01	0.0E+00	0.0E+00	2.8E-01	1.9E-01	4.6E-01

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-15
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 04 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	0.00	0.00	NA
<i>Metals</i>										
Manganese	10.91	11.63	1.55	NE	22.13	NE (Kp<=0.01)	NE	24.09	22.13	46.22
Strontium	ND	ND	ND	ND	17.86	NE (Kp<=0.01)	NE	0.00	17.86	17.86
<i>Non-Metallic Anion</i>										
Perchlorate	33.76	2.16	NTV	NE	ND	ND	ND	35.92	0.00	35.92
Totals	44.7	13.8	1.6	0.0	40.0	0.0	0.0	60.0	40.0	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-16
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 04 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
<i>Dioxin/Furan</i>							
2,3,7,8-TCDD	5.56E-12	1.07E-12	8.40E-16	NE	3.26E-11	1.35E-10	NE
<i>Metals</i>							
Manganese	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE
Strontium	ND	ND	ND	ND	1.78E-02	NE (Kp<=0.01)	NE
<i>Non-Metallic Anion</i>							
Perchlorate	5.03E-05	3.22E-06	7.61E-09	NE	ND	ND	ND

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-17
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 04 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
Dioxin/Furan										
2,3,7,8-TCDD	8.3E-07	3.2E-07	2.8E-11	NE	4.9E-06	4.0E-05	NE	1.2E-06	4.5E-05	4.7E-05
Metals										
Manganese	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Strontium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Non-Metallic Anion										
Perchlorate	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Totals	8.3E-07	3.2E-07	2.8E-11	0.0E+00	4.9E-06	4.0E-05	0.0E+00	1.2E-06	4.5E-05	4.7E-05

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-18
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 04 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	1.79	0.69	0.00	NE	10.51	87.01	NE	2.48	97.52	100.00
<i>Metals</i>										
Manganese	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Strontium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
<i>Non-Metallic Anion</i>										
Perchlorate	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Totals	1.8	0.7	0.0	0.0	10.5	87.0	0.0	2.5	97.5	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-19
Set 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Current Trespasser - Site 08 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	4.64E-13	4.87E-14	7.02E-17	NE
<i>Metals</i>				
Mercury	1.02E-06	3.57E-08	1.54E-10	NE
<i>Non-Metallic Anion</i>				
Perchlorate	ND	ND	ND	NE

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-20
Set 1 - RME
Summary of Hazard Quotients and Indices
Current Trespasser - Site 08 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total Hazard Index
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NA
<i>Metals</i>					
Mercury	3.4E-03	1.7E-03	5.1E-07	NE	5.1E-03
<i>Non-Metallic Anion</i>					
Perchlorate	ND	ND	ND	NE	NA
Totals	3.4E-03	1.7E-03	5.1E-07	0.0E+00	5.1E-03

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-21
Set 1 - RME
Percent Contribution to the Total Hazard Index
Current Trespasser - Site 08 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NA
<i>Metals</i>					
Mercury	66.66	33.33	0.01	NE	100.00
<i>Non-Metallic Anion</i>					
Perchlorate	ND	ND	ND	NE	NA
Totals	66.7	33.3	0.0	0.0	100.0

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-22
Set 1 -RME
Summary of Exposure Doses (Cancer Effects)
Current Trespasser - Site 08 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	7.96E-14	8.36E-15	1.20E-17	NE
<i>Metals</i>				
Mercury	NC	NC	NC	NE
<i>Non-Metallic Anion</i>				
Perchlorate	ND	ND	ND	NE

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-23
Set 1 -RME
Summary of Potential Cancer Risks
Current Trespasser - Site 08 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total Potential Cancer Risk
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	1.2E-08	2.5E-09	4.0E-13	NE	1.4E-08
<i>Metals</i>					
Mercury	NC	NC	NC	NE	NA
<i>Non-Metallic Anion</i>					
Perchlorate	ND	ND	ND	NE	NA
Totals	1.2E-08	2.5E-09	4.0E-13	0.0E+00	1.4E-08

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-24
Set 1 -RME
Percent Contribution to the Total Potential Cancer Risk
Current Trespasser - Site 08 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	82.64	17.35	0.00	NE	100.00
<i>Metals</i>					
Mercury	NC	NC	NC	NE	NA
<i>Non-Metallic Anion</i>					
Perchlorate	ND	ND	ND	NE	NA
Totals	82.6	17.4	0.0	0.0	100.0

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-25
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 08 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	2.32E-12	4.46E-13	3.51E-16	NE	1.46E-10	6.05E-10	NE
Metals							
Manganese	ND	ND	ND	ND	4.72E-03	NE (Kp<=0.01)	NE
Mercury	5.10E-06	3.26E-07	7.71E-10	NE	ND	ND	ND
Non-Metallic Anion							
Perchlorate	ND	ND	ND	NE	9.78E-05	NE (Kp<=0.01)	NE

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).
 ND = Not detected in associated media or not selected as a chemical of potential concern.
 NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-26
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 08 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	NA	NA	NA
<i>Metals</i>										
Manganese	ND	ND	ND	ND	1.0E-01	NE (Kp<=0.01)	NE	NA	1.0E-01	1.0E-01
Mercury	1.7E-02	1.6E-02	2.6E-06	NE	ND	ND	ND	3.3E-02	NA	3.3E-02
<i>Non-Metallic Anion</i>										
Perchlorate	ND	ND	ND	NE	1.1E-01	NE (Kp<=0.01)	NE	NA	1.1E-01	1.1E-01
Totals	1.7E-02	1.6E-02	2.6E-06	0.0E+00	2.1E-01	0.0E+00	0.0E+00	3.3E-02	2.1E-01	2.4E-01

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-27
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 08 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Groundwater	Total Soil	Total
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	0.00	0.00	NA
<i>Metals</i>										
Manganese	ND	ND	ND	ND	41.53	NE (Kp<=0.01)	NE	41.53	0.00	41.53
Mercury	7.03	6.43	0.00	NE	ND	ND	ND	0.00	13.47	13.47
<i>Non-Metallic Anion</i>										
Perchlorate	ND	ND	ND	NE	45.00	NE (Kp<=0.01)	NE	45.00	0.00	45.00
Totals	7.0	6.4	0.0	0.0	86.5	0.0	0.0	86.5	13.5	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-28
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 08 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
<i>Dioxin/Furan</i>							
2,3,7,8-TCDD	8.29E-13	1.59E-13	1.25E-16	NE	5.22E-11	2.16E-10	NE
<i>Metals</i>							
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Mercury	NC	NC	NC	NE	ND	ND	ND
<i>Non-Metallic Anion</i>							
Perchlorate	ND	ND	ND	NE	3.49E-05	NE (Kp<=0.01)	NE

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-29
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 08 - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	1.2E-07	4.8E-08	4.1E-12	NE	7.8E-06	6.5E-05	NE	1.7E-07	7.3E-05	7.3E-05
<i>Metals</i>										
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Mercury	NC	NC	NC	NE	ND	ND	ND	NA	NA	NA
<i>Non-Metallic Anion</i>										
Perchlorate	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Totals	1.2E-07	4.8E-08	4.1E-12	0.0E+00	7.8E-06	6.5E-05	0.0E+00	1.7E-07	7.3E-05	7.3E-05

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-30
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 08 - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	0.17	0.07	0.00	NE	10.75	89.01	NE	0.24	99.76	100.00
<i>Metals</i>										
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Mercury	NC	NC	NC	NE	ND	ND	ND	0.00	0.00	NA
<i>Non-Metallic Anion</i>										
Perchlorate	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Totals	0.2	0.1	0.0	0.0	10.8	89.0	0.0	0.2	99.8	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-31
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 08 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	2.32E-12	4.46E-13	3.51E-16	NE	1.46E-10	6.05E-10	NE
Metals							
Manganese	ND	ND	ND	ND	4.72E-03	NE (Kp<=0.01)	NE
Mercury	5.10E-06	3.26E-07	7.71E-10	NE	ND	ND	ND
Non-Metallic Anion							
Perchlorate	3.16E-08	2.02E-09	4.78E-12	NE	9.78E-05	NE (Kp<=0.01)	NE

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-32
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 08 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
Dioxin/Furan										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	NA	NA	NA
Metals										
Manganese	ND	ND	ND	ND	1.0E-01	NE (Kp<=0.01)	NE	NA	1.0E-01	1.0E-01
Mercury	1.7E-02	1.6E-02	2.6E-06	NE	ND	ND	ND	3.3E-02	NA	3.3E-02
Non-Metallic Anion										
Perchlorate	3.5E-05	2.2E-06	NTV	NE	1.1E-01	NE (Kp<=0.01)	NE	3.7E-05	1.1E-01	1.1E-01
Totals	1.7E-02	1.6E-02	2.6E-06	0.0E+00	2.1E-01	0.0E+00	0.0E+00	3.3E-02	2.1E-01	2.4E-01

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-33
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 08 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	0.00	0.00	NA
<i>Metals</i>										
Manganese	ND	ND	ND	ND	41.53	NE (Kp<=0.01)	NE	0.00	41.53	41.53
Mercury	7.03	6.43	0.00	NE	ND	ND	ND	13.46	0.00	13.46
<i>Non-Metallic Anion</i>										
Perchlorate	0.01	0.00	NTV	NE	44.99	NE (Kp<=0.01)	NE	0.02	44.99	45.01
Totals	7.0	6.4	0.0	0.0	86.5	0.0	0.0	13.5	86.5	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-34
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 08 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
<i>Dioxin/Furan</i>							
2,3,7,8-TCDD	8.29E-13	1.59E-13	1.25E-16	NE	5.22E-11	2.16E-10	NE
<i>Metals</i>							
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Mercury	NC	NC	NC	NE	ND	ND	ND
<i>Non-Metallic Anion</i>							
Perchlorate	1.13E-08	7.22E-10	1.71E-12	NE	3.49E-05	NE (Kp<=0.01)	NE

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-35
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 08 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	1.2E-07	4.8E-08	4.1E-12	NE	7.8E-06	6.5E-05	NE	1.7E-07	7.3E-05	7.3E-05
<i>Metals</i>										
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Mercury	NC	NC	NC	NE	ND	ND	ND	NA	NA	NA
<i>Non-Metallic Anion</i>										
Perchlorate	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Totals	1.2E-07	4.8E-08	4.1E-12	0.0E+00	7.8E-06	6.5E-05	0.0E+00	1.7E-07	7.3E-05	7.3E-05

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-36
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 08 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total	
								Soil	Groundwater
<i>Dioxin/Furan</i>									
2,3,7,8-TCDD	0.17	0.07	0.00	NE	10.75	89.01	NE	0.24	99.76
<i>Metals</i>									
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	NA
Mercury	NC	NC	NC	NE	ND	ND	ND	0.00	NA
<i>Non-Metallic Anion</i>									
Perchlorate	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	NA
Totals	0.2	0.1	0.0	0.0	10.8	89.0	0.0	0.2	99.8
									100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-37
Set 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Current Trespasser - Site 35A - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	4.96E-12	5.21E-13	7.49E-16	NE
<i>Metals</i>				
Aluminum	ND	ND	ND	NE
Antimony	ND	ND	ND	NE
Cadmium	ND	ND	ND	NE
Mercury	8.55E-06	2.99E-07	1.29E-09	NE
Silver	ND	ND	ND	NE
Vanadium	1.00E-05	3.51E-07	1.52E-09	NE
<i>Semi-Volatile Organics</i>				
Benzo(a)anthracene	1.26E-07	5.72E-08	1.90E-11	NE
Benzo(a)pyrene	3.91E-07	1.78E-07	5.92E-11	NE
Benzo(b)fluoranthene	6.07E-07	2.76E-07	9.17E-11	NE
Bis(2-ethylhexyl)phthalate	3.91E-05	1.37E-05	5.92E-09	NE
Dibenzo(a,h)anthracene	5.87E-08	2.67E-08	8.88E-12	NE
Indeno(1,2,3-cd)pyrene	4.11E-07	1.87E-07	6.21E-11	NE

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-38
Set 1 - RME
Summary of Hazard Quotients and Indices
Current Trespasser - Site 35A - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total Hazard Index
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NA
<i>Metals</i>					
Aluminum	ND	ND	ND	NE	NA
Antimony	ND	ND	ND	NE	NA
Cadmium	ND	ND	ND	NE	NA
Mercury	2.9E-02	1.4E-02	4.3E-06	NE	4.3E-02
Silver	ND	ND	ND	NE	NA
Vanadium	1.4E-03	1.9E-03	3.0E-05	NE	3.4E-03
<i>Semi-Volatile Organics</i>					
Benzo(a)anthracene	NTV	NTV	NTV	NE	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	NA
Bis(2-ethylhexyl)phthalate	2.0E-03	3.6E-03	NTV	NE	5.6E-03
Dibenzo(a,h)anthracene	NTV	NTV	NTV	NE	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NE	NA
Totals	3.2E-02	2.0E-02	3.5E-05	0.0E+00	5.2E-02

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-39
Set 1 - RME
Percent Contribution to the Total Hazard Index
Current Trespasser - Site 35A - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NA
<i>Metals</i>					
Aluminum	ND	ND	ND	NE	NA
Antimony	ND	ND	ND	NE	NA
Cadmium	ND	ND	ND	NE	NA
Mercury	55.12	27.56	0.01	NE	82.69
Silver	ND	ND	ND	NE	NA
Vanadium	2.77	3.73	0.06	NE	6.56
<i>Semi-Volatile Organics</i>					
Benzo(a)anthracene	NTV	NTV	NTV	NE	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	NA
Bis(2-ethylhexyl)phthalate	3.78	6.97	NTV	NE	10.75
Dibenzo(a,h)anthracene	NTV	NTV	NTV	NE	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NE	NA
Totals	61.7	38.3	0.1	0.0	100.0

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-40
Set 1 -RME
Summary of Exposure Doses (Cancer Effects)
Current Trespasser - Site 35A - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	8.50E-13	8.92E-14	1.28E-16	NE
<i>Metals</i>				
Aluminum	ND	ND	ND	NE
Antimony	ND	ND	ND	NE
Cadmium	ND	ND	ND	NE
Mercury	NC	NC	NC	NE
Silver	ND	ND	ND	NE
Vanadium	1.72E-06	6.02E-08	2.60E-10	NE
<i>Semi-Volatile Organics</i>				
Benzo(a)anthracene	2.16E-08	9.81E-09	3.26E-12	NE
Benzo(a)pyrene	6.71E-08	3.05E-08	1.01E-11	NE
Benzo(b)fluoranthene	1.04E-07	4.73E-08	1.57E-11	NE
Bis(2-ethylhexyl)phthalate	6.71E-06	2.35E-06	1.01E-09	NE
Dibenzo(a,h)anthracene	1.01E-08	4.58E-09	1.52E-12	NE
Indeno(1,2,3-cd)pyrene	7.05E-08	3.21E-08	1.07E-11	NE

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-41
Set 1 -RME
Summary of Potential Cancer Risks
Current Trespasser - Site 35A - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total Potential Cancer Risk
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	1.3E-07	2.7E-08	4.2E-12	NE	1.5E-07
<i>Metals</i>					
Aluminum	ND	ND	ND	NE	NA
Antimony	ND	ND	ND	NE	NA
Cadmium	ND	ND	ND	NE	NA
Mercury	NC	NC	NC	NE	NA
Silver	ND	ND	ND	NE	NA
Vanadium	NTV	NTV	NTV	NE	NA
<i>Semi-Volatile Organics</i>					
Benzo(a)anthracene	1.6E-08	8.0E-09	2.9E-16	NE	2.4E-08
Benzo(a)pyrene	4.9E-07	2.5E-07	8.9E-15	NE	7.4E-07
Benzo(b)fluoranthene	7.6E-08	3.9E-08	1.4E-12	NE	1.1E-07
Bis(2-ethylhexyl)phthalate	9.4E-08	1.7E-07	4.1E-12	NE	2.7E-07
Dibenzo(a,h)anthracene	7.3E-08	3.8E-08	1.3E-15	NE	1.1E-07
Indeno(1,2,3-cd)pyrene	5.1E-08	2.6E-08	9.4E-16	NE	7.8E-08
Totals	9.3E-07	5.6E-07	9.7E-12	0.0E+00	1.5E-06

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-42
Set 1 -RME
Percent Contribution to the Total Potential Cancer Risk
Current Trespasser - Site 35A - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	8.56	1.80	0.00	NE	10.36
<i>Metals</i>					
Aluminum	ND	ND	ND	NE	NA
Antimony	ND	ND	ND	NE	NA
Cadmium	ND	ND	ND	NE	NA
Mercury	NC	NC	NC	NE	NA
Silver	ND	ND	ND	NE	NA
Vanadium	NTV	NTV	NTV	NE	NA
<i>Semi-Volatile Organics</i>					
Benzo(a)anthracene	1.06	0.54	0.00	NE	1.60
Benzo(a)pyrene	32.90	16.82	0.00	NE	49.72
Benzo(b)fluoranthene	5.10	2.61	0.00	NE	7.71
Bis(2-ethylhexyl)phthalate	6.31	11.62	0.00	NE	17.93
Dibenzo(a,h)anthracene	4.94	2.52	0.00	NE	7.46
Indeno(1,2,3-cd)pyrene	3.45	1.77	0.00	NE	5.22
Totals	62.3	37.7	0.0	0.0	100.0

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-43
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 35A - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	2.48E-11	4.76E-12	3.75E-15	NE	ND	ND	ND
Explosive							
RDX	ND	ND	ND	ND	8.64E-04	NE (Kp<=0.01)	NE
Metals							
Aluminum	ND	ND	ND	NE	9.61E-01	NE (Kp<=0.01)	NE
Antimony	ND	ND	ND	NE	1.27E-04	NE (Kp<=0.01)	NE
Beryllium	ND	ND	ND	NE	3.62E-05	NE (Kp<=0.01)	NE
Cadmium	ND	ND	ND	NE	1.96E-05	NE (Kp<=0.01)	NE
Chromium	ND	ND	ND	ND	2.74E-02	NE (Kp<=0.01)	NE
Cobalt	ND	ND	ND	ND	2.45E-03	NE (Kp<=0.01)	NE
Lead	ND	ND	ND	ND	8.81E-04	NE (Kp<=0.01)	NE
Manganese	ND	ND	ND	ND	5.68E-02	NE (Kp<=0.01)	NE
Mercury	4.28E-05	2.74E-06	6.46E-09	NE	ND	ND	ND
Nickel	ND	ND	ND	ND	1.08E-02	NE (Kp<=0.01)	NE
Selenium	ND	ND	ND	ND	6.44E-04	NE (Kp<=0.01)	NE
Silver	ND	ND	ND	NE	ND	ND	NE
Strontium	ND	ND	ND	ND	2.25E-01	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	3.52E-05	NE (Kp<=0.01)	NE
Vanadium	5.01E-05	3.21E-06	7.58E-09	NE	5.48E-04	NE (Kp<=0.01)	NE
Non-Metallic Anion							
Perchlorate	ND	ND	ND	ND	7.93E-04	NE (Kp<=0.01)	NE
Pesticides							
Aldrin	ND	ND	ND	ND	6.16E-08	NE (Kp<=0.01)	NE
alpha-BHC	ND	ND	ND	ND	7.44E-08	9.09E-09	NE
beta-BHC	ND	ND	ND	ND	5.28E-08	6.46E-09	NE
delta-BHC	ND	ND	ND	ND	4.50E-08	3.69E-09	NE
Semi-Volatile Organics							
Benzo(a)anthracene	6.29E-07	5.23E-07	9.51E-11	NE	ND	ND	ND
Benzo(a)pyrene	1.96E-06	1.63E-06	2.96E-10	NE	ND	ND	ND
Benzo(b)fluoranthene	3.03E-06	2.52E-06	4.59E-10	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	1.96E-04	1.25E-04	2.96E-08	NE	8.61E-04	1.07E-04	NE
Dibenzo(a,h)anthracene	2.94E-07	2.44E-07	4.44E-11	NE	ND	ND	ND
Indeno(1,2,3-cd)pyrene	2.05E-06	1.71E-06	3.11E-10	NE	ND	ND	ND
Volatile Organics							
1,1,2-Trichloroethane	ND	ND	ND	ND	7.83E-05	5.76E-05	1.37E-03
1,1-Dichloroethene	ND	ND	ND	ND	1.31E-02	1.75E-02	2.30E-01
1,2-Dichloroethane	ND	ND	ND	ND	2.94E-05	1.35E-05	5.14E-04
Benzene	ND	ND	ND	ND	7.83E-06	5.40E-07	1.37E-04
Methylene chloride	ND	ND	ND	ND	9.49E-06	NE (Kp<=0.01)	1.66E-04
Tetrachloroethene	ND	ND	ND	ND	5.28E-02	2.11E-01	9.25E-01

Site35A_riskcalcs(0_to_0.5)_new.XLS Future Maintenance Wkr (35A)

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Table C-43
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 35A - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Trichloroethene	ND	ND	ND	ND	1.57E-03	2.09E-03	2.74E-02
Vinyl Chloride	ND	ND	ND	ND	9.78E-05	NE (Kp<=0.01)	1.71E-03

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-44
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 35A - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 0.5 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
Dioxin/Furan										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Explosive										
RDX	ND	ND	ND	ND	2.9E-01	NE (Kp<=0.01)	NE	NA	2.9E-01	2.9E-01
Metals										
Aluminum	ND	ND	ND	NE	9.6E-01	NE (Kp<=0.01)	NE	NA	9.6E-01	9.6E-01
Antimony	ND	ND	ND	NE	3.2E-01	NE (Kp<=0.01)	NE	NA	3.2E-01	3.2E-01
Beryllium	ND	ND	ND	NE	1.8E-02	NE (Kp<=0.01)	NE	NA	1.8E-02	1.8E-02
Cadmium	ND	ND	ND	NE	3.9E-02	NE (Kp<=0.01)	NE	NA	3.9E-02	3.9E-02
Chromium	ND	ND	ND	NE	1.8E-02	NE (Kp<=0.01)	NE	NA	1.8E-02	1.8E-02
Cobalt	ND	ND	ND	NE	1.2E-01	NE (Kp<=0.01)	NE	NA	1.2E-01	1.2E-01
Lead	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	ND	ND	ND	NE	1.2E+00	NE (Kp<=0.01)	NE	NA	1.2E+00	1.2E+00
Mercury	1.4E-01	1.3E-01	2.2E-05	NE	ND	ND	ND	2.7E-01	NA	2.7E-01
Nickel	ND	ND	ND	NE	5.4E-01	NE (Kp<=0.01)	NE	NA	5.4E-01	5.4E-01
Selenium	ND	ND	ND	NE	1.3E-01	NE (Kp<=0.01)	NE	NA	1.3E-01	1.3E-01
Silver	ND	ND	ND	NE	ND	ND	ND	NA	NA	NA
Strontium	ND	ND	ND	NE	3.8E-01	NE (Kp<=0.01)	NE	NA	3.8E-01	3.8E-01
Thallium	ND	ND	ND	NE	4.4E-01	NE (Kp<=0.01)	NE	NA	4.4E-01	4.4E-01
Vanadium	7.2E-03	1.8E-02	1.5E-04	NE	7.8E-02	NE (Kp<=0.01)	NE	2.5E-02	7.8E-02	1.0E-01
Non-Metallic Anion										
Perchlorate	ND	ND	ND	ND	8.8E-01	NE (Kp<=0.01)	NE	NA	8.8E-01	8.8E-01
Pesticides										
Aldrin	ND	ND	ND	ND	2.1E-03	NE (Kp<=0.01)	NE	NA	2.1E-03	2.1E-03
alpha-BHC	ND	ND	ND	ND	9.3E-06	1.2E-06	NE	NA	1.0E-05	1.0E-05
beta-BHC	ND	ND	ND	ND	NTV	NTV	NE	NA	NA	NA
delta-BHC	ND	ND	ND	ND	1.5E-04	2.5E-05	NE	NA	1.7E-04	1.7E-04
Semi-Volatile Organics										
Benzo(a)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Bis(2-ethylhexyl)phthalate	9.8E-03	3.3E-02	NTV	NE	4.3E-02	2.8E-02	NE	4.3E-02	7.1E-02	1.1E-01
Dibenzo(a,h)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Volatiles Organics										
1,1,2-Trichloroethane	ND	ND	ND	ND	2.0E-02	1.8E-02	NTV	NA	3.7E-02	3.7E-02
1,1-Dichloroethene	ND	ND	ND	ND	1.5E+00	1.9E+00	NTV	NA	3.4E+00	3.4E+00
1,2-Dichloroethane	ND	ND	ND	ND	9.8E-04	4.5E-04	1.0E-01	NA	1.0E-01	1.0E-01
Benzene	ND	ND	ND	ND	2.6E-03	1.9E-04	2.3E-02	NA	2.6E-02	2.6E-02
Methylene chloride	ND	ND	ND	ND	1.6E-04	NE (Kp<=0.01)	5.5E-05	NA	2.1E-04	2.1E-04
Tetrachloroethene	ND	ND	ND	ND	5.3E+00	2.1E+01	1.9E+00	NA	2.8E+01	2.8E+01
Trichloroethene	ND	ND	ND	ND	2.6E-01	3.5E-01	NTV	NA	6.1E-01	6.1E-01

Site35A_riskcalcs(0_to_0.5)_new.XLS Future Maintenance Wkr (35A)

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Table C-44
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 35A - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
Vinyl Chloride	ND	ND	ND	ND	3.3E-02	NE (Kp<=0.01)	1.7E-02	NA	5.0E-02	5.0E-02
Totals	1.6E-01	1.8E-01	1.7E-04	0.0E+00	1.3E+01	2.3E+01	2.0E+00	3.4E-01	3.8E+01	3.8E+01

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-45
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 35A - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
<i>Explosive</i>										
RDX	ND	ND	ND	ND	0.75	NE (Kp<=0.01)	NE	0.00	0.75	0.75
<i>Metals</i>										
Aluminum	ND	ND	ND	NE	2.50	NE (Kp<=0.01)	NE	0.00	2.50	2.50
Antimony	ND	ND	ND	NE	0.83	NE (Kp<=0.01)	NE	0.00	0.83	0.83
Beryllium	ND	ND	ND	NE	0.05	NE (Kp<=0.01)	NE	0.00	0.05	0.05
Cadmium	ND	ND	ND	NE	0.10	NE (Kp<=0.01)	NE	0.00	0.10	0.10
Chromium	ND	ND	ND	ND	0.05	NE (Kp<=0.01)	NE	0.00	0.05	0.05
Cobalt	ND	ND	ND	ND	0.32	NE (Kp<=0.01)	NE	0.00	0.32	0.32
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	ND	ND	ND	ND	3.15	NE (Kp<=0.01)	NE	0.00	3.15	3.15
Mercury	0.37	0.34	0.00	NE	ND	ND	ND	0.71	0.00	0.71
Nickel	ND	ND	ND	ND	1.40	NE (Kp<=0.01)	NE	0.00	1.40	1.40
Selenium	ND	ND	ND	ND	0.34	NE (Kp<=0.01)	NE	0.00	0.34	0.34
Silver	ND	ND	ND	NE	ND	ND	ND	0.00	0.00	NA
Strontium	ND	ND	ND	ND	0.98	NE (Kp<=0.01)	NE	0.00	0.98	0.98
Thallium	ND	ND	ND	ND	1.15	NE (Kp<=0.01)	NE	0.00	1.15	1.15
Vanadium	0.02	0.05	0.00	NE	0.20	NE (Kp<=0.01)	NE	0.06	0.20	0.27
<i>Non-Metallic Anion</i>										
Perchlorate	ND	ND	ND	ND	2.29	NE (Kp<=0.01)	NE	0.00	2.29	2.29
<i>Pesticides</i>										
Aldrin	ND	ND	ND	ND	0.01	NE (Kp<=0.01)	NE	0.00	0.01	0.01
alpha-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
beta-BHC	ND	ND	ND	ND	NTV	NTV	NE	0.00	0.00	NA
delta-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
<i>Semi-Volatile Organics</i>										
Benzo(a)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Bis(2-ethylhexyl)phthalate	0.03	0.09	NTV	NE	0.11	0.07	NE	0.11	0.19	0.30
Dibenzo(a,h)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
<i>Volatile Organics</i>										
1,1,2-Trichloroethane	ND	ND	ND	ND	0.05	0.05	NTV	0.00	0.10	0.10
1,1-Dichloroethene	ND	ND	ND	ND	3.80	5.07	NTV	0.00	8.87	8.87
1,2-Dichloroethane	ND	ND	ND	ND	0.00	0.00	0.27	0.00	0.27	0.27
Benzene	ND	ND	ND	ND	0.01	0.00	0.06	0.00	0.07	0.07
Methylene chloride	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	0.00	0.00	0.00	0.00
Tetrachloroethene	ND	ND	ND	ND	13.77	55.11	4.92	0.00	73.79	73.79
Trichloroethene	ND	ND	ND	ND	0.68	0.91	NTV	0.00	1.59	1.59

Site35A_riskcalcs(0_to_0.5)_new.XLS Future Maintenance Wkr (35A)

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Table C-45
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 35A - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
Vinyl Chloride	ND	ND	ND	ND	0.08	NE (Kp<=0.01)	0.04	0.00	0.13	0.13
Totals	0.4	0.5	0.0	0.0	32.6	61.2	5.3	0.9	99.1	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-46
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 35A - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	8.85E-12	1.70E-12	1.34E-15	NE	ND	ND	ND
Explosive							
RDX	ND	ND	ND	ND	3.09E-04	NE (Kp<=0.01)	NE
Metals							
Aluminum	ND	ND	ND	NE	3.43E-01	NE (Kp<=0.01)	NE
Antimony	ND	ND	ND	NE	4.54E-05	NE (Kp<=0.01)	NE
Beryllium	ND	ND	ND	NE	1.29E-05	NE (Kp<=0.01)	NE
Cadmium	ND	ND	ND	NE	6.99E-06	NE (Kp<=0.01)	NE
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Cobalt	ND	ND	ND	ND	8.74E-04	NE (Kp<=0.01)	NE
Lead	ND	ND	ND	ND	3.15E-04	NE (Kp<=0.01)	NE
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Mercury	NC	NC	NC	NE	ND	ND	ND
Nickel	ND	ND	ND	ND	3.84E-03	NE (Kp<=0.01)	NE
Selenium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Silver	ND	ND	ND	NE	ND	ND	ND
Strontium	ND	ND	ND	ND	8.04E-02	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Vanadium	1.79E-05	1.15E-06	2.71E-09	NE	1.96E-04	NE (Kp<=0.01)	NE
Non-Metallic Anion							
Perchlorate	ND	ND	ND	ND	2.83E-04	NE (Kp<=0.01)	NE
Pesticides							
Aldrin	ND	ND	ND	ND	2.20E-08	NE (Kp<=0.01)	NE
alpha-BHC	ND	ND	ND	ND	2.66E-08	3.25E-09	NE
beta-BHC	ND	ND	ND	ND	1.89E-08	2.31E-09	NE
delta-BHC	ND	ND	ND	ND	1.61E-08	1.32E-09	NE
Semi-Volatile Organics							
Benzo(a)anthracene	2.25E-07	1.87E-07	3.40E-11	NE	ND	ND	ND
Benzo(a)pyrene	6.99E-07	5.81E-07	1.06E-10	NE	ND	ND	ND
Benzo(b)fluoranthene	1.08E-06	9.01E-07	1.64E-10	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	6.99E-05	4.47E-05	1.06E-08	NE	3.08E-04	3.82E-05	NE
Dibenzo(a,h)anthracene	1.05E-07	8.72E-08	1.59E-11	NE	ND	ND	ND
Indeno(1,2,3-cd)pyrene	7.34E-07	6.11E-07	1.11E-10	NE	ND	ND	ND
Volatile Organics							
1,1,2-Trichloroethane	ND	ND	ND	ND	2.80E-05	2.06E-05	4.89E-04
1,1-Dichloroethene	ND	ND	ND	ND	4.69E-03	6.25E-03	8.20E-02
1,2-Dichloroethane	ND	ND	ND	ND	1.05E-05	4.82E-06	1.83E-04
Benzene	ND	ND	ND	ND	2.80E-06	1.93E-07	4.89E-05
Methylene chloride	ND	ND	ND	ND	3.39E-06	NE (Kp<=0.01)	5.93E-05
Tetrachloroethene	ND	ND	ND	ND	1.89E-02	7.55E-02	3.30E-01
Trichloroethene	ND	ND	ND	ND	5.59E-04	7.46E-04	9.78E-03

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Table C-46
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 35A - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Vinyl Chloride	ND	ND	ND	ND	3.49E-05	NE (Kp<=0.01)	6.12E-04

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-47
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 35A - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
Dioxin/Furan										
2,3,7,8-TCDD	1.3E-06	5.1E-07	4.4E-11	NE	ND	ND	ND	1.8E-06	NA	1.8E-06
Explosive										
RDX	ND	ND	ND	ND	3.4E-05	NE (Kp<=0.01)	NE	NA	3.4E-05	3.4E-05
Metals										
Aluminum	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Antimony	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Beryllium	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Cadmium	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Cobalt	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Mercury	NC	NC	NC	NE	ND	ND	ND	NA	NA	NA
Nickel	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Selenium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Silver	ND	ND	ND	NE	ND	ND	ND	NA	NA	NA
Strontium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Vanadium	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Non-Metallic Anion										
Perchlorate	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Pesticides										
Aldrin	ND	ND	ND	ND	3.7E-07	NE (Kp<=0.01)	NE	NA	3.7E-07	3.7E-07
alpha-BHC	ND	ND	ND	ND	1.7E-07	2.1E-08	NE	NA	1.9E-07	1.9E-07
beta-BHC	ND	ND	ND	ND	3.4E-08	4.6E-09	NE	NA	3.9E-08	3.9E-08
delta-BHC	ND	ND	ND	ND	2.9E-08	4.7E-09	NE	NA	3.4E-08	3.4E-08
Semi-Volatile Organics										
Benzo(a)anthracene	1.6E-07	1.5E-07	3.0E-15	NE	ND	ND	ND	3.2E-07	NA	3.2E-07
Benzo(a)pyrene	5.1E-06	4.8E-06	9.3E-14	NE	ND	ND	ND	9.9E-06	NA	9.9E-06
Benzo(b)fluoranthene	7.9E-07	7.4E-07	1.4E-11	NE	ND	ND	ND	1.5E-06	NA	1.5E-06
Bis(2-ethylhexyl)phthalate	9.8E-07	3.3E-06	4.2E-11	NE	4.3E-06	2.8E-06	NE	4.3E-06	7.1E-06	1.1E-05
Dibenzo(a,h)anthracene	7.7E-07	7.2E-07	1.4E-14	NE	ND	ND	ND	1.5E-06	NA	1.5E-06
Indeno(1,2,3-cd)pyrene	5.4E-07	5.0E-07	9.8E-15	NE	ND	ND	ND	1.0E-06	NA	1.0E-06
Volatile Organics										
1,1,2-Trichloroethane	ND	ND	ND	ND	1.6E-06	1.4E-06	7.8E-09	NA	3.0E-06	3.0E-06
1,1-Dichloroethene	ND	ND	ND	ND	2.8E-03	3.8E-03	4.1E-03	NA	1.1E-02	1.1E-02
1,2-Dichloroethane	ND	ND	ND	ND	9.5E-07	4.4E-07	4.8E-06	NA	6.2E-06	6.2E-06
Benzene	ND	ND	ND	ND	1.1E-07	1.1E-08	3.8E-10	NA	1.7E-07	1.7E-07
Methylene chloride	ND	ND	ND	ND	2.5E-08	NE (Kp<=0.01)	2.8E-08	NA	5.3E-08	5.3E-08
Tetrachloroethene	ND	ND	ND	ND	9.8E-04	3.9E-03	1.9E-07	NA	4.9E-03	4.9E-03
Trichloroethene	ND	ND	ND	ND	6.2E-06	8.2E-06	1.7E-05	NA	3.1E-05	3.1E-05

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Table C-47
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 35A - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
Vinyl Chloride	ND	ND	ND	ND	5.2E-05	NE (Kp<=0.01)	5.4E-06	NA	5.8E-05	5.8E-05
Totals	9.7E-06	1.1E-05	1.0E-10	0.0E+00	3.9E-03	7.7E-03	4.1E-03	2.0E-05	1.6E-02	1.6E-02

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-48
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 35A - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	0.01	0.00	0.00	NE	ND	ND	ND	0.01	0.00	0.01
<i>Explosive</i>										
RDX	ND	ND	ND	ND	0.22	NE (Kp<=0.01)	NE	0.00	0.22	0.22
<i>Metals</i>										
Aluminum	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Antimony	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Beryllium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Cadmium	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Cobalt	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Mercury	NC	NC	NC	NE	ND	ND	ND	0.00	0.00	NA
Nickel	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Selenium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Silver	ND	ND	ND	NE	ND	ND	ND	0.00	0.00	NA
Strontium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Vanadium	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
<i>Non-Metallic Anion</i>										
Perchlorate	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
<i>Pesticides</i>										
Aldrin	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
alpha-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
beta-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
delta-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
<i>Semi-Volatile Organics</i>										
Benzo(a)anthracene	0.00	0.00	0.00	NE	ND	ND	ND	0.00	0.00	0.00
Benzo(a)pyrene	0.03	0.03	0.00	NE	ND	ND	ND	0.06	0.00	0.06
Benzo(b)fluoranthene	0.01	0.00	0.00	NE	ND	ND	ND	0.01	0.00	0.01
Bis(2-ethylhexyl)phthalate	0.01	0.02	0.00	NE	0.03	0.02	NE	0.03	0.05	0.07
Dibenzo(a,h)anthracene	0.00	0.00	0.00	NE	ND	ND	ND	0.01	0.00	0.01
Indeno(1,2,3-cd)pyrene	0.00	0.00	0.00	NE	ND	ND	ND	0.01	0.00	0.01
<i>Volatile Organics</i>										
1,1,2-Trichloroethane	ND	ND	ND	ND	0.01	0.01	0.00	0.00	0.02	0.02
1,1-Dichloroethene	ND	ND	ND	ND	17.87	23.84	26.06	0.00	67.78	67.78
1,2-Dichloroethane	ND	ND	ND	ND	0.01	0.00	0.03	0.00	0.04	0.04
Benzene	ND	ND	ND	ND	0.00	0.00	0.00	0.00	0.00	0.00
Methylene chloride	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	0.00	0.00	0.00	0.00
Tetrachloroethene	ND	ND	ND	ND	6.24	24.96	0.00	0.00	31.20	31.20
Trichloroethene	ND	ND	ND	ND	0.04	0.05	0.11	0.00	0.20	0.20

Site35A_riskscals(0_to_0.5)_new.XLS Future Maintenance Wkr (35A)

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Table C-48
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 35A - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
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Vinyl Chloride

Totals

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-49
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 35A - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	2.48E-11	4.76E-12	3.75E-15	NE	ND	ND	ND
Explosive							
RDX	ND	ND	ND	ND	8.64E-04	NE (Kp<=0.01)	NE
Metals							
Aluminum	9.04E-03	5.78E-04	1.37E-06	NE	9.61E-01	NE (Kp<=0.01)	NE
Antimony	8.32E-06	5.32E-07	1.26E-09	NE	1.27E-04	NE (Kp<=0.01)	NE
Beryllium	ND	ND	ND	ND	3.62E-05	NE (Kp<=0.01)	NE
Cadmium	1.81E-05	1.16E-07	2.74E-09	NE	1.96E-05	NE (Kp<=0.01)	NE
Chromium	ND	ND	ND	ND	2.74E-02	NE (Kp<=0.01)	NE
Cobalt	ND	ND	ND	ND	2.45E-03	NE (Kp<=0.01)	NE
Lead	ND	ND	ND	ND	8.81E-04	NE (Kp<=0.01)	NE
Manganese	ND	ND	ND	ND	5.68E-02	NE (Kp<=0.01)	NE
Mercury	4.28E-05	2.74E-06	6.46E-09	NE	ND	ND	ND
Nickel	ND	ND	ND	NE	1.08E-02	NE (Kp<=0.01)	NE
Selenium	ND	ND	ND	ND	6.44E-04	NE (Kp<=0.01)	NE
Silver	1.07E-04	6.83E-06	1.61E-08	NE	ND	ND	ND
Strontium	ND	ND	ND	ND	2.25E-01	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	3.52E-05	NE (Kp<=0.01)	NE
Vanadium	5.01E-05	3.21E-06	7.58E-09	NE	5.48E-04	NE (Kp<=0.01)	NE
Non-Metallic Anion							
Perchlorate	ND	ND	ND	ND	7.93E-04	NE (Kp<=0.01)	NE
Pesticides							
Aldrin	ND	ND	ND	ND	6.16E-08	NE (Kp<=0.01)	NE
alpha-BHC	ND	ND	ND	ND	7.44E-08	9.09E-09	NE
beta-BHC	ND	ND	ND	ND	5.28E-08	6.46E-09	NE
delta-BHC	ND	ND	ND	ND	4.50E-08	3.69E-09	NE
Semi-Volatile Organics							
Benzo(a)anthracene	1.57E-06	1.30E-06	2.37E-10	NE	ND	ND	ND
Benzo(a)pyrene	1.96E-06	1.63E-06	2.96E-10	NE	ND	ND	ND
Benzo(b)fluoranthene	3.03E-06	2.52E-06	4.59E-10	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	1.96E-04	1.25E-04	2.96E-08	NE	8.61E-04	1.07E-04	NE
Dibenzo(a,h)anthracene	2.94E-07	2.44E-07	4.44E-11	NE	ND	ND	ND
Indeno(1,2,3-cd)pyrene	2.05E-06	1.71E-06	3.11E-10	NE	ND	ND	ND
Volatile Organics							
1,1,2-Trichloroethane	ND	ND	ND	ND	7.83E-05	5.76E-05	1.37E-03
1,1-Dichloroethene	ND	ND	ND	ND	1.31E-02	1.75E-02	2.30E-01
1,2-Dichloroethane	ND	ND	ND	ND	2.94E-05	1.35E-05	5.14E-04
Benzene	ND	ND	ND	ND	7.83E-06	5.40E-07	1.37E-04
Methylene chloride	ND	ND	ND	ND	9.49E-06	NE (Kp<=0.01)	1.66E-04
Tetrachloroethene	ND	ND	ND	ND	5.28E-02	2.11E-01	9.25E-01

Site35A_riskcalc(0_to_2)_Set1_rme.XLS Future Maintenance Wkr (35A)

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Table C-49
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 35A - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Trichloroethene	ND	ND	ND	ND	1.57E-03	2.09E-03	2.74E-02
Vinyl Chloride	ND	ND	ND	ND	9.78E-05	NE (Kp<=0.01)	1.71E-03

NE (Kp<=0.01) = Based on EPA 6 guidance. COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-50
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 35A - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
Dioxin/Furan										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Explosive										
RDX	ND	ND	ND	ND	2.9E-01	NE (Kp<=0.01)	NE	NA	2.9E-01	2.9E-01
Metals										
Aluminum	9.0E-03	5.8E-03	3.9E-04	NE	9.6E-01	NE (Kp<=0.01)	NE	1.5E-02	9.6E-01	9.8E-01
Antimony	2.1E-02	8.9E-03	2.5E-06	NE	3.2E-01	NE (Kp<=0.01)	NE	3.0E-02	3.2E-01	3.5E-01
Beryllium	ND	ND	ND	ND	1.8E-02	NE (Kp<=0.01)	NE	NA	1.8E-02	1.8E-02
Cadmium	1.8E-02	4.6E-03	1.4E-05	NE	3.9E-02	NE (Kp<=0.01)	NE	2.3E-02	3.9E-02	6.2E-02
Chromium	ND	ND	ND	ND	1.8E-02	NE (Kp<=0.01)	NE	NA	1.8E-02	1.8E-02
Cobalt	ND	ND	ND	ND	1.2E-01	NE (Kp<=0.01)	NE	NA	1.2E-01	1.2E-01
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	ND	ND	ND	ND	1.2E+00	NE (Kp<=0.01)	NE	NA	1.2E+00	1.2E+00
Mercury	1.4E-01	1.3E-01	2.2E-05	NE	ND	ND	NE	2.7E-01	NA	2.7E-01
Nickel	ND	ND	ND	ND	5.4E-01	NE (Kp<=0.01)	NE	NA	5.4E-01	5.4E-01
Selenium	ND	ND	ND	ND	1.3E-01	NE (Kp<=0.01)	NE	NA	1.3E-01	1.3E-01
Silver	2.1E-02	3.4E-02	1.6E-03	NE	ND	ND	NE	5.7E-02	NA	5.7E-02
Strontium	ND	ND	ND	ND	3.8E-01	NE (Kp<=0.01)	NE	NA	3.8E-01	3.8E-01
Thallium	ND	ND	ND	ND	4.4E-01	NE (Kp<=0.01)	NE	NA	4.4E-01	4.4E-01
Vanadium	7.2E-03	1.8E-02	1.5E-04	NE	7.8E-02	NE (Kp<=0.01)	NE	2.5E-02	7.8E-02	1.0E-01
Non-Metallic Anion										
Perchlorate	ND	ND	ND	ND	8.8E-01	NE (Kp<=0.01)	NE	NA	8.8E-01	8.8E-01
Pesticides										
Aldrin	ND	ND	ND	ND	2.1E-03	NE (Kp<=0.01)	NE	NA	2.1E-03	2.1E-03
alpha-BHC	ND	ND	ND	ND	9.3E-06	1.2E-06	NE	NA	1.0E-05	1.0E-05
beta-BHC	ND	ND	ND	ND	NTV	NTV	NE	NA	NA	NA
delta-BHC	ND	ND	ND	ND	1.5E-04	2.5E-05	NE	NA	1.7E-04	1.7E-04
Semi-Volatile Organics										
Benzo(a)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Bis(2-ethylhexyl)phthalate	9.8E-03	3.3E-02	NTV	NE	4.3E-02	2.8E-02	NE	4.3E-02	7.1E-02	1.1E-01
Dibenz(a,h)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Volatile Organics										
1,1,2-Trichloroethane	ND	ND	ND	ND	2.0E-02	1.8E-02	NTV	NA	3.7E-02	3.7E-02
1,1-Dichloroethene	ND	ND	ND	ND	1.5E+00	1.9E+00	NTV	NA	3.4E+00	3.4E+00
1,2-Dichloroethane	ND	ND	ND	ND	9.8E-04	4.5E-04	1.0E-01	NA	1.0E-01	1.0E-01
Benzene	ND	ND	ND	ND	2.6E-03	1.9E-04	2.3E-02	NA	2.6E-02	2.6E-02
Methylene chloride	ND	ND	ND	ND	1.6E-04	NE (Kp<=0.01)	5.5E-05	NA	2.1E-04	2.1E-04
Tetrachloroethene	ND	ND	ND	ND	5.3E+00	2.1E+01	1.9E+00	NA	2.8E+01	2.8E+01

Site35A_riskcalcs(0_to_2)_Set1_rme.XLS Future Maintenance Wkr (35A)

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Table C-50
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 35A - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
Trichloroethene	ND	ND	ND	ND	2.6E-01	3.5E-01	NTV	NA	6.1E-01	6.1E-01
Vinyl Chloride	ND	ND	ND	ND	3.3E-02	NE (Kp<=0.01)	1.7E-02	NA	5.0E-02	5.0E-02
Totals	2.3E-01	2.3E-01	2.2E-03	0.0E+00	1.3E+01	2.3E+01	2.0E+00	4.7E-01	3.8E+01	3.8E+01

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-51
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 35A - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
<i>Explosive</i>										
RDX	ND	ND	ND	ND	0.75	NE (Kp<=0.01)	NE	0.00	0.75	0.75
<i>Metals</i>										
Aluminum	0.02	0.02	0.00	NE	2.50	NE (Kp<=0.01)	NE	0.04	2.50	2.54
Antimony	0.05	0.02	0.00	NE	0.83	NE (Kp<=0.01)	NE	0.08	0.83	0.90
Beryllium	ND	ND	ND	ND	0.05	NE (Kp<=0.01)	NE	0.00	0.05	0.05
Cadmium	0.05	0.01	0.00	NE	0.10	NE (Kp<=0.01)	NE	0.06	0.10	0.16
Chromium	ND	ND	ND	ND	0.05	NE (Kp<=0.01)	NE	0.00	0.05	0.05
Cobalt	ND	ND	ND	ND	0.32	NE (Kp<=0.01)	NE	0.00	0.32	0.32
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	ND	ND	ND	ND	3.14	NE (Kp<=0.01)	NE	0.00	3.14	3.14
Mercury	0.37	0.34	0.00	NE	ND	ND	NE	0.71	0.00	0.71
Nickel	ND	ND	ND	ND	1.40	NE (Kp<=0.01)	NE	0.00	1.40	1.40
Selenium	ND	ND	ND	ND	0.33	NE (Kp<=0.01)	NE	0.00	0.33	0.33
Silver	0.06	0.09	0.00	NE	ND	ND	NE	0.15	0.00	0.15
Strontium	ND	ND	ND	ND	0.97	NE (Kp<=0.01)	NE	0.00	0.97	0.97
Thallium	ND	ND	ND	ND	1.14	NE (Kp<=0.01)	NE	0.00	1.14	1.14
Vanadium	0.02	0.05	0.00	NE	0.20	NE (Kp<=0.01)	NE	0.06	0.20	0.27
<i>Non-Metallic Anion</i>										
Perchlorate	ND	ND	ND	ND	2.29	NE (Kp<=0.01)	NE	0.00	2.29	2.29
<i>Pesticides</i>										
Aldrin	ND	ND	ND	ND	0.01	NE (Kp<=0.01)	NE	0.00	0.01	0.01
alpha-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
beta-BHC	ND	ND	ND	ND	NTV	NTV	NE	0.00	0.00	NA
delta-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
<i>Semi-Volatile Organics</i>										
Benzo(a)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Bis(2-ethylhexyl)phthalate	0.03	0.09	NTV	NE	0.11	0.07	NE	0.11	0.18	0.30
Dibenzo(a,h)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
<i>Volatile Organics</i>										
1,1,2-Trichloroethane	ND	ND	ND	ND	0.05	0.05	NTV	0.00	0.10	0.10
1,1-Dichloroethene	ND	ND	ND	ND	3.79	5.05	NTV	0.00	8.84	8.84
1,2-Dichloroethane	ND	ND	ND	ND	0.00	0.00	0.27	0.00	0.27	0.27
Benzene	ND	ND	ND	ND	0.01	0.00	0.06	0.00	0.07	0.07
Methylene chloride	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	0.00	0.00	0.00	0.00
Tetrachloroethene	ND	ND	ND	ND	13.72	54.93	4.90	0.00	73.55	73.55
Trichloroethene	ND	ND	ND	ND	0.68	0.90	NTV	0.00	1.58	1.58
Vinyl Chloride	ND	ND	ND	ND	0.08	NE (Kp<=0.01)	0.04	0.00	0.13	0.13
Totals	0.6	0.6	0.0	0.0	32.5	61.0	5.3	1.2	98.8	100.0

Site35A_riskcalc(0_to_2)_Set1_rme.XLS Future Maintenance Wkr (35A)

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Table C-51
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 35A - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering		Inhalation of Volatiles While Showering		Total Soil	Total Groundwater	Total
						Groundwater	Groundwater	Groundwater	Groundwater			

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-52
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 35A - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	8.85E-12	1.70E-12	1.34E-15	NE	ND	ND	ND
Explosive							
RDX	ND	ND	ND	ND	3.09E-04	NE (Kp<=0.01)	NE
Metals							
Aluminum	3.23E-03	2.07E-04	4.88E-07	NE	3.43E-01	NE (Kp<=0.01)	NE
Antimony	2.97E-06	1.90E-07	4.49E-10	NE	4.54E-05	NE (Kp<=0.01)	NE
Beryllium	ND	ND	ND	NE	1.29E-05	NE (Kp<=0.01)	NE
Cadmium	6.46E-06	4.14E-08	9.77E-10	NE	6.99E-06	NE (Kp<=0.01)	NE
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Cobalt	ND	ND	ND	ND	8.74E-04	NE (Kp<=0.01)	NE
Lead	ND	ND	ND	ND	3.15E-04	NE (Kp<=0.01)	NE
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Mercury	NC	NC	NC	NE	ND	ND	ND
Nickel	ND	ND	ND	ND	3.84E-03	NE (Kp<=0.01)	NE
Selenium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Silver	NC	NC	NC	NE	ND	ND	ND
Strontium	ND	ND	ND	ND	8.04E-02	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Vanadium	1.79E-05	1.15E-06	2.71E-09	NE	1.96E-04	NE (Kp<=0.01)	NE
Non-Metallic Anion							
Perchlorate	ND	ND	ND	ND	2.83E-04	NE (Kp<=0.01)	NE
Pesticides							
Aldrin	ND	ND	ND	ND	2.20E-08	NE (Kp<=0.01)	NE
alpha-BHC	ND	ND	ND	ND	2.66E-08	3.25E-09	NE
beta-BHC	ND	ND	ND	ND	1.89E-08	2.31E-09	NE
delta-BHC	ND	ND	ND	ND	1.61E-08	1.32E-09	NE
Semi-Volatile Organics							
Benzo(a)anthracene	5.59E-07	4.65E-07	8.45E-11	NE	ND	ND	ND
Benzo(a)pyrene	6.99E-07	5.81E-07	1.06E-10	NE	ND	ND	ND
Benzo(b)fluoranthene	1.08E-06	9.01E-07	1.64E-10	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	6.99E-05	4.47E-05	1.06E-08	NE	3.08E-04	3.82E-05	NE
Dibenz(a,h)anthracene	1.05E-07	8.72E-08	1.59E-11	NE	ND	ND	ND
Indeno(1,2,3-cd)pyrene	7.34E-07	6.11E-07	1.11E-10	NE	ND	ND	ND
Volatile Organics							
1,1,2-Trichloroethane	ND	ND	ND	ND	2.80E-05	2.06E-05	4.89E-04
1,1-Dichloroethene	ND	ND	ND	ND	4.69E-03	6.25E-03	8.20E-02
1,2-Dichloroethane	ND	ND	ND	ND	1.05E-05	4.82E-06	1.83E-04
Benzene	ND	ND	ND	ND	2.80E-06	1.93E-07	4.89E-05
Methylene chloride	ND	ND	ND	ND	3.39E-06	NE (Kp<=0.01)	5.93E-05
Tetrachloroethene	ND	ND	ND	ND	1.89E-02	7.55E-02	3.30E-01
Trichloroethene	ND	ND	ND	ND	5.59E-04	7.46E-04	9.78E-03
Vinyl Chloride	ND	ND	ND	ND	3.49E-05	NE (Kp<=0.01)	6.12E-04

Table C-52
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 35A - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion		Dermal Contact		Inhalation of Particulates		Inhalation of Volatiles		Ingestion		Dermal Contact		Inhalation of Volatiles	
	Soil (0 to 2 ft.)	(mg/kg-day)	Soil (0 to 2 ft.)	(mg/kg-day)	Soil (0 to 2 ft.)	(mg/m ³)	Soil (0 to 2 ft.)	(mg/m ³)	Groundwater	(mg/kg-day)	While Showering	Groundwater	While Showering	Groundwater

NE (Kp<0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-53
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 35A - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
Dioxin/Furan										
2,3,7,8-TCDD	1.3E-06	5.1E-07	4.4E-11	NE	ND	ND	ND	1.8E-06	NA	1.8E-06
Explosive										
RDX	ND	ND	ND	ND	3.4E-05	NE (Kp<=0.01)	NE	NA	3.4E-05	3.4E-05
Metals										
Aluminum	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Antimony	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Beryllium	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Cadmium	NTV	NTV	1.8E-09	NE	NTV	NE (Kp<=0.01)	NE	1.8E-09	NA	1.8E-09
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Cobalt	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Mercury	NC	NC	NC	NE	ND	ND	ND	NA	NA	NA
Nickel	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Selenium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Silver	NC	NC	NC	NE	ND	ND	ND	NA	NA	NA
Strontium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Vanadium	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Non-Metallic Anion										
Perchlorate	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Pesticides										
Aldrin	ND	ND	ND	ND	3.7E-07	NE (Kp<=0.01)	NE	NA	3.7E-07	3.7E-07
alpha-BHC	ND	ND	ND	ND	1.7E-07	2.1E-08	NE	NA	1.9E-07	1.9E-07
beta-BHC	ND	ND	ND	ND	3.4E-08	4.6E-09	NE	NA	3.9E-08	3.9E-08
delta-BHC	ND	ND	ND	ND	2.9E-08	4.7E-09	NE	NA	3.4E-08	3.4E-08
Semi-Volatile Organics										
Benzo(a)anthracene	4.1E-07	3.8E-07	7.4E-15	NE	ND	ND	ND	7.9E-07	NA	7.9E-07
Benzo(a)pyrene	5.1E-06	4.8E-06	9.3E-14	NE	ND	ND	ND	9.9E-06	NA	9.9E-06
Benzo(b)fluoranthene	7.9E-07	7.4E-07	1.4E-11	NE	ND	ND	ND	1.5E-06	NA	1.5E-06
Bis(2-ethylhexyl)phthalate	9.8E-07	3.3E-06	4.2E-11	NE	4.3E-06	2.8E-06	NE	4.3E-06	7.1E-06	1.1E-05
Dibenzo(a,h)anthracene	7.7E-07	7.2E-07	1.4E-14	NE	ND	ND	ND	1.5E-06	NA	1.5E-06
Indeno(1,2,3-cd)pyrene	5.4E-07	5.0E-07	9.8E-15	NE	ND	ND	ND	1.0E-06	NA	1.0E-06
Volatile Organics										
1,1,2-Trichloroethane	ND	ND	ND	ND	1.6E-06	1.4E-06	7.8E-09	NA	3.0E-06	3.0E-06
1,1-Dichloroethane	ND	ND	ND	ND	2.8E-03	3.8E-03	4.1E-03	NA	1.1E-02	1.1E-02
1,2-Dichloroethane	ND	ND	ND	ND	9.5E-07	4.4E-07	4.8E-06	NA	6.2E-06	6.2E-06
Benzene	ND	ND	ND	ND	1.5E-07	1.1E-08	3.8E-10	NA	1.7E-07	1.7E-07
Methylene chloride	ND	ND	ND	ND	2.5E-08	NE (Kp<=0.01)	2.8E-08	NA	5.3E-08	5.3E-08
Tetrachloroethene	ND	ND	ND	ND	9.8E-04	3.9E-03	1.9E-07	NA	4.9E-03	4.9E-03
Trichloroethene	ND	ND	ND	ND	6.2E-06	8.2E-06	1.7E-05	NA	3.1E-05	3.1E-05
Vinyl Chloride	ND	ND	ND	ND	5.2E-05	NE (Kp<=0.01)	5.4E-06	NA	5.8E-05	5.8E-05
Totals	9.9E-06	1.1E-05	1.9E-09	0.0E+00	3.9E-03	7.7E-03	4.1E-03	2.1E-05	1.6E-02	1.6E-02

Table C-53
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 35A - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering		Inhalation of Volatiles While Showering		Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
						Groundwater	Groundwater	Groundwater	Groundwater			

NE (Kp<0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-54
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 35A - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	0.01	0.00	0.00	NE	ND	ND	ND	0.01	0.00	0.01
<i>Explosive</i>										
RDX	ND	ND	ND	ND	0.22	NE (Kp<=0.01)	NE	0.00	0.22	0.22
<i>Metals</i>										
Aluminum	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Antimony	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Beryllium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Cadmium	NTV	NTV	0.00	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	0.00
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Cobalt	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Mercury	NC	NC	NC	NE	ND	ND	ND	0.00	0.00	NA
Nickel	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Selenium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Silver	NC	NC	NC	NE	ND	ND	ND	0.00	0.00	NA
Strontium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Vanadium	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
<i>Non-Metallic Anion</i>										
Perchlorate	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
<i>Pesticides</i>										
Aldrin	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
alpha-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
beta-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
delta-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
<i>Semi-Volatile Organics</i>										
Benzo(a)anthracene	0.00	0.00	0.00	NE	ND	ND	ND	0.01	0.00	0.01
Benzo(a)pyrene	0.03	0.03	0.00	NE	ND	ND	ND	0.06	0.00	0.06
Benzo(b)fluoranthene	0.01	0.00	0.00	NE	ND	ND	ND	0.01	0.00	0.01
Bis(2-ethylhexyl)phthalate	0.01	0.02	0.00	NE	0.03	0.02	NE	0.03	0.05	0.07
Dibenzo(a,h)anthracene	0.00	0.00	0.00	NE	ND	ND	ND	0.01	0.00	0.01
Indeno(1,2,3-cd)pyrene	0.00	0.00	0.00	NE	ND	ND	ND	0.01	0.00	0.01
<i>Volatile Organics</i>										
1,1,2-Trichloroethane	ND	ND	ND	ND	0.01	0.01	0.00	0.00	0.02	0.02
1,1-Dichloroethene	ND	ND	ND	ND	17.87	23.84	26.06	0.00	67.78	67.78
1,2-Dichloroethane	ND	ND	ND	ND	0.01	0.00	0.03	0.00	0.04	0.04
Benzene	ND	ND	ND	ND	0.00	0.00	0.00	0.00	0.00	0.00
Methylene chloride	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	0.00	0.00	0.00	0.00
Tetrachloroethene	ND	ND	ND	ND	6.24	24.96	0.00	0.00	31.20	31.20
Trichloroethene	ND	ND	ND	ND	0.04	0.05	0.11	0.00	0.20	0.20
Vinyl Chloride	ND	ND	ND	ND	0.33	NE (Kp<=0.01)	0.03	0.00	0.37	0.37
Totals	0.1	0.1	0.0	0.0	24.7	48.9	26.2	0.1	99.9	100.0

Table C-54
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 35A - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total	
								Soil	Groundwater

NE ($K_p < 0.01$) = Based on EPA 6 guidance, COPCs with a $K_p \leq 0.01$ were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-55
Set 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Current Trespasser - Site 35B - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	5.00E-13	5.26E-14	7.57E-17	NE
<i>Metals</i>				
Aluminum	ND	ND	ND	NE
Cadmium	1.47E-06	5.14E-09	2.22E-10	NE
Manganese	3.64E-04	1.27E-05	5.50E-08	NE
<i>Pesticides</i>				
Aldrin	3.33E-08	1.16E-08	5.03E-12	NE
<i>Semi-Volatile Organics</i>				
Benzo(a)anthracene	8.61E-08	3.92E-08	1.30E-11	NE
Benzo(a)pyrene	8.02E-08	3.65E-08	1.21E-11	NE
Benzo(b)fluoranthene	1.14E-07	5.16E-08	1.72E-11	NE
Indeno(1,2,3-cd)pyrene	7.24E-08	3.29E-08	1.09E-11	NE

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-56
Set 1 - RME
Summary of Hazard Quotients and Indices
Current Trespasser - Site 35B - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total Hazard Index
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NA
<i>Metals</i>					
Aluminum	ND	ND	ND	NE	NA
Cadmium	1.5E-03	2.1E-04	1.1E-06	NE	1.7E-03
Manganese	7.7E-03	4.5E-03	1.1E-03	NE	1.3E-02
<i>Pesticides</i>					
Aldrin	1.1E-03	7.8E-04	NTV	NE	1.9E-03
<i>Semi-Volatile Organics</i>					
Benzo(a)anthracene	NTV	NTV	NTV	NE	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NE	NA
Totals	1.0E-02	5.5E-03	1.1E-03	0.0E+00	1.7E-02

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-57
Set 1 - RME
Percent Contribution to the Total Hazard Index
Current Trespasser - Site 35B - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NA
<i>Metals</i>					
Aluminum	ND	ND	ND	NE	NA
Cadmium	8.67	1.21	0.01	NE	9.89
Manganese	45.77	26.70	6.50	NE	78.97
<i>Pesticides</i>					
Aldrin	6.55	4.59	NTV	NE	11.14
<i>Semi-Volatile Organics</i>					
Benzo(a)anthracene	NTV	NTV	NTV	NE	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NE	NA
Totals	61.0	32.5	6.5	0.0	100.0

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-58
Set 1 -RME
Summary of Exposure Doses (Cancer Effects)
Current Trespasser - Site 35B - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	8.58E-14	9.01E-15	1.30E-17	NE
<i>Metals</i>				
Aluminum	ND	ND	ND	NE
Cadmium	2.52E-07	8.81E-10	3.80E-11	NE
Manganese	NC	NC	NC	NE
<i>Pesticides</i>				
Aldrin	5.70E-09	2.00E-09	8.62E-13	NE
<i>Semi-Volatile Organics</i>				
Benzo(a)anthracene	1.48E-08	6.72E-09	2.23E-12	NE
Benzo(a)pyrene	1.38E-08	6.26E-09	2.08E-12	NE
Benzo(b)fluoranthene	1.95E-08	8.85E-09	2.94E-12	NE
Indeno(1,2,3-cd)pyrene	1.24E-08	5.65E-09	1.88E-12	NE

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-59
Set 1 -RME
Summary of Potential Cancer Risks
Current Trespasser - Site 35B - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total Potential Cancer Risk
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	1.3E-08	2.7E-09	4.3E-13	NE	1.6E-08
<i>Metals</i>					
Aluminum	ND	ND	ND	NE	NA
Cadmium	NTV	NTV	6.8E-11	NE	6.8E-11
Manganese	NC	NC	NC	NE	NA
<i>Pesticides</i>					
Aldrin	9.7E-08	6.8E-08	4.2E-15	NE	1.6E-07
<i>Semi-Volatile Organics</i>					
Benzo(a)anthracene	1.1E-08	5.5E-09	2.0E-16	NE	1.6E-08
Benzo(a)pyrene	1.0E-07	5.1E-08	1.8E-15	NE	1.5E-07
Benzo(b)fluoranthene	1.4E-08	7.3E-09	2.6E-13	NE	2.1E-08
Indeno(1,2,3-cd)pyrene	9.1E-09	4.6E-09	1.7E-16	NE	1.4E-08
Totals	2.4E-07	1.4E-07	6.9E-11	0.0E+00	3.8E-07

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-60
Set 1 -RME
Percent Contribution to the Total Potential Cancer Risk
Current Trespasser - Site 35B - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	3.35	0.70	0.00	NE	4.06
<i>Metals</i>					
Aluminum	ND	ND	ND	NE	NA
Cadmium	NTV	NTV	0.02	NE	0.02
Manganese	NC	NC	NC	NE	NA
<i>Pesticides</i>					
Aldrin	25.27	17.69	0.00	NE	42.96
<i>Semi-Volatile Organics</i>					
Benzo(a)anthracene	2.81	1.44	0.00	NE	4.24
Benzo(a)pyrene	26.17	13.38	0.00	NE	39.55
Benzo(b)fluoranthene	3.70	1.89	0.00	NE	5.60
Indeno(1,2,3-cd)pyrene	2.36	1.21	0.00	NE	3.57
Totals	63.7	36.3	0.0	0.0	100.0

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-61
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 35B - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	2.50E-12	4.80E-13	3.78E-16	NE	4.84E-11	2.01E-10	NE
Explosive							
m-Dinitrobenzene	ND	ND	ND	ND	9.78E-07	NE (Kp<=0.01)	NE
Metals							
Aluminum	ND	ND	ND	NE	5.68E-02	NE (Kp<=0.01)	NE
Antimony	ND	ND	ND	ND	7.83E-04	NE (Kp<=0.01)	NE
Cadmium	7.34E-06	4.70E-08	1.11E-09	NE	7.83E-06	NE (Kp<=0.01)	NE
Lead	ND	ND	ND	ND	3.82E-05	NE (Kp<=0.01)	NE
Manganese	1.82E-03	1.16E-04	2.75E-07	NE	3.72E-03	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	9.59E-04	NE (Kp<=0.01)	NE
Vanadium	ND	ND	ND	ND	3.13E-05	NE (Kp<=0.01)	NE
Pesticides							
Aldrin	1.66E-07	1.06E-07	2.51E-11	NE	ND	ND	ND
Semi-Volatile Organics							
Benzo(a)anthracene	4.31E-07	3.58E-07	6.51E-11	NE	ND	ND	ND
Benzo(a)pyrene	4.01E-07	3.34E-07	6.07E-11	NE	ND	ND	ND
Benzo(b)fluoranthene	5.68E-07	4.72E-07	8.58E-11	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	1.37E-05	1.70E-06	NE
Indeno(1,2,3-cd)pyrene	3.62E-07	3.01E-07	5.47E-11	NE	ND	ND	ND
Volatile Organics							
1,1-Dichloroethene	ND	ND	ND	ND	5.68E-04	7.57E-04	9.93E-03
Benzene	ND	ND	ND	ND	2.94E-05	2.03E-06	5.14E-04
Tetrachloroethene	ND	ND	ND	ND	3.33E-04	1.33E-03	5.82E-03
Trichloroethene	ND	ND	ND	ND	3.20E-03	4.27E-03	5.60E-02

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).
 ND = Not detected in associated media or not selected as a chemical of potential concern.
 NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-62
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 35B - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
Dioxin/Furan										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	NA	NA	NA
Explosive										
m-Dinitrobenzene	ND	ND	ND	ND	9.8E-03	NE (Kp<=0.01)	NE	NA	9.8E-03	9.8E-03
Metals										
Aluminum	ND	ND	ND	NE	5.7E-02	NE (Kp<=0.01)	NE	NA	5.7E-02	5.7E-02
Antimony	ND	ND	ND	ND	2.0E+00	NE (Kp<=0.01)	NE	NA	2.0E+00	2.0E+00
Cadmium	7.3E-03	1.9E-03	5.5E-06	NE	1.6E-02	NE (Kp<=0.01)	NE	9.2E-03	1.6E-02	2.5E-02
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	3.9E-02	4.1E-02	5.5E-03	NE	7.9E-02	NE (Kp<=0.01)	NE	8.6E-02	7.9E-02	1.6E-01
Thallium	ND	ND	ND	ND	1.2E+01	NE (Kp<=0.01)	NE	NA	1.2E+01	1.2E+01
Vanadium	ND	ND	ND	ND	4.5E-03	NE (Kp<=0.01)	NE	NA	4.5E-03	4.5E-03
Pesticides										
Aldrin	5.5E-03	7.1E-03	NTV	NE	ND	ND	ND	1.3E-02	NA	1.3E-02
Semi-Volatile Organics										
Benzo(a)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	6.8E-04	4.5E-04	NE	NA	1.1E-03	1.1E-03
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Volatile Organics										
1,1-Dichloroethene	ND	ND	ND	ND	6.3E-02	8.4E-02	NTV	NA	1.5E-01	1.5E-01
Benzene	ND	ND	ND	ND	9.8E-03	7.0E-04	8.6E-02	NA	9.6E-02	9.6E-02
Tetrachloroethene	ND	ND	ND	ND	3.3E-02	1.3E-01	1.2E-02	NA	1.8E-01	1.8E-01
Trichloroethene	ND	ND	ND	ND	5.3E-01	7.1E-01	NTV	NA	1.2E+00	1.2E+00
Totals	5.2E-02	5.0E-02	5.5E-03	0.0E+00	1.5E+01	9.3E-01	9.7E-02	1.1E-01	1.6E+01	1.6E+01

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-63
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 35B - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
Dioxin/Furan										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	0.00	0.00	NA
Explosive										
m-Dinitrobenzene	ND	ND	ND	ND	0.06	NE (Kp<=0.01)	NE	0.00	0.06	0.06
Metals										
Aluminum	ND	ND	ND	NE	0.36	NE (Kp<=0.01)	NE	0.00	0.36	0.36
Antimony	ND	ND	ND	ND	12.32	NE (Kp<=0.01)	NE	0.00	12.32	12.32
Cadmium	0.05	0.01	0.00	NE	0.10	NE (Kp<=0.01)	NE	0.06	0.10	0.16
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	0.24	0.26	0.03	NE	0.50	NE (Kp<=0.01)	NE	0.54	0.50	1.04
Thallium	ND	ND	ND	ND	75.46	NE (Kp<=0.01)	NE	0.00	75.46	75.46
Vanadium	ND	ND	ND	ND	0.03	NE (Kp<=0.01)	NE	0.00	0.03	0.03
Pesticides										
Aldrin	0.03	0.04	NTV	NE	ND	ND	ND	0.08	0.00	0.08
Semi-Volatile Organics										
Benzo(a)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.01	0.01
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Volatile Organics										
1,1-Dichloroethene	ND	ND	ND	ND	0.40	0.53	NTV	0.00	0.93	0.93
Benzene	ND	ND	ND	ND	0.06	0.00	0.54	0.00	0.61	0.61
Tetrachloroethene	ND	ND	ND	ND	0.21	0.84	0.07	0.00	1.12	1.12
Trichloroethene	ND	ND	ND	ND	3.36	4.48	NTV	0.00	7.84	7.84
Totals	0.3	0.3	0.0	0.0	92.9	5.9	0.6	0.7	99.3	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-64
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 35B - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
<i>Dioxin/Furan</i>							
2,3,7,8-TCDD	8.94E-13	1.72E-13	1.35E-16	NE	1.73E-11	7.16E-11	NE
<i>Explosive</i>							
m-Dinitrobenzene	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
<i>Metals</i>							
Aluminum	ND	ND	ND	NE	2.03E-02	NE (Kp<=0.01)	NE
Antimony	ND	ND	ND	ND	2.80E-04	NE (Kp<=0.01)	NE
Cadmium	2.62E-06	1.68E-08	3.96E-10	NE	2.80E-06	NE (Kp<=0.01)	NE
Lead	ND	ND	ND	ND	1.36E-05	NE (Kp<=0.01)	NE
Manganese	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Vanadium	ND	ND	ND	ND	1.12E-05	NE (Kp<=0.01)	NE
<i>Pesticides</i>							
Aldrin	5.94E-08	3.80E-08	8.98E-12	NE	ND	ND	ND
<i>Semi-Volatile Organics</i>							
Benzo(a)anthracene	1.54E-07	1.28E-07	2.32E-11	NE	ND	ND	ND
Benzo(a)pyrene	1.43E-07	1.19E-07	2.17E-11	NE	ND	ND	ND
Benzo(b)fluoranthene	2.03E-07	1.69E-07	3.06E-11	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	4.89E-06	6.08E-07	NE
Indeno(1,2,3-cd)pyrene	1.29E-07	1.08E-07	1.95E-11	NE	ND	ND	ND
<i>Volatile Organics</i>							
1,1-Dichloroethene	ND	ND	ND	ND	2.03E-04	2.70E-04	3.55E-03
Benzene	ND	ND	ND	ND	1.05E-05	7.23E-07	1.83E-04
Tetrachloroethene	ND	ND	ND	ND	1.19E-04	4.75E-04	2.08E-03
Trichloroethene	ND	ND	ND	ND	1.14E-03	1.52E-03	2.00E-02

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-65
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 35B - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	1.3E-07	5.1E-08	4.5E-12	NE	2.6E-06	2.1E-05	NE	1.9E-07	2.4E-05	2.4E-05
<i>Explosive</i>										
m-Dinitrobenzene	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
<i>Metals</i>										
Aluminum	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Antimony	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Cadmium	NTV	NTV	7.1E-10	NE	NTV	NE (Kp<=0.01)	NE	7.1E-10	NA	7.1E-10
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Vanadium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
<i>Pesticides</i>										
Aldrin	1.0E-06	1.3E-06	4.4E-14	NE	ND	ND	ND	2.3E-06	NA	2.3E-06
<i>Semi-Volatile Organics</i>										
Benzo(a)anthracene	1.1E-07	1.0E-07	2.0E-15	NE	ND	ND	ND	2.2E-07	NA	2.2E-07
Benzo(a)pyrene	1.0E-06	9.8E-07	1.9E-14	NE	ND	ND	ND	2.0E-06	NA	2.0E-06
Benzo(b)fluoranthene	1.5E-07	1.4E-07	2.7E-12	NE	ND	ND	ND	2.9E-07	NA	2.9E-07
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	6.8E-08	4.5E-08	NE	NA	1.1E-07	1.1E-07
Indeno(1,2,3-cd)pyrene	9.4E-08	8.8E-08	1.7E-15	NE	ND	ND	ND	1.8E-07	NA	1.8E-07
<i>Volatile Organics</i>										
1,1-Dichloroethene	ND	ND	ND	ND	1.2E-04	1.6E-04	1.8E-04	NA	4.6E-04	4.6E-04
Benzene	ND	ND	ND	ND	5.8E-07	4.1E-08	1.4E-09	NA	6.2E-07	6.2E-07
Tetrachloroethene	ND	ND	ND	ND	6.2E-06	2.5E-05	1.2E-09	NA	3.1E-05	3.1E-05
Trichloroethene	ND	ND	ND	ND	1.3E-05	1.7E-05	3.4E-05	NA	6.3E-05	6.3E-05
Totals	2.5E-06	2.7E-06	7.2E-10	0.0E+00	1.4E-04	2.3E-04	2.1E-04	5.2E-06	5.8E-04	5.9E-04

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-66
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 35B - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
Dioxin/Furan										
2,3,7,8-TCDD	0.02	0.01	0.00	NE	0.44	3.67	NE	0.03	4.11	4.15
Explosive										
m-Dinitrobenzene	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Metals										
Aluminum	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Antimony	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Cadmium	NTV	NTV	0.00	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	0.00
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Vanadium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Pesticides										
Aldrin	0.17	0.22	0.00	NE	ND	ND	ND	0.39	0.00	0.39
Semi-Volatile Organics										
Benzo(a)anthracene	0.02	0.02	0.00	NE	ND	ND	ND	0.04	0.00	0.04
Benzo(a)pyrene	0.18	0.17	0.00	NE	ND	ND	ND	0.35	0.00	0.35
Benzo(b)fluoranthene	0.03	0.02	0.00	NE	ND	ND	ND	0.05	0.00	0.05
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	0.01	0.01	NE	0.00	0.02	0.02
Indeno(1,2,3-cd)pyrene	0.02	0.02	0.00	NE	ND	ND	ND	0.03	0.00	0.03
Volatile Organics										
1,1-Dichloroethene	ND	ND	ND	ND	20.77	27.71	30.29	0.00	78.78	78.78
Benzene	ND	ND	ND	ND	0.10	0.01	0.00	0.00	0.11	0.11
Tetrachloroethene	ND	ND	ND	ND	1.06	4.22	0.00	0.00	5.28	5.28
Trichloroethene	ND	ND	ND	ND	2.15	2.86	5.81	0.00	10.82	10.82
Totals	0.4	0.5	0.0	0.0	24.5	38.5	36.1	0.9	99.1	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-67
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 35B - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Loughorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	2.50E-12	4.80E-13	3.78E-16	NE	4.84E-11	2.01E-10	NE
Explosive							
m-Dinitrobenzene	ND	ND	ND	ND	9.78E-07	NE (Kp<=0.01)	NE
Metals							
Aluminum	1.82E-02	1.16E-03	2.75E-06	NE	5.68E-02	NE (Kp<=0.01)	NE
Antimony	ND	ND	ND	ND	7.83E-04	NE (Kp<=0.01)	NE
Cadmium	7.34E-06	4.70E-08	1.11E-09	NE	7.83E-06	NE (Kp<=0.01)	NE
Lead	ND	ND	ND	ND	3.82E-05	NE (Kp<=0.01)	NE
Manganese	1.82E-03	1.16E-04	2.75E-07	NE	3.72E-03	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	9.59E-04	NE (Kp<=0.01)	NE
Vanadium	ND	ND	ND	ND	3.13E-05	NE (Kp<=0.01)	NE
Pesticides							
Aldrin	1.66E-07	1.06E-07	2.51E-11	NE	ND	ND	ND
Semi-Volatile Organics							
Benzo(a)anthracene	4.31E-07	3.58E-07	6.51E-11	NE	ND	ND	ND
Benzo(a)pyrene	4.01E-07	3.34E-07	6.07E-11	NE	ND	ND	ND
Benzo(b)fluoranthene	5.68E-07	4.72E-07	8.58E-11	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	1.37E-05	1.70E-06	NE
Indeno(1,2,3-cd)pyrene	3.62E-07	3.01E-07	5.47E-11	NE	ND	ND	ND
Volatile Organics							
1,1-Dichloroethene	ND	ND	ND	ND	5.68E-04	7.57E-04	9.93E-03
Benzene	ND	ND	ND	ND	2.94E-05	2.03E-06	5.14E-04
Tetrachloroethene	ND	ND	ND	ND	3.33E-04	1.33E-03	5.82E-03
Trichloroethene	ND	ND	ND	ND	3.20E-03	4.27E-03	5.60E-02

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).
ND = Not detected in associated media or not selected as a chemical of potential concern.
NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-68
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 35B - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
Dioxin/Furan										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	NA	NA	NA
Explosive										
m-Dinitrobenzene	ND	ND	ND	ND	9.8E-03	NE (Kp<=0.01)	NE	NA	9.8E-03	9.8E-03
Metals										
Aluminum	1.8E-02	1.2E-02	7.9E-04	NE	5.7E-02	NE (Kp<=0.01)	NE	3.1E-02	5.7E-02	8.7E-02
Antimony	ND	ND	ND	ND	2.0E+00	NE (Kp<=0.01)	NE	NA	2.0E+00	2.0E+00
Cadmium	7.3E-03	1.9E-03	5.5E-06	NE	1.6E-02	NE (Kp<=0.01)	NE	9.2E-03	1.6E-02	2.5E-02
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	3.9E-02	4.1E-02	5.5E-03	NE	7.9E-02	NE (Kp<=0.01)	NE	8.6E-02	7.9E-02	1.6E-01
Thallium	ND	ND	ND	ND	1.2E+01	NE (Kp<=0.01)	NE	NA	1.2E+01	1.2E+01
Vanadium	ND	ND	ND	ND	4.5E-03	NE (Kp<=0.01)	NE	NA	4.5E-03	4.5E-03
Pesticides										
Aldrin	5.5E-03	7.1E-03	NTV	NE	ND	ND	ND	1.3E-02	NA	1.3E-02
Semi-Volatile Organics										
Benzo(a)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	6.8E-04	4.5E-04	NE	NA	1.1E-03	1.1E-03
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Volatile Organics										
1,1-Dichloroethene	ND	ND	ND	ND	6.3E-02	8.4E-02	NTV	NA	1.5E-01	1.5E-01
Benzene	ND	ND	ND	ND	9.8E-03	7.0E-04	8.6E-02	NA	9.6E-02	9.6E-02
Tetrachloroethene	ND	ND	ND	ND	3.3E-02	1.3E-01	1.2E-02	NA	1.8E-01	1.8E-01
Trichloroethene	ND	ND	ND	ND	5.3E-01	7.1E-01	NTV	NA	1.2E+00	1.2E+00
Totals	7.0E-02	6.2E-02	6.3E-03	0.0E+00	1.5E+01	9.3E-01	9.7E-02	1.4E-01	1.6E+01	1.6E+01

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-69
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 35B - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	0.00	0.00	NA
<i>Explosive</i>										
m-Dinitrobenzene	ND	ND	ND	ND	0.06	NE (Kp<=0.01)	NE	0.00	0.06	0.06
<i>Metals</i>										
Aluminum	0.11	0.07	0.00	NE	0.36	NE (Kp<=0.01)	NE	0.19	0.36	0.55
Antimony	ND	ND	ND	ND	12.30	NE (Kp<=0.01)	NE	0.00	12.30	12.30
Cadmium	0.05	0.01	0.00	NE	0.10	NE (Kp<=0.01)	NE	0.06	0.10	0.16
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	0.24	0.26	0.03	NE	0.50	NE (Kp<=0.01)	NE	0.54	0.50	1.03
Thallium	ND	ND	ND	ND	75.32	NE (Kp<=0.01)	NE	0.00	75.32	75.32
Vanadium	ND	ND	ND	ND	0.03	NE (Kp<=0.01)	NE	0.00	0.03	0.03
<i>Pesticides</i>										
Aldrin	0.03	0.04	NTV	NE	ND	ND	ND	0.08	0.00	0.08
<i>Semi-Volatile Organics</i>										
Benzo(a)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.01	0.01
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
<i>Volatile Organics</i>										
1,1-Dichloroethene	ND	ND	ND	ND	0.40	0.53	NTV	0.00	0.92	0.92
Benzene	ND	ND	ND	ND	0.06	0.00	0.54	0.00	0.60	0.60
Tetrachloroethene	ND	ND	ND	ND	0.21	0.84	0.07	0.00	1.12	1.12
Trichloroethene	ND	ND	ND	ND	3.35	4.47	NTV	0.00	7.82	7.82
Totals	0.4	0.4	0.0	0.0	92.7	5.8	0.6	0.9	99.1	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-70
Set 1 - RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 35B - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
<i>Dioxin/Furan</i>							
2,3,7,8-TCDD	8.94E-13	1.72E-13	1.35E-16	NE	1.73E-11	7.16E-11	NE
<i>Explosive</i>							
m-Dinitrobenzene	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
<i>Metals</i>							
Aluminum	6.50E-03	4.16E-04	9.83E-07	NE	2.03E-02	NE (Kp<=0.01)	NE
Antimony	ND	ND	ND	ND	2.80E-04	NE (Kp<=0.01)	NE
Cadmium	2.62E-06	1.68E-08	3.96E-10	NE	2.80E-06	NE (Kp<=0.01)	NE
Lead	ND	ND	ND	ND	1.36E-05	NE (Kp<=0.01)	NE
Manganese	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Vanadium	ND	ND	ND	ND	1.12E-05	NE (Kp<=0.01)	NE
<i>Pesticides</i>							
Aldrin	5.94E-08	3.80E-08	8.98E-12	NE	ND	ND	ND
<i>Semi-Volatile Organics</i>							
Benzo(a)anthracene	1.54E-07	1.28E-07	2.32E-11	NE	ND	ND	ND
Benzo(a)pyrene	1.43E-07	1.19E-07	2.17E-11	NE	ND	ND	ND
Benzo(b)fluoranthene	2.03E-07	1.69E-07	3.06E-11	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	4.89E-06	6.08E-07	NE
Indeno(1,2,3-cd)pyrene	1.29E-07	1.08E-07	1.95E-11	NE	ND	ND	ND
<i>Volatile Organics</i>							
1,1-Dichloroethene	ND	ND	ND	ND	2.03E-04	2.70E-04	3.55E-03
Benzene	ND	ND	ND	ND	1.05E-05	7.23E-07	1.83E-04
Tetrachloroethene	ND	ND	ND	ND	1.19E-04	4.75E-04	2.08E-03
Trichloroethene	ND	ND	ND	ND	1.14E-03	1.52E-03	2.00E-02

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).
 NC = Not classified as a carcinogen.
 ND = Not detected in associated media or not selected as a chemical of potential concern.
 NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-71
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 35B - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	1.3E-07	5.1E-08	4.5E-12	NE	2.6E-06	2.1E-05	NE	1.9E-07	2.4E-05	2.4E-05
<i>Explosive</i>										
m-Dinitrobenzene	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
<i>Metals</i>										
Aluminum	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Antimony	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Cadmium	NTV	NTV	7.1E-10	NE	NTV	NE (Kp<=0.01)	NE	7.1E-10	NA	7.1E-10
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	NC	NC	NC	NC	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Vanadium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
<i>Pesticides</i>										
Aldrin	1.0E-06	1.3E-06	4.4E-14	NE	ND	ND	ND	2.3E-06	NA	2.3E-06
<i>Semi-Volatile Organics</i>										
Benzo(a)anthracene	1.1E-07	1.0E-07	2.0E-15	NE	ND	ND	ND	2.2E-07	NA	2.2E-07
Benzo(a)pyrene	1.0E-06	9.8E-07	1.9E-14	NE	ND	ND	ND	2.0E-06	NA	2.0E-06
Benzo(b)fluoranthene	1.5E-07	1.4E-07	2.7E-12	NE	ND	ND	ND	2.9E-07	NA	2.9E-07
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	6.8E-08	4.5E-08	NE	NA	1.1E-07	1.1E-07
Indeno(1,2,3-cd)pyrene	9.4E-08	8.8E-08	1.7E-15	NE	ND	ND	ND	1.8E-07	NA	1.8E-07
<i>Volatile Organics</i>										
1,1-Dichloroethene	ND	ND	ND	ND	1.2E-04	1.6E-04	1.8E-04	NA	4.6E-04	4.6E-04
Benzene	ND	ND	ND	ND	5.8E-07	4.1E-08	1.4E-09	NA	6.2E-07	6.2E-07
Tetrachloroethene	ND	ND	ND	ND	6.2E-06	2.5E-05	1.2E-09	NA	3.1E-05	3.1E-05
Trichloroethene	ND	ND	ND	ND	1.3E-05	1.7E-05	3.4E-05	NA	6.3E-05	6.3E-05
Totals	2.5E-06	2.7E-06	7.2E-10	0.0E+00	1.4E-04	2.3E-04	2.1E-04	5.2E-06	5.8E-04	5.9E-04

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-72
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 35B - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	0.02	0.01	0.00	NE	0.44	3.67	NE	0.03	4.11	4.15
<i>Explosive</i>										
m-Dinitrobenzene	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
<i>Metals</i>										
Aluminum	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Antimony	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Cadmium	NTV	NTV	0.00	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	0.00
Lead	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Vanadium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
<i>Pesticides</i>										
Aldrin	0.17	0.22	0.00	NE	ND	ND	ND	0.39	0.00	0.39
<i>Semi-Volatile Organics</i>										
Benzo(a)anthracene	0.02	0.02	0.00	NE	ND	ND	ND	0.04	0.00	0.04
Benzo(a)pyrene	0.18	0.17	0.00	NE	ND	ND	ND	0.35	0.00	0.35
Benzo(b)fluoranthene	0.03	0.02	0.00	NE	ND	ND	ND	0.05	0.00	0.05
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	0.01	0.01	NE	0.00	0.02	0.02
Indeno(1,2,3-cd)pyrene	0.02	0.02	0.00	NE	ND	ND	ND	0.03	0.00	0.03
<i>Volatile Organics</i>										
1,1-Dichloroethene	ND	ND	ND	ND	20.77	27.71	30.29	0.00	78.78	78.78
Benzene	ND	ND	ND	ND	0.10	0.01	0.00	0.00	0.11	0.11
Tetrachloroethene	ND	ND	ND	ND	1.06	4.22	0.00	0.00	5.28	5.28
Trichloroethene	ND	ND	ND	ND	2.15	2.86	5.81	0.00	10.82	10.82
Totals	0.4	0.5	0.0	0.0	24.5	38.5	36.1	0.9	99.1	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-73
Set 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Current Trespasser - Site 35C - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	3.07E-11	3.22E-12	4.64E-15	NE
<i>Metals</i>				
Aluminum	2.38E-03	8.33E-05	3.60E-07	NE
Cadmium	ND	ND	ND	NE
Vanadium	9.98E-06	3.49E-07	1.51E-09	NE
<i>Non-Metallic Anion</i>				
Perchlorate	1.19E-08	4.17E-10	1.80E-12	NE
<i>Semi-Volatile Organics</i>				
Benzo(a)pyrene	2.15E-08	9.79E-09	3.25E-12	NE

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-74
Set 1 - RME
Summary of Hazard Quotients and Indices
Current Trespasser - Site 35C - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total Hazard Index
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NA
<i>Metals</i>					
Aluminum	2.4E-03	8.3E-04	1.0E-04	NE	3.3E-03
Cadmium	ND	ND	ND	NE	NA
Vanadium	1.4E-03	1.9E-03	3.0E-05	NE	3.4E-03
<i>Non-Metallic Anion</i>					
Perchlorate	1.3E-05	4.6E-07	NTV	NE	1.4E-05
<i>Semi-Volatile Organics</i>					
Benzo(a)pyrene	NTV	NTV	NTV	NE	NA
Totals	3.8E-03	2.8E-03	1.3E-04	0.0E+00	6.7E-03

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-75
Set 1 - RME
Percent Contribution to the Total Hazard Index
Current Trespasser - Site 35C - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NA
<i>Metals</i>					
Aluminum	35.50	12.43	1.53	NE	49.46
Cadmium	ND	ND	ND	NE	NA
Vanadium	21.26	28.62	0.45	NE	50.34
<i>Non-Metallic Anion</i>					
Perchlorate	0.20	0.01	NTV	NE	0.20
<i>Semi-Volatile Organics</i>					
Benzo(a)pyrene	NTV	NTV	NTV	NE	NA
Totals	57.0	41.1	2.0	0.0	100.0

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-76
Set 1 -RME
Summary of Exposure Doses (Cancer Effects)
Current Trespasser - Site 35C - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	5.26E-12	5.52E-13	7.95E-16	NE
<i>Metals</i>				
Aluminum	4.08E-04	1.43E-05	6.17E-08	NE
Cadmium	ND	ND	ND	NE
Vanadium	1.71E-06	5.99E-08	2.59E-10	NE
<i>Non-Metallic Anion</i>				
Perchlorate	2.04E-09	7.15E-11	3.09E-13	NE
<i>Semi-Volatile Organics</i>				
Benzo(a)pyrene	3.69E-09	1.68E-09	5.58E-13	NE

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-77
Set 1 -RME
Summary of Potential Cancer Risks
Current Trespasser - Site 35C - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total Potential Cancer Risk
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	7.9E-07	1.7E-07	2.6E-11	NE	9.5E-07
<i>Metals</i>					
Aluminum	NTV	NTV	NTV	NE	NA
Cadmium	ND	ND	ND	NE	NA
Vanadium	NTV	NTV	NTV	NE	NA
<i>Non-Metallic Anion</i>					
Perchlorate	NTV	NTV	NTV	NE	NA
<i>Semi-Volatile Organics</i>					
Benzo(a)pyrene	2.7E-08	1.4E-08	4.9E-16	NE	4.1E-08
Totals	8.2E-07	1.8E-07	2.6E-11	0.0E+00	9.9E-07

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-78
Set 1 -RME
Percent Contribution to the Total Potential Cancer Risk
Current Trespasser - Site 35C - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	79.26	16.64	0.00	NE	95.91
<i>Metals</i>					
Aluminum	NTV	NTV	NTV	NE	NA
Cadmium	ND	ND	ND	NE	NA
Vanadium	NTV	NTV	NTV	NE	NA
<i>Non-Metallic Anion</i>					
Perchlorate	NTV	NTV	NTV	NE	NA
<i>Semi-Volatile Organics</i>					
Benzo(a)pyrene	2.71	1.38	0.00	NE	4.09
Totals	82.0	18.0	0.0	0.0	100.0

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-79
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 35C - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	1.53E-10	2.94E-11	2.32E-14	NE	1.39E-10	5.74E-10	NE
Explosive							
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	9.30E-06	NE (Kp<=0.01)	NE
RDX	ND	ND	ND	ND	4.79E-06	NE (Kp<=0.01)	NE
Metals							
Aluminum	1.19E-02	7.62E-04	1.80E-06	NE	1.06E+00	NE (Kp<=0.01)	NE
Beryllium	ND	ND	ND	ND	1.57E-05	NE (Kp<=0.01)	NE
Cadmium	ND	ND	ND	NE	ND	ND	ND
Chromium	ND	ND	ND	ND	4.21E-01	NE (Kp<=0.01)	NE
Lead	ND	ND	ND	ND	2.92E-03	NE (Kp<=0.01)	NE
Manganese	ND	ND	ND	ND	1.37E-02	NE (Kp<=0.01)	NE
Nickel	ND	ND	ND	ND	2.45E-02	NE (Kp<=0.01)	NE
Silver	ND	ND	ND	ND	1.17E-02	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	1.31E-03	NE (Kp<=0.01)	NE
Vanadium	4.99E-05	3.19E-06	7.54E-09	NE	2.64E-04	NE (Kp<=0.01)	NE
Non-Metallic Anion							
Perchlorate	5.96E-08	3.81E-09	9.01E-12	NE	2.74E-05	NE (Kp<=0.01)	NE
Pesticides							
Aldrin	ND	ND	ND	ND	6.16E-08	NE (Kp<=0.01)	NE
alpha-BHC	ND	ND	ND	ND	7.44E-08	9.09E-09	NE
beta-BHC	ND	ND	ND	ND	5.28E-08	6.46E-09	NE
delta-BHC	ND	ND	ND	ND	4.50E-08	3.69E-09	NE
Semi-Volatile Organics							
2,6-Dinitrotoluene	ND	ND	ND	ND	6.07E-06	NE (Kp<=0.01)	NE
Benzo(a)pyrene	1.08E-07	8.95E-08	1.63E-11	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	8.51E-05	1.06E-05	NE
Volatile Organics							
1,2-Dichloroethane	ND	ND	ND	ND	2.94E-05	1.35E-05	5.14E-04
Trichloroethene	ND	ND	ND	ND	6.85E-05	9.14E-05	1.20E-03

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-80
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 35C - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
Dioxin/Furan										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	NA	NA	NA
Explosive										
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	5.6E-02	NE (Kp<=0.01)	NE	NA	5.6E-02	5.6E-02
RDX	ND	ND	ND	ND	1.6E-03	NE (Kp<=0.01)	NE	NA	1.6E-03	1.6E-03
Metals										
Aluminum	1.2E-02	7.6E-03	5.1E-04	NE	1.1E+00	NE (Kp<=0.01)	NE	2.0E-02	1.1E+00	1.1E+00
Beryllium	ND	ND	ND	ND	7.8E-03	NE (Kp<=0.01)	NE	NA	7.8E-03	7.8E-03
Cadmium	ND	ND	ND	NE	ND	ND	ND	NA	NA	NA
Chromium	ND	ND	ND	ND	2.8E-01	NE (Kp<=0.01)	NE	NA	2.8E-01	2.8E-01
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	ND	ND	ND	ND	2.9E-01	NE (Kp<=0.01)	NE	NA	2.9E-01	2.9E-01
Nickel	ND	ND	ND	ND	1.2E+00	NE (Kp<=0.01)	NE	NA	1.2E+00	1.2E+00
Silver	ND	ND	ND	ND	2.3E+00	NE (Kp<=0.01)	NE	NA	2.3E+00	2.3E+00
Thallium	ND	ND	ND	ND	1.6E+01	NE (Kp<=0.01)	NE	NA	1.6E+01	1.6E+01
Vanadium	7.1E-03	1.8E-02	1.5E-04	NE	3.8E-02	NE (Kp<=0.01)	NE	2.5E-02	3.8E-02	6.3E-02
Non-Metallic Anion										
Perchlorate	6.6E-05	4.2E-06	NTV	NE	3.0E-02	NE (Kp<=0.01)	NE	7.0E-05	3.0E-02	3.1E-02
Pesticides										
Aldrin	ND	ND	ND	ND	2.1E-03	NE (Kp<=0.01)	NE	NA	2.1E-03	2.1E-03
alpha-BHC	ND	ND	ND	ND	9.3E-06	1.2E-06	NE	NA	1.0E-05	1.0E-05
beta-BHC	ND	ND	ND	ND	NTV	NTV	NE	NA	NA	NA
delta-BHC	ND	ND	ND	ND	1.5E-04	2.5E-05	NE	NA	1.7E-04	1.7E-04
Semi-Volatile Organics										
2,6-Dinitrotoluene	ND	ND	ND	ND	6.1E-03	NE (Kp<=0.01)	NE	NA	6.1E-03	6.1E-03
Benzo(a)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	4.3E-03	2.8E-03	NE	NA	7.0E-03	7.0E-03
Volatile Organics										
1,2-Dichloroethane	ND	ND	ND	ND	9.8E-04	4.5E-04	1.0E-01	NA	1.0E-01	1.0E-01
Trichloroethene	ND	ND	ND	ND	1.1E-02	1.5E-02	NTV	NA	2.7E-02	2.7E-02
Totals	1.9E-02	2.5E-02	6.7E-04	0.0E+00	2.2E+01	1.8E-02	1.0E-01	4.5E-02	2.2E+01	2.2E+01

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-81
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 35C - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
Dioxin/Furan										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	0.00	0.00	NA
Explosive										
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	0.25	NE (Kp<=0.01)	NE	0.00	0.25	0.25
RDX	ND	ND	ND	ND	0.01	NE (Kp<=0.01)	NE	0.00	0.01	0.01
Metals										
Aluminum	0.05	0.03	0.00	NE	4.82	NE (Kp<=0.01)	NE	0.09	4.82	4.91
Beryllium	ND	ND	ND	ND	0.04	NE (Kp<=0.01)	NE	0.00	0.04	0.04
Cadmium	ND	ND	ND	NE	ND	ND	ND	0.00	0.00	NA
Chromium	ND	ND	ND	ND	1.28	NE (Kp<=0.01)	NE	0.00	1.28	1.28
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	ND	ND	ND	ND	1.33	NE (Kp<=0.01)	NE	0.00	1.33	1.33
Nickel	ND	ND	ND	ND	5.58	NE (Kp<=0.01)	NE	0.00	5.58	5.58
Silver	ND	ND	ND	ND	10.72	NE (Kp<=0.01)	NE	0.00	10.72	10.72
Thallium	ND	ND	ND	ND	74.79	NE (Kp<=0.01)	NE	0.00	74.79	74.79
Vanadium	0.03	0.08	0.00	NE	0.17	NE (Kp<=0.01)	NE	0.11	0.17	0.29
Non-Metallic Anion										
Perchlorate	0.00	0.00	NTV	NE	0.14	NE (Kp<=0.01)	NE	0.00	0.14	0.14
Pesticides										
Aldrin	ND	ND	ND	ND	0.01	NE (Kp<=0.01)	NE	0.00	0.01	0.01
alpha-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
beta-BHC	ND	ND	ND	ND	NTV	NTV	NE	0.00	0.00	NA
delta-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
Semi-Volatile Organics										
2,6-Dinitrotoluene	ND	ND	ND	ND	0.03	NE (Kp<=0.01)	NE	0.00	0.03	0.03
Benzo(a)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	0.02	0.01	NE	0.00	0.03	0.03
Volatile Organics										
1,2-Dichloroethane	ND	ND	ND	ND	0.00	0.00	0.47	0.00	0.48	0.48
Trichloroethene	ND	ND	ND	ND	0.05	0.07	NTV	0.00	0.12	0.12
Totals	0.1	0.1	0.0	0.0	99.2	0.1	0.5	0.2	99.8	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-82
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 35C - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	5.48E-11	1.05E-11	8.28E-15	NE	4.95E-11	2.05E-10	NE
Explosive							
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	3.32E-06	NE (Kp<=0.01)	NE
RDX	ND	ND	ND	ND	1.71E-06	NE (Kp<=0.01)	NE
Metals							
Aluminum	4.25E-03	2.72E-04	6.43E-07	NE	3.77E-01	NE (Kp<=0.01)	NE
Beryllium	ND	ND	ND	ND	5.59E-06	NE (Kp<=0.01)	NE
Cadmium	ND	ND	ND	NE	ND	ND	ND
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Lead	ND	ND	ND	ND	1.04E-03	NE (Kp<=0.01)	NE
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Nickel	ND	ND	ND	ND	8.74E-03	NE (Kp<=0.01)	NE
Silver	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Vanadium	1.78E-05	1.14E-06	2.69E-09	NE	9.44E-05	NE (Kp<=0.01)	NE
Non-Metallic Anion							
Perchlorate	2.13E-08	1.36E-09	3.22E-12	NE	9.78E-06	NE (Kp<=0.01)	NE
Pesticides							
Aldrin	ND	ND	ND	ND	2.20E-08	NE (Kp<=0.01)	NE
alpha-BHC	ND	ND	ND	ND	2.66E-08	3.25E-09	NE
beta-BHC	ND	ND	ND	ND	1.89E-08	2.31E-09	NE
delta-BHC	ND	ND	ND	ND	1.61E-08	1.32E-09	NE
Semi-Volatile Organics							
2,6-Dinitrotoluene	ND	ND	ND	ND	2.17E-06	NE (Kp<=0.01)	NE
Benzo(a)pyrene	3.84E-08	3.20E-08	5.81E-12	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	3.04E-05	3.78E-06	NE
Volatile Organics							
1,2-Dichloroethane	ND	ND	ND	ND	1.05E-05	4.82E-06	1.83E-04
Trichloroethene	ND	ND	ND	ND	2.45E-05	3.26E-05	4.28E-04

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-83
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 35C - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Loughorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
Dioxin/Furan										
2,3,7,8-TCDD	8.2E-06	3.2E-06	2.7E-10	NE	7.4E-06	6.2E-05	NE	1.1E-05	6.9E-05	8.0E-05
Explosive										
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	3.3E-08	NE (Kp<=0.01)	NE	NA	3.3E-08	3.3E-08
RDX	ND	ND	ND	ND	1.9E-07	NE (Kp<=0.01)	NE	NA	1.9E-07	1.9E-07
Metals										
Aluminum	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Beryllium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Cadmium	ND	ND	ND	NE	ND	ND	ND	NA	NA	NA
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Nickel	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Silver	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Vanadium	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Non-Metallic Anion										
Perchlorate	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Pesticides										
Aldrin	ND	ND	ND	ND	3.7E-07	NE (Kp<=0.01)	NE	NA	3.7E-07	3.7E-07
alpha-BHC	ND	ND	ND	ND	1.7E-07	2.1E-08	NE	NA	1.9E-07	1.9E-07
beta-BHC	ND	ND	ND	ND	3.4E-08	4.6E-09	NE	NA	3.9E-08	3.9E-08
delta-BHC	ND	ND	ND	ND	2.9E-08	4.7E-09	NE	NA	3.4E-08	3.4E-08
Semi-Volatile Organics										
2,6-Dinitrotoluene	ND	ND	ND	ND	1.5E-06	NE (Kp<=0.01)	NE	NA	1.5E-06	1.5E-06
Benzo(a)pyrene	2.8E-07	2.6E-07	5.1E-15	NE	ND	ND	ND	5.4E-07	NA	5.4E-07
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	4.3E-07	2.8E-07	NE	NA	7.0E-07	7.0E-07
Volatile Organics										
1,2-Dichloroethane	ND	ND	ND	ND	9.5E-07	4.4E-07	4.8E-06	NA	6.2E-06	6.2E-06
Trichloroethene	ND	ND	ND	ND	2.7E-07	3.6E-07	7.3E-07	NA	1.4E-06	1.4E-06
Totals	8.5E-06	3.4E-06	2.7E-10	0.0E+00	1.1E-05	6.3E-05	5.5E-06	1.2E-05	8.0E-05	9.1E-05

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-84
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 35C - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
Dioxin/Furan										
2,3,7,8-TCDD	8.98	3.45	0.00	NE	8.13	67.30	NE	12.43	75.43	87.86
Explosive										
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	0.04	NE (Kp<=0.01)	NE	0.00	0.04	0.04
RDX	ND	ND	ND	ND	0.21	NE (Kp<=0.01)	NE	0.00	0.21	0.21
Metals										
Aluminum	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Beryllium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Cadmium	ND	ND	ND	NE	ND	ND	ND	0.00	0.00	NA
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Nickel	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Silver	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Vanadium	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Non-Metallic Anion										
Perchlorate	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Pesticides										
Aldrin	ND	ND	ND	ND	0.41	NE (Kp<=0.01)	NE	0.00	0.41	0.41
alpha-BHC	ND	ND	ND	ND	0.18	0.02	NE	0.00	0.21	0.21
beta-BHC	ND	ND	ND	ND	0.04	0.00	NE	0.00	0.04	0.04
delta-BHC	ND	ND	ND	ND	0.03	0.01	NE	0.00	0.04	0.04
Semi-Volatile Organics										
2,6-Dinitrotoluene	ND	ND	ND	ND	1.61	NE (Kp<=0.01)	NE	0.00	1.61	1.61
Benzo(a)pyrene	0.31	0.29	0.00	NE	ND	ND	ND	0.59	0.00	0.59
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	0.47	0.30	NE	0.00	0.77	0.77
Volatile Organics										
1,2-Dichloroethane	ND	ND	ND	ND	1.04	0.48	5.22	0.00	6.74	6.74
Trichloroethene	ND	ND	ND	ND	0.29	0.39	0.80	0.00	1.48	1.48
Totals	9.3	3.7	0.0	0.0	12.4	68.5	6.0	13.0	87.0	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-85
SET 1 - RME
Summary of Exposure Doses (Nontcancer Effects)
Future Maintenance Worker - Site 35C - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	1.53E-10	2.94E-11	2.32E-14	NE	1.39E-10	5.74E-10	NE
Explosive							
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	9.30E-06	NE (Kp<=0.01)	NE
RDX	ND	ND	ND	ND	4.79E-06	NE (Kp<=0.01)	NE
Metals							
Aluminum	1.57E-02	1.00E-03	2.37E-06	NE	1.06E+00	NE (Kp<=0.01)	NE
Beryllium	ND	ND	ND	ND	1.57E-05	NE (Kp<=0.01)	NE
Cadmium	1.57E-06	1.00E-08	2.37E-10	NE	ND	ND	ND
Chromium	ND	ND	ND	ND	4.21E-01	NE (Kp<=0.01)	NE
Lead	ND	ND	ND	ND	2.92E-03	NE (Kp<=0.01)	NE
Manganese	ND	ND	ND	ND	1.37E-02	NE (Kp<=0.01)	NE
Nickel	ND	ND	ND	ND	2.45E-02	NE (Kp<=0.01)	NE
Silver	ND	ND	ND	ND	1.17E-02	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	1.31E-03	NE (Kp<=0.01)	NE
Vanadium	4.99E-05	3.19E-06	7.54E-09	NE	2.64E-04	NE (Kp<=0.01)	NE
Non-Metallic Anion							
Perchlorate	5.96E-08	3.81E-09	9.01E-12	NE	2.74E-05	NE (Kp<=0.01)	NE
Pesticides							
Aldrin	ND	ND	ND	ND	6.16E-08	NE (Kp<=0.01)	NE
alpha-BHC	ND	ND	ND	ND	7.44E-08	9.09E-09	NE
beta-BHC	ND	ND	ND	ND	5.28E-08	6.46E-09	NE
delta-BHC	ND	ND	ND	ND	4.50E-08	3.69E-09	NE
Semi-Volatile Organics							
2,6-Dinitrotoluene	ND	ND	ND	ND	6.07E-06	NE (Kp<=0.01)	NE
Benzo(a)pyrene	1.08E-07	8.95E-08	1.63E-11	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	8.51E-05	1.06E-05	NE
Volatile Organics							
1,2-Dichloroethane	ND	ND	ND	ND	2.94E-05	1.35E-05	5.14E-04
Trichloroethene	ND	ND	ND	ND	6.85E-05	9.14E-05	1.20E-03

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-86
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 35C - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
Dioxin/Furan										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	NA	NA	NA
Explosive										
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	5.6E-02	NE (Kp<=0.01)	NE	NA	5.6E-02	5.6E-02
RDX	ND	ND	ND	ND	1.6E-03	NE (Kp<=0.01)	NE	NA	1.6E-03	1.6E-03
Metals										
Aluminum	1.6E-02	1.0E-02	6.8E-04	NE	1.1E+00	NE (Kp<=0.01)	NE	2.6E-02	1.1E+00	1.1E+00
Beryllium	ND	ND	ND	ND	7.8E-03	NE (Kp<=0.01)	NE	NA	7.8E-03	7.8E-03
Cadmium	1.6E-03	4.0E-04	1.2E-06	NE	ND	ND	ND	2.0E-03	NA	2.0E-03
Chromium	ND	ND	ND	ND	2.8E-01	NE (Kp<=0.01)	NE	NA	2.8E-01	2.8E-01
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	ND	ND	ND	ND	2.9E-01	NE (Kp<=0.01)	NE	NA	2.9E-01	2.9E-01
Nickel	ND	ND	ND	ND	1.2E+00	NE (Kp<=0.01)	NE	NA	1.2E+00	1.2E+00
Silver	ND	ND	ND	ND	2.3E+00	NE (Kp<=0.01)	NE	NA	2.3E+00	2.3E+00
Thallium	ND	ND	ND	ND	1.6E+01	NE (Kp<=0.01)	NE	NA	1.6E+01	1.6E+01
Vanadium	7.1E-03	1.8E-02	1.5E-04	NE	3.8E-02	NE (Kp<=0.01)	NE	2.5E-02	3.8E-02	6.3E-02
Non-Metallic Anion										
Perchlorate	6.6E-05	4.2E-06	NTV	NE	3.0E-02	NE (Kp<=0.01)	NE	7.0E-05	3.0E-02	3.1E-02
Pesticides										
Aldrin	ND	ND	ND	ND	2.1E-03	NE (Kp<=0.01)	NE	NA	2.1E-03	2.1E-03
alpha-BHC	ND	ND	ND	ND	9.3E-06	1.2E-06	NE	NA	1.0E-05	1.0E-05
beta-BHC	ND	ND	ND	ND	NTV	NTV	NE	NA	NA	NA
delta-BHC	ND	ND	ND	ND	1.5E-04	2.5E-05	NE	NA	1.7E-04	1.7E-04
Semi-Volatile Organics										
2,6-Dinitrotoluene	ND	ND	ND	ND	6.1E-03	NE (Kp<=0.01)	NE	NA	6.1E-03	6.1E-03
Benzo(a)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	4.3E-03	2.8E-03	NE	NA	7.0E-03	7.0E-03
Volatile Organics										
1,2-Dichloroethane	ND	ND	ND	ND	9.8E-04	4.5E-04	1.0E-01	NA	1.0E-01	1.0E-01
Trichloroethene	ND	ND	ND	ND	1.1E-02	1.5E-02	NTV	NA	2.7E-02	2.7E-02
Totals	2.4E-02	2.8E-02	8.3E-04	0.0E+00	2.2E+01	1.8E-02	1.0E-01	5.3E-02	2.2E+01	2.2E+01

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-87
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 35C - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
Dioxin/Furan										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	0.00	0.00	NA
Explosive										
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	0.25	NE (Kp<=0.01)	NE	0.00	0.25	0.25
RDX	ND	ND	ND	ND	0.01	NE (Kp<=0.01)	NE	0.00	0.01	0.01
Metals										
Aluminum	0.07	0.05	0.00	NE	4.82	NE (Kp<=0.01)	NE	0.12	4.82	4.94
Beryllium	ND	ND	ND	ND	0.04	NE (Kp<=0.01)	NE	0.00	0.04	0.04
Cadmium	0.01	0.00	0.00	NE	ND	ND	ND	0.01	0.00	0.01
Chromium	ND	ND	ND	ND	1.28	NE (Kp<=0.01)	NE	0.00	1.28	1.28
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	ND	ND	ND	ND	1.33	NE (Kp<=0.01)	NE	0.00	1.33	1.33
Nickel	ND	ND	ND	ND	5.58	NE (Kp<=0.01)	NE	0.00	5.58	5.58
Silver	ND	ND	ND	ND	10.71	NE (Kp<=0.01)	NE	0.00	10.71	10.71
Thallium	ND	ND	ND	ND	74.76	NE (Kp<=0.01)	NE	0.00	74.76	74.76
Vanadium	0.03	0.08	0.00	NE	0.17	NE (Kp<=0.01)	NE	0.11	0.17	0.29
Non-Metallic Anion										
Perchlorate	0.00	0.00	NTV	NE	0.14	NE (Kp<=0.01)	NE	0.00	0.14	0.14
Pesticides										
Aldrin	ND	ND	ND	ND	0.01	NE (Kp<=0.01)	NE	0.00	0.01	0.01
alpha-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
beta-BHC	ND	ND	ND	ND	NTV	NTV	NE	0.00	0.00	NA
delta-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
Semi-Volatile Organics										
2,6-Dinitrotoluene	ND	ND	ND	ND	0.03	NE (Kp<=0.01)	NE	0.00	0.03	0.03
Benzo(a)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	0.02	0.01	NE	0.00	0.03	0.03
Volatile Organics										
1,2-Dichloroethane	ND	ND	ND	ND	0.00	0.00	0.47	0.00	0.48	0.48
Trichloroethene	ND	ND	ND	ND	0.05	0.07	NTV	0.00	0.12	0.12
Totals	0.1	0.1	0.0	0.0	99.2	0.1	0.5	0.2	99.8	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-38
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 35C - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	5.48E-11	1.05E-11	8.28E-15	NE	4.95E-11	2.05E-10	NE
Explosive							
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	3.32E-06	NE (Kp<=0.01)	NE
RDX	ND	ND	ND	ND	1.71E-06	NE (Kp<=0.01)	NE
Metals							
Aluminum	5.60E-03	3.59E-04	8.47E-07	NE	3.77E-01	NE (Kp<=0.01)	NE
Beryllium	ND	ND	ND	ND	5.59E-06	NE (Kp<=0.01)	NE
Cadmium	5.59E-07	3.58E-09	8.45E-11	NE	ND	ND	ND
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Lead	ND	ND	ND	ND	1.04E-03	NE (Kp<=0.01)	NE
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Nickel	ND	ND	ND	ND	8.74E-03	NE (Kp<=0.01)	NE
Silver	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Vanadium	1.78E-05	1.14E-06	2.69E-09	NE	9.44E-05	NE (Kp<=0.01)	NE
Non-Metallic Anion							
Perchlorate	2.13E-08	1.36E-09	3.22E-12	NE	9.78E-06	NE (Kp<=0.01)	NE
Pesticides							
Aldrin	ND	ND	ND	ND	2.20E-08	NE (Kp<=0.01)	NE
alpha-BHC	ND	ND	ND	ND	2.66E-08	3.25E-09	NE
beta-BHC	ND	ND	ND	ND	1.89E-08	2.31E-09	NE
delta-BHC	ND	ND	ND	ND	1.61E-08	1.32E-09	NE
Semi-Volatile Organics							
2,6-Dinitrotoluene	ND	ND	ND	ND	2.17E-06	NE (Kp<=0.01)	NE
Benzo(a)pyrene	3.84E-08	3.20E-08	5.81E-12	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	3.04E-05	3.78E-06	NE
Volatile Organics							
1,2-Dichloroethane	ND	ND	ND	ND	1.05E-05	4.82E-06	1.83E-04
Trichloroethene	ND	ND	ND	ND	2.45E-05	3.26E-05	4.28E-04

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-89
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 35C - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Kernack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
Dioxin/Furan										
2,3,7,8-TCDD	8.2E-06	3.2E-06	2.7E-10	NE	7.4E-06	6.2E-05	NE	1.1E-05	6.9E-05	8.0E-05
Explosive										
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	3.3E-08	NE (Kp<=0.01)	NE	NA	3.3E-08	3.3E-08
RDX	ND	ND	ND	ND	1.9E-07	NE (Kp<=0.01)	NE	NA	1.9E-07	1.9E-07
Metals										
Aluminum	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Beryllium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Cadmium	NTV	NTV	1.5E-10	NE	ND	ND	ND	1.5E-10	NA	1.5E-10
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Nickel	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Silver	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Vanadium	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Non-Metallic Anion										
Perchlorate	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Pesticides										
Aldrin	ND	ND	ND	ND	3.7E-07	NE (Kp<=0.01)	NE	NA	3.7E-07	3.7E-07
alpha-BHC	ND	ND	ND	ND	1.7E-07	2.1E-08	NE	NA	1.9E-07	1.9E-07
beta-BHC	ND	ND	ND	ND	3.4E-08	4.6E-09	NE	NA	3.9E-08	3.9E-08
delta-BHC	ND	ND	ND	ND	2.9E-08	4.7E-09	NE	NA	3.4E-08	3.4E-08
Semi-Volatile Organics										
2,6-Dinitrotoluene	ND	ND	ND	ND	1.5E-06	NE (Kp<=0.01)	NE	NA	1.5E-06	1.5E-06
Benzo(a)pyrene	2.8E-07	2.6E-07	5.1E-15	NE	ND	ND	ND	5.4E-07	NA	5.4E-07
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	4.3E-07	2.8E-07	NE	NA	7.0E-07	7.0E-07
Volatile Organics										
1,2-Dichloroethane	ND	ND	ND	ND	9.5E-07	4.4E-07	4.8E-06	NA	6.2E-06	6.2E-06
Trichloroethene	ND	ND	ND	ND	2.7E-07	3.6E-07	7.3E-07	NA	1.4E-06	1.4E-06
Totals	8.5E-06	3.4E-06	4.3E-10	0.0E+00	1.1E-05	6.3E-05	5.5E-06	1.2E-05	8.0E-05	9.1E-05

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-90
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 35C - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
Dioxin/Furan										
2,3,7,8-TCDD	8.98	3.45	0.00	NE	8.13	67.30	NE	12.43	75.43	87.86
Explosive										
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	0.04	NE (Kp<=0.01)	NE	0.00	0.04	0.04
RDX	ND	ND	ND	ND	0.21	NE (Kp<=0.01)	NE	0.00	0.21	0.21
Metals										
Aluminum	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Beryllium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Cadmium	NTV	NTV	0.00	NE	ND	ND	ND	0.00	0.00	0.00
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Nickel	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Silver	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Vanadium	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Non-Metallic Anion										
Perchlorate	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Pesticides										
Aldrin	ND	ND	ND	ND	0.41	NE (Kp<=0.01)	NE	0.00	0.41	0.41
alpha-BHC	ND	ND	ND	ND	0.18	0.02	NE	0.00	0.21	0.21
beta-BHC	ND	ND	ND	ND	0.04	0.00	NE	0.00	0.04	0.04
delta-BHC	ND	ND	ND	ND	0.03	0.01	NE	0.00	0.04	0.04
Semi-Volatile Organics										
2,6-Dinitrotoluene	ND	ND	ND	ND	1.61	NE (Kp<=0.01)	NE	0.00	1.61	1.61
Benzo(a)pyrene	0.31	0.29	0.00	NE	ND	ND	ND	0.59	0.00	0.59
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	0.47	0.30	NE	0.00	0.77	0.77
Volatile Organics										
1,2-Dichloroethane	ND	ND	ND	ND	1.04	0.48	5.22	0.00	6.74	6.74
Trichloroethene	ND	ND	ND	ND	0.29	0.39	0.80	0.00	1.48	1.48
Totals	9.3	3.7	0.0	0.0	12.4	68.5	6.0	13.0	87.0	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-91
Set 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Current Trespasser - Site 46 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	8.29E-13	8.70E-14	1.25E-16	NE
<i>Metals</i>				
Aluminum	1.84E-03	6.45E-05	2.79E-07	NE
Antimony	ND	ND	ND	NE
Barium	4.68E-05	1.64E-06	7.07E-09	NE
Cadmium	ND	ND	ND	NE
Lead	ND	ND	ND	NE
Manganese	7.09E-05	2.48E-06	1.07E-08	NE
Mercury	ND	ND	ND	NE
Vanadium	5.65E-06	1.98E-07	8.54E-10	NE
<i>Semi-Volatile Organics</i>				
Benzo(a)anthracene	1.17E-07	5.31E-08	1.76E-11	NE
Benzo(a)pyrene	4.11E-07	1.87E-07	6.21E-11	NE
Benzo(b)fluoranthene	8.81E-07	4.01E-07	1.33E-10	NE
Benzo(k)fluoranthene	1.15E-07	5.24E-08	1.74E-11	NE
Dibenzo(a,h)anthracene	7.44E-08	3.38E-08	1.12E-11	NE
Indeno(1,2,3-cd)pyrene	3.13E-07	1.42E-07	4.73E-11	NE

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-92
Set 1 - RME
Summary of Hazard Quotients and Indices
Current Trespasser - Site 46 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total Hazard Index
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NA
<i>Metals</i>					
Aluminum	1.8E-03	6.5E-04	8.0E-05	NE	2.6E-03
Antimony	ND	ND	ND	NE	NA
Barium	6.7E-04	3.3E-04	1.4E-05	NE	1.0E-03
Cadmium	ND	ND	ND	NE	NA
Lead	ND	ND	ND	NE	NA
Manganese	1.5E-03	8.8E-04	2.1E-04	NE	2.6E-03
Mercury	ND	ND	ND	NE	NA
Vanadium	8.1E-04	1.1E-03	1.7E-05	NE	1.9E-03
<i>Semi-Volatile Organics</i>					
Benzo(a)anthracene	NTV	NTV	NTV	NE	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	NA
Benzo(k)fluoranthene	NTV	NTV	NTV	NE	NA
Dibenzo(a,h)anthracene	NTV	NTV	NTV	NE	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NE	NA
Totals	4.8E-03	2.9E-03	3.3E-04	0.0E+00	8.1E-03

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-93
Set 1 - RME
Percent Contribution to the Total Hazard Index
Current Trespasser - Site 46 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NA
<i>Metals</i>					
Aluminum	22.76	7.97	0.98	NE	31.72
Antimony	ND	ND	ND	NE	NA
Barium	8.25	4.12	0.18	NE	12.55
Cadmium	ND	ND	ND	NE	NA
Lead	ND	ND	ND	NE	NA
Manganese	18.62	10.86	2.65	NE	32.14
Mercury	ND	ND	ND	NE	NA
Vanadium	9.97	13.42	0.21	NE	23.60
<i>Semi-Volatile Organics</i>					
Benzo(a)anthracene	NTV	NTV	NTV	NE	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	NA
Benzo(k)fluoranthene	NTV	NTV	NTV	NE	NA
Dibenzo(a,h)anthracene	NTV	NTV	NTV	NE	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NE	NA
Totals	59.6	36.4	4.0	0.0	100.0

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-94
Set 1 -RME
Summary of Exposure Doses (Cancer Effects)
Current Trespasser - Site 46 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	1.42E-13	1.49E-14	2.15E-17	NE
<i>Metals</i>				
Aluminum	3.16E-04	1.11E-05	4.78E-08	NE
Antimony	ND	ND	ND	NE
Barium	NC	NC	NC	NE
Cadmium	ND	ND	ND	NE
Lead	ND	ND	ND	NE
Manganese	NC	NC	NC	NE
Mercury	ND	ND	ND	NE
Vanadium	9.69E-07	3.39E-08	1.46E-10	NE
<i>Semi-Volatile Organics</i>				
Benzo(a)anthracene	2.00E-08	9.10E-09	3.02E-12	NE
Benzo(a)pyrene	7.05E-08	3.21E-08	1.07E-11	NE
Benzo(b)fluoranthene	1.51E-07	6.87E-08	2.28E-11	NE
Benzo(k)fluoranthene	1.98E-08	8.99E-09	2.99E-12	NE
Dibenzo(a,h)anthracene	1.27E-08	5.80E-09	1.93E-12	NE
Indeno(1,2,3-cd)pyrene	5.37E-08	2.44E-08	8.12E-12	NE

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-95
Set 1 -RME
Summary of Potential Cancer Risks
Current Trespasser - Site 46 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total Potential Cancer Risk
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	2.1E-08	4.5E-09	7.1E-13	NE	2.6E-08
<i>Metals</i>					
Aluminum	NTV	NTV	NTV	NE	NA
Antimony	ND	ND	ND	NE	NA
Barium	NC	NC	NC	NE	NA
Cadmium	ND	ND	ND	NE	NA
Lead	ND	ND	ND	NE	NA
Manganese	NC	NC	NC	NE	NA
Mercury	ND	ND	ND	NE	NA
Vanadium	NTV	NTV	NTV	NE	NA
<i>Semi-Volatile Organics</i>					
Benzo(a)anthracene	1.5E-08	7.5E-09	2.7E-16	NE	2.2E-08
Benzo(a)pyrene	5.1E-07	2.6E-07	9.4E-15	NE	7.8E-07
Benzo(b)fluoranthene	1.1E-07	5.6E-08	2.0E-12	NE	1.7E-07
Benzo(k)fluoranthene	1.4E-09	7.4E-10	2.6E-14	NE	2.2E-09
Dibenzo(a,h)anthracene	9.3E-08	4.8E-08	1.7E-15	NE	1.4E-07
Indeno(1,2,3-cd)pyrene	3.9E-08	2.0E-08	7.1E-16	NE	5.9E-08
Totals	7.9E-07	4.0E-07	2.8E-12	0.0E+00	1.2E-06

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-96
Set 1 -RME
Percent Contribution to the Total Potential Cancer Risk
Current Trespasser - Site 46 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	1.79	0.37	0.00	NE	2.16
<i>Metals</i>					
Aluminum	NTV	NTV	NTV	NE	NA
Antimony	ND	ND	ND	NE	NA
Barium	NC	NC	NC	NE	NA
Cadmium	ND	ND	ND	NE	NA
Lead	ND	ND	ND	NE	NA
Manganese	NC	NC	NC	NE	NA
Mercury	ND	ND	ND	NE	NA
Vanadium	NTV	NTV	NTV	NE	NA
<i>Semi-Volatile Organics</i>					
Benzo(a)anthracene	1.22	0.63	0.00	NE	1.85
Benzo(a)pyrene	43.09	22.03	0.00	NE	65.11
Benzo(b)fluoranthene	9.23	4.72	0.00	NE	13.95
Benzo(k)fluoranthene	0.12	0.06	0.00	NE	0.18
Dibenzo(a,h)anthracene	7.80	3.99	0.00	NE	11.78
Indeno(1,2,3-cd)pyrene	3.28	1.68	0.00	NE	4.96
Totals	66.5	33.5	0.0	0.0	100.0

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-97
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 46 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	4.14E-12	7.95E-13	6.26E-16	NE	6.21E-11	2.57E-10	NE
Explosive							
RDX	ND	ND	ND	ND	3.13E-06	NE (Kp<=0.01)	NE
Metals							
Aluminum	9.22E-03	5.90E-04	1.39E-06	NE	7.83E-01	NE (Kp<=0.01)	NE
Antimony	ND	ND	ND	NE	6.16E-04	NE (Kp<=0.01)	NE
Barium	2.34E-04	1.50E-05	3.53E-08	NE	3.65E-02	NE (Kp<=0.01)	NE
Beryllium	ND	ND	ND	ND	7.44E-04	NE (Kp<=0.01)	NE
Cadmium	ND	ND	ND	NE	1.96E-04	NE (Kp<=0.01)	NE
Chromium	ND	ND	ND	NE	4.60E-02	NE (Kp<=0.01)	NE
Lead	ND	ND	ND	NE	6.59E-03	NE (Kp<=0.01)	NE
Manganese	3.54E-04	2.27E-05	5.36E-08	NE	6.36E-02	NE (Kp<=0.01)	NE
Mercury	ND	ND	ND	NE	ND	ND	ND
Nickel	ND	ND	ND	ND	1.16E-02	NE (Kp<=0.01)	NE
Silver	ND	ND	ND	ND	1.17E-03	NE (Kp<=0.01)	NE
Strontium	ND	ND	ND	ND	1.17E-01	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	1.96E-03	NE (Kp<=0.01)	NE
Vanadium	2.83E-05	1.81E-06	4.27E-09	NE	1.37E-03	NE (Kp<=0.01)	NE
Non-Metallic Anion							
Perchlorate	ND	ND	ND	ND	2.94E-04	NE (Kp<=0.01)	NE
Pesticides							
Aldrin	ND	ND	ND	ND	6.16E-08	NE (Kp<=0.01)	NE
alpha-BHC	ND	ND	ND	ND	7.44E-08	9.09E-09	NE
beta-BHC	ND	ND	ND	ND	5.28E-08	6.46E-09	NE
delta-BHC	ND	ND	ND	ND	4.50E-08	3.69E-09	NE
Semi-Volatile Organics							
2,4-Dinitrotoluene	ND	ND	ND	ND	7.14E-07	NE (Kp<=0.01)	NE
Benzo(a)anthracene	5.84E-07	4.85E-07	8.82E-11	NE	ND	ND	ND
Benzo(a)pyrene	2.05E-06	1.71E-06	3.11E-10	NE	ND	ND	ND
Benzo(b)fluoranthene	4.40E-06	3.66E-06	6.66E-10	NE	ND	ND	ND
Benzo(k)fluoranthene	5.76E-07	4.79E-07	8.71E-11	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	2.64E-04	3.28E-05	NE
Dibenz(o,a,h)anthracene	3.72E-07	3.09E-07	5.62E-11	NE	ND	ND	ND
Indeno(1,2,3-cd)pyrene	1.57E-06	1.30E-06	2.37E-10	NE	ND	ND	ND
Volatile Organics							
Methylene chloride	ND	ND	ND	ND	1.37E-05	NE (Kp<=0.01)	2.40E-04

Site46_riskcales(0_to_0.5)_new.XLS Future Maintenance Wkr (46)

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Table C-97
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 46 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Tetrachloroethene	ND	ND	ND	ND	2.35E-05	9.40E-05	4.11E-04
Trichlorofluoromethane	ND	ND	ND	ND	2.05E-05	3.02E-05	3.60E-04
Vinyl Chloride	ND	ND	ND	ND	6.95E-06	NE (Kp<=0.01)	1.22E-04

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-98
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 46 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
Dioxin/Furan										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	NA	NA	NA
Explosive										
RDX	ND	ND	ND	ND	1.0E-03	NE (Kp<=0.01)	NE	NA	1.0E-03	1.0E-03
Metals										
Aluminum	9.2E-03	5.9E-03	4.0E-04	NE	7.8E-01	NE (Kp<=0.01)	NE	1.6E-02	7.8E-01	8.0E-01
Antimony	ND	ND	ND	NE	1.5E+00	NE (Kp<=0.01)	NE	NA	1.5E+00	1.5E+00
Barium	3.3E-03	3.1E-03	7.2E-05	NE	5.2E-01	NE (Kp<=0.01)	NE	6.5E-03	5.2E-01	5.3E-01
Beryllium	ND	ND	ND	ND	3.7E-01	NE (Kp<=0.01)	NE	NA	3.7E-01	3.7E-01
Cadmium	ND	ND	ND	NE	3.9E-01	NE (Kp<=0.01)	NE	NA	3.9E-01	3.9E-01
Chromium	ND	ND	ND	ND	3.1E-02	NE (Kp<=0.01)	NE	NA	3.1E-02	3.1E-02
Lead	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	7.5E-03	8.0E-03	1.1E-03	NE	1.4E+00	NE (Kp<=0.01)	NE	1.7E-02	1.4E+00	1.4E+00
Mercury	ND	ND	ND	NE	ND	ND	NE	NA	NA	NA
Nickel	ND	ND	ND	ND	5.8E-01	NE (Kp<=0.01)	NE	NA	5.8E-01	5.8E-01
Silver	ND	ND	ND	ND	2.3E-01	NE (Kp<=0.01)	NE	NA	2.3E-01	2.3E-01
Strontium	ND	ND	ND	ND	2.0E-01	NE (Kp<=0.01)	NE	NA	2.0E-01	2.0E-01
Thallium	ND	ND	ND	ND	2.4E+01	NE (Kp<=0.01)	NE	NA	2.4E+01	2.4E+01
Vanadium	4.0E-03	9.9E-03	8.5E-05	NE	2.0E-01	NE (Kp<=0.01)	NE	1.4E-02	2.0E-01	2.1E-01
Non-Metallic Anion										
Perchlorate	ND	ND	ND	ND	3.3E-01	NE (Kp<=0.01)	NE	NA	3.3E-01	3.3E-01
Pesticides										
Aldrin	ND	ND	ND	ND	2.1E-03	NE (Kp<=0.01)	NE	NA	2.1E-03	2.1E-03
alpha-BHC	ND	ND	ND	ND	9.3E-06	1.2E-06	NE	NA	1.0E-05	1.0E-05
beta-BHC	ND	ND	ND	ND	NTV	NTV	NE	NA	NA	NA
deta-BHC	ND	ND	ND	ND	1.5E-04	2.5E-05	NE	NA	1.7E-04	1.7E-04
Semi-Volatile Organics										
2,4-Dinitrotoluene	ND	ND	ND	ND	3.6E-04	NE (Kp<=0.01)	NE	NA	3.6E-04	3.6E-04
Benzo(a)anthracene	NTV	NTV	NTV	NE	ND	ND	NE	NA	NA	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	ND	ND	NE	NA	NA	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	ND	ND	NE	NA	NA	NA
Benzo(k)fluoranthene	NTV	NTV	NTV	NE	ND	ND	NE	NA	NA	NA
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	1.3E-02	8.6E-03	NE	NA	2.2E-02	2.2E-02
Dibenzo(a,h)anthracene	NTV	NTV	NTV	NE	ND	ND	NE	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NE	ND	ND	NE	NA	NA	NA
Volatile Organics										
Methylene chloride	ND	ND	ND	ND	2.3E-04	NE (Kp<=0.01)	8.0E-05	NA	3.1E-04	3.1E-04
Tetrachloroethene	ND	ND	ND	ND	2.3E-03	9.4E-03	8.4E-04	NA	1.3E-02	1.3E-02
Trichlorofluoromethane	ND	ND	ND	ND	6.8E-05	4.4E-04	5.1E-04	NA	1.0E-03	1.0E-03
Vinyl Chloride	ND	ND	ND	ND	2.3E-03	NE (Kp<=0.01)	1.2E-03	NA	3.5E-03	3.5E-03

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Table C-98
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 46 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
Totals	2.4E-02	2.7E-02	1.6E-03	0.0E+00	3.1E+01	1.8E-02	2.6E-03	5.3E-02	3.1E+01	3.1E+01

NE ($K_p \leq 0.01$) = Based on EPA 6 guidance, COPCs with a $K_p \leq 0.01$ were not evaluated for dermal contact while showering (EPA, 1995)

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-99
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 46 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
Dioxin/Furan										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	0.00	0.00	NA
Explosive										
RDX	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
Metals										
Aluminum	0.03	0.02	0.00	NE	2.52	NE (Kp<=0.01)	NE	0.05	2.52	2.57
Antimony	ND	ND	ND	NE	4.96	NE (Kp<=0.01)	NE	0.00	4.96	4.96
Barium	0.01	0.01	0.00	NE	1.68	NE (Kp<=0.01)	NE	0.02	1.68	1.70
Beryllium	ND	ND	ND	NE	1.20	NE (Kp<=0.01)	NE	0.00	1.20	1.20
Cadmium	ND	ND	ND	NE	1.26	NE (Kp<=0.01)	NE	0.00	1.26	1.26
Chromium	ND	ND	ND	ND	0.10	NE (Kp<=0.01)	NE	0.00	0.10	0.10
Lead	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	0.02	0.03	0.00	NE	4.35	NE (Kp<=0.01)	NE	0.05	4.35	4.41
Mercury	ND	ND	ND	NE	ND	ND	ND	0.00	0.00	NA
Nickel	ND	ND	ND	NE	1.87	NE (Kp<=0.01)	NE	0.00	1.87	1.87
Silver	ND	ND	ND	ND	0.76	NE (Kp<=0.01)	NE	0.00	0.76	0.76
Strontium	ND	ND	ND	ND	0.63	NE (Kp<=0.01)	NE	0.00	0.63	0.63
Thallium	ND	ND	ND	ND	78.69	NE (Kp<=0.01)	NE	0.00	78.69	78.69
Vanadium	0.01	0.03	0.00	NE	0.63	NE (Kp<=0.01)	NE	0.05	0.63	0.67
Non-Metallic Anion										
Perchlorate	ND	ND	ND	ND	1.05	NE (Kp<=0.01)	NE	0.00	1.05	1.05
Pesticides										
Aldrin	ND	ND	ND	ND	0.01	NE (Kp<=0.01)	NE	0.00	0.01	0.01
alpha-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
beta-BHC	ND	ND	ND	ND	NTV	NTV	NE	0.00	0.00	NA
delta-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
Semi-Volatile Organics										
2,4-Dinitrotoluene	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
Benzo(a)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Benzo(k)fluoranthene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	0.04	0.03	NE	0.00	0.07	0.07
Dibenzo(a,h)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Volatile Organics										
Methylene chloride	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	0.00	0.00	0.00	0.00
Tetrachloroethene	ND	ND	ND	ND	0.01	0.03	0.00	0.00	0.04	0.04
Trichlorofluoromethane	ND	ND	ND	ND	0.00	0.00	0.00	0.00	0.00	0.00
Vinyl Chloride	ND	ND	ND	ND	0.01	NE (Kp<=0.01)	0.00	0.00	0.01	0.01

Site46_riskcalcs(0_to_0.5)_new.XLS Future Maintenance Wkr (46)

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Table C-99
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 46 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater		Total Groundwater	Total Soil	Total
							Groundwater	Soil			
Totals	0.1	0.1	0.0	0.0	99.8	0.1	0.0	0.2	99.8	0.2	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-100
Set 1 - RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 46 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	1.48E-12	2.84E-13	2.24E-16	NE	2.22E-11	9.18E-11	NE
Explosive							
RDX	ND	ND	ND	ND	1.12E-06	NE (Kp<=0.01)	NE
Metals							
Aluminum	3.29E-03	2.11E-04	4.98E-07	NE	2.80E-01	NE (Kp<=0.01)	NE
Antimony	ND	ND	ND	NE	2.20E-04	NE (Kp<=0.01)	NE
Barium	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE
Beryllium	ND	ND	ND	ND	2.66E-04	NE (Kp<=0.01)	NE
Cadmium	ND	ND	ND	NE	6.99E-05	NE (Kp<=0.01)	NE
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Lead	ND	ND	ND	NE	2.35E-03	NE (Kp<=0.01)	NE
Manganese	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE
Mercury	ND	ND	ND	NE	ND	ND	ND
Nickel	ND	ND	ND	ND	4.16E-03	NE (Kp<=0.01)	NE
Silver	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Strontium	ND	ND	ND	ND	4.19E-02	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Vanadium	1.01E-05	6.46E-07	1.53E-09	NE	4.89E-04	NE (Kp<=0.01)	NE
Non-Metallic Anion							
Perchlorate	ND	ND	ND	ND	1.05E-04	NE (Kp<=0.01)	NE
Pesticides							
Aldrin	ND	ND	ND	ND	2.20E-08	NE (Kp<=0.01)	NE
alpha-BHC	ND	ND	ND	ND	2.66E-08	3.25E-09	NE
beta-BHC	ND	ND	ND	ND	1.89E-08	2.31E-09	NE
delta-BHC	ND	ND	ND	ND	1.61E-08	1.32E-09	NE
Semi-Volatile Organics							
2,4-Dinitrotoluene	ND	ND	ND	ND	2.55E-07	NE (Kp<=0.01)	NE
Benzo(a)anthracene	2.08E-07	1.73E-07	3.15E-11	NE	ND	ND	ND
Benzo(a)pyrene	7.34E-07	6.11E-07	1.11E-10	NE	ND	ND	ND
Benzo(b)fluoranthene	1.57E-06	1.31E-06	2.38E-10	NE	ND	ND	ND
Benzo(k)fluoranthene	2.06E-07	1.71E-07	3.11E-11	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	9.44E-05	1.17E-05	NE
Dibenzo(a,h)anthracene	1.33E-07	1.10E-07	2.01E-11	NE	ND	ND	ND
Indeno(1,2,3-cd)pyrene	5.59E-07	4.65E-07	8.45E-11	NE	ND	ND	ND
Volatile Organics							
Methylene chloride	ND	ND	ND	ND	4.89E-06	NE (Kp<=0.01)	8.56E-05
Tetrachloroethene	ND	ND	ND	ND	8.39E-06	3.36E-05	1.47E-04
Trichlorofluoromethane	ND	ND	ND	ND	7.34E-06	1.08E-05	1.28E-04
Vinyl Chloride	ND	ND	ND	ND	2.48E-06	NE (Kp<=0.01)	4.34E-05

Table C-100
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 46 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).
 NC = Not classified as a carcinogen.
 ND = Not detected in associated media or not selected as a chemical of potential concern.
 NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-101
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 46 - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
Dioxin/Furan										
2,3,7,8-TCDD	2.2E-07	8.5E-08	7.4E-12	NE	3.3E-06	2.8E-05	NE	3.1E-07	3.1E-05	3.1E-05
Explosive										
RDX	ND	ND	ND	ND	1.2E-07	NE (Kp<=0.01)	NE	NA	1.2E-07	1.2E-07
Metals										
Aluminum	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Antimony	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Barium	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Beryllium	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Cadmium	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Chromium	ND	ND	ND	NE	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Lead	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Mercury	ND	ND	ND	NE	ND	ND	ND	NA	NA	NA
Nickel	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Silver	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Strontium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Vanadium	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Non-Metallic Anion										
Perchlorate	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Pesticides										
Aldrin	ND	ND	ND	ND	3.7E-07	NE (Kp<=0.01)	NE	NA	3.7E-07	3.7E-07
alpha-BHC	ND	ND	ND	ND	1.7E-07	2.1E-08	NE	NA	1.9E-07	1.9E-07
beta-BHC	ND	ND	ND	ND	3.4E-08	4.6E-09	NE	NA	3.9E-08	3.9E-08
delta-BHC	ND	ND	ND	ND	2.9E-08	4.7E-09	NE	NA	3.4E-08	3.4E-08
Semi-Volatile Organics										
2,4-Dinitrotoluene	ND	ND	ND	ND	1.7E-07	NE (Kp<=0.01)	NE	NA	1.7E-07	1.7E-07
Benzo(a)anthracene	1.5E-07	1.4E-07	2.8E-15	NE	ND	ND	ND	2.9E-07	NA	2.9E-07
Benzo(a)pyrene	5.4E-06	5.0E-06	9.8E-14	NE	ND	ND	ND	1.0E-05	NA	1.0E-05
Benzo(b)fluoranthene	1.1E-06	1.1E-06	2.1E-11	NE	ND	ND	ND	2.2E-06	NA	2.2E-06
Benzo(k)fluoranthene	1.5E-08	1.4E-08	2.7E-13	NE	ND	ND	ND	2.9E-08	NA	2.9E-08
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	1.3E-06	8.6E-07	NE	NA	2.2E-06	2.2E-06
Dibenzo(a,h)anthracene	9.7E-07	9.1E-07	1.8E-14	NE	ND	ND	ND	1.9E-06	NA	1.9E-06
Indeno(1,2,3-cd)pyrene	4.1E-07	3.8E-07	7.4E-15	NE	ND	ND	ND	7.9E-07	NA	7.9E-07
Volatile Organics										
Methylene chloride	ND	ND	ND	ND	3.7E-08	NE (Kp<=0.01)	4.0E-08	NA	7.7E-08	7.7E-08
Tetrachloroethene	ND	ND	ND	ND	4.4E-07	1.7E-06	8.5E-11	NA	2.2E-06	2.2E-06
Trichlorofluoromethane	ND	ND	ND	ND	NTV	NTV	NTV	NA	NA	NA
Vinyl Chloride	ND	ND	ND	ND	3.7E-06	NE (Kp<=0.01)	3.8E-07	NA	4.1E-06	4.1E-06

Table C-101
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 46 - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
Totals	8.3E-06	7.6E-06	2.9E-11	0.0E+00	9.7E-06	3.0E-05	4.2E-07	1.6E-05	4.0E-05	5.6E-05

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-102
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 46 - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
Dioxin/Furan										
2,3,7,8-TCDD	0.39	0.15	0.00	NE	5.92	48.99	NE	0.55	54.90	55.45
Explosive										
RDX	ND	ND	ND	ND	0.22	NE (Kp<=0.01)	NE	0.00	0.22	0.22
Metals										
Aluminum	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Antimony	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Barium	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Beryllium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Cadmium	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Lead	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Mercury	ND	ND	ND	NE	ND	ND	ND	0.00	0.00	NA
Nickel	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Silver	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Strontium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Vanadium	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Non-Metallic Anion										
Perchlorate	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Pesticides										
Aldrin	ND	ND	ND	ND	0.67	NE (Kp<=0.01)	NE	0.00	0.67	0.67
alpha-BHC	ND	ND	ND	ND	0.30	0.04	NE	0.00	0.34	0.34
beta-BHC	ND	ND	ND	ND	0.06	0.01	NE	0.00	0.07	0.07
delta-BHC	ND	ND	ND	ND	0.05	0.01	NE	0.00	0.06	0.06
Semi-Volatile Organics										
2,4-Dinitrotoluene	ND	ND	ND	ND	0.31	NE (Kp<=0.01)	NE	0.00	0.31	0.31
Benzo(a)anthracene	0.27	0.25	0.00	NE	ND	ND	ND	0.52	0.00	0.52
Benzo(a)pyrene	9.53	8.91	0.00	NE	ND	ND	ND	18.43	0.00	18.43
Benzo(b)fluoranthene	2.04	1.91	0.00	NE	ND	ND	ND	3.95	0.00	3.95
Benzo(k)fluoranthene	0.03	0.02	0.00	NE	ND	ND	ND	0.05	0.00	0.05
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	2.35	1.54	NE	0.00	3.88	3.88
Dibenzo(a,h)anthracene	1.72	1.61	0.00	NE	ND	ND	ND	3.34	0.00	3.34
Indeno(1,2,3-cd)pyrene	0.73	0.68	0.00	NE	ND	ND	ND	1.40	0.00	1.40
Volatile Organics										
Methylene chloride	ND	ND	ND	ND	0.07	NE (Kp<=0.01)	0.07	0.00	0.14	0.14
Tetrachloroethene	ND	ND	ND	ND	0.78	3.10	0.00	0.00	3.88	3.88
Trichlorofluoromethane	ND	ND	ND	ND	NTV	NTV	NTV	0.00	0.00	NA
Vinyl Chloride	ND	ND	ND	ND	6.62	NE (Kp<=0.01)	0.68	0.00	7.30	7.30

Site46_riskcalcs(0_to_0.5)_new.XLS Future Maintenance Wkr (46)

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Table C-102
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 46 - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total	
								Soil	Groundwater
Totals	14.7	13.5	0.0	0.0	17.3	53.7	0.8	28.2	71.8
									100.0

NE ($K_p \leq 0.01$) = Based on EPA 6 guidance, COPCs with a $K_p \leq 0.01$ were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-103
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 46 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	4.14E-12	7.95E-13	6.26E-16	NE	6.21E-11	2.57E-10	NE
Explosive							
RDX	ND	ND	ND	ND	3.13E-06	NE (Kp<=0.01)	NE
Metals							
Aluminum	7.89E-03	5.05E-04	1.19E-06	NE	7.83E-01	NE (Kp<=0.01)	NE
Antimony	4.08E-06	2.61E-07	6.16E-10	NE	6.16E-04	NE (Kp<=0.01)	NE
Barium	2.02E-03	1.29E-04	3.05E-07	NE	3.65E-02	NE (Kp<=0.01)	NE
Beryllium	ND	ND	ND	ND	7.44E-04	NE (Kp<=0.01)	NE
Cadmium	7.03E-06	4.50E-08	1.06E-09	NE	1.96E-04	NE (Kp<=0.01)	NE
Chromium	ND	ND	ND	ND	4.60E-02	NE (Kp<=0.01)	NE
Lead	9.30E-04	5.95E-05	1.41E-07	NE	6.59E-03	NE (Kp<=0.01)	NE
Manganese	2.47E-04	1.58E-05	3.74E-08	NE	6.36E-02	NE (Kp<=0.01)	NE
Mercury	5.48E-07	3.51E-08	8.28E-11	NE	ND	ND	ND
Nickel	ND	ND	ND	ND	1.16E-02	NE (Kp<=0.01)	NE
Silver	ND	ND	ND	ND	1.17E-03	NE (Kp<=0.01)	NE
Strontium	ND	ND	ND	ND	1.17E-01	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	1.96E-03	NE (Kp<=0.01)	NE
Vanadium	2.83E-05	1.81E-06	4.27E-09	NE	1.37E-03	NE (Kp<=0.01)	NE
Non-Metallic Anion							
Perchlorate	ND	ND	ND	ND	2.94E-04	NE (Kp<=0.01)	NE
Pesticides							
Aldrin	ND	ND	ND	ND	6.16E-08	NE (Kp<=0.01)	NE
alpha-BHC	ND	ND	ND	ND	7.44E-08	9.09E-09	NE
beta-BHC	ND	ND	ND	ND	5.28E-08	6.46E-09	NE
delta-BHC	ND	ND	ND	ND	4.50E-08	3.69E-09	NE
Semi-Volatile Organics							
2,4-Dinitrotoluene	ND	ND	ND	ND	7.14E-07	NE (Kp<=0.01)	NE
Benzo(a)anthracene	2.25E-06	1.87E-06	3.40E-10	NE	ND	ND	ND
Benzo(a)pyrene	2.05E-06	1.71E-06	3.11E-10	NE	ND	ND	ND
Benzo(b)fluoranthene	4.40E-06	3.66E-06	6.66E-10	NE	ND	ND	ND
Benzo(k)fluoranthene	3.70E-07	3.08E-07	5.60E-11	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	2.64E-04	3.28E-05	NE
Dibenzo(a,h)anthracene	3.72E-07	3.09E-07	5.62E-11	NE	ND	ND	ND
Indeno(1,2,3-cd)pyrene	1.57E-06	1.30E-06	2.37E-10	NE	ND	ND	ND
Volatiles Organics							
Methylene chloride	ND	ND	ND	ND	1.37E-05	NE (Kp<=0.01)	2.40E-04

Site46_riskcalcs(0_to_2)_rme.XLS Future Maintenance Wkr (46)

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Table C-103
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 46 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Tetrachloroethene	ND	ND	ND	ND	2.35E-05	9.40E-05	4.11E-04
Trichlorofluoromethane	ND	ND	ND	ND	2.05E-05	3.02E-05	3.60E-04
Vinyl Chloride	ND	ND	ND	ND	6.95E-06	NE (Kp<=0.01)	1.22E-04

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-104
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 46 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
Dioxin/Furan										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	NA	NA	NA
Explosive										
RDX	ND	ND	ND	ND	1.0E-03	NE (Kp<=0.01)	NE	NA	1.0E-03	1.0E-03
Metals										
Aluminum	7.9E-03	5.1E-03	3.4E-04	NE	7.8E-01	NE (Kp<=0.01)	NE	1.3E-02	7.8E-01	8.0E-01
Antimony	1.0E-02	4.3E-03	1.2E-06	NE	1.5E+00	NE (Kp<=0.01)	NE	1.5E-02	1.5E+00	1.6E+00
Barium	2.9E-02	2.6E-02	6.2E-04	NE	5.2E-01	NE (Kp<=0.01)	NE	5.6E-02	5.2E-01	5.8E-01
Beryllium	ND	ND	ND	ND	3.7E-01	NE (Kp<=0.01)	NE	NA	3.7E-01	3.7E-01
Cadmium	7.0E-03	1.8E-03	5.3E-06	ND	3.9E-01	NE (Kp<=0.01)	NE	8.8E-03	3.9E-01	4.0E-01
Chromium	ND	ND	ND	ND	3.1E-02	NE (Kp<=0.01)	NE	NA	3.1E-02	3.1E-02
Lead	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	5.3E-03	5.6E-03	7.5E-04	NE	1.4E+00	NE (Kp<=0.01)	NE	1.2E-02	1.4E+00	1.4E+00
Mercury	1.8E-03	1.7E-03	2.8E-07	NE	ND	NE (Kp<=0.01)	NE	3.5E-03	NA	3.5E-03
Nickel	ND	ND	ND	ND	5.8E-01	NE (Kp<=0.01)	NE	NA	5.8E-01	5.8E-01
Silver	ND	ND	ND	ND	2.3E-01	NE (Kp<=0.01)	NE	NA	2.3E-01	2.3E-01
Strontium	ND	ND	ND	ND	2.0E-01	NE (Kp<=0.01)	NE	NA	2.0E-01	2.0E-01
Thallium	ND	ND	ND	ND	2.4E+01	NE (Kp<=0.01)	NE	NA	2.4E+01	2.4E+01
Vanadium	4.0E-03	9.9E-03	8.5E-05	NE	2.0E-01	NE (Kp<=0.01)	NE	1.4E-02	2.0E-01	2.1E-01
Non-Metallic Anion										
Perchlorate	ND	ND	ND	ND	3.3E-01	NE (Kp<=0.01)	NE	NA	3.3E-01	3.3E-01
Pesticides										
Aldrin	ND	ND	ND	ND	2.1E-03	NE (Kp<=0.01)	NE	NA	2.1E-03	2.1E-03
alpha-BHC	ND	ND	ND	ND	9.3E-06	1.2E-06	NE	NA	1.0E-05	1.0E-05
beta-BHC	ND	ND	ND	ND	NTV	NTV	NE	NA	NA	NA
delta-BHC	ND	ND	ND	ND	1.5E-04	2.5E-05	NE	NA	1.7E-04	1.7E-04
Semi-Volatile Organics										
2,4-Dinitrotoluene	ND	ND	ND	ND	3.6E-04	NE (Kp<=0.01)	NE	NA	3.6E-04	3.6E-04
Benzo(a)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Benzo(k)fluoranthene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	1.3E-02	8.6E-03	NE	NA	2.2E-02	2.2E-02
Dibenzo(a,h)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Volatile Organics										
Methylene chloride	ND	ND	ND	ND	2.3E-04	NE (Kp<=0.01)	8.0E-05	NA	3.1E-04	3.1E-04
Tetrachloroethene	ND	ND	ND	ND	2.3E-03	9.4E-03	8.4E-04	NA	1.3E-02	1.3E-02
Trichlorofluoromethane	ND	ND	ND	ND	6.8E-05	4.4E-04	5.1E-04	NA	1.0E-03	1.0E-03
Vinyl Chloride	ND	ND	ND	ND	2.3E-03	NE (Kp<=0.01)	1.2E-03	NA	3.5E-03	3.5E-03

Site46_riskcalcs(0_to_2)_rme.XLS Future Maintenance Wkr (46)

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Table C-104
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 46 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
Totals	6.5E-02	5.5E-02	1.8E-03	0.0E+00	3.1E+01	1.8E-02	2.6E-03	1.2E-01	3.1E+01	3.1E+01

NE ($K_p \leq 0.01$) = Based on EPA 6 guidance, COPCs with a $K_p \leq 0.01$ were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-105
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 46 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	0.00	0.00	NA
<i>Explosive</i>										
RDX	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
<i>Metals</i>										
Aluminum	0.03	0.02	0.00	NE	2.51	NE (Kp<=0.01)	NE	0.04	2.51	2.56
Antimony	0.03	0.01	0.00	NE	4.95	NE (Kp<=0.01)	NE	0.05	4.95	4.99
Barium	0.09	0.08	0.00	NE	1.67	NE (Kp<=0.01)	NE	0.18	1.67	1.85
Beryllium	ND	ND	ND	ND	1.19	NE (Kp<=0.01)	NE	0.00	1.19	1.19
Cadmium	0.02	0.01	0.00	NE	1.26	NE (Kp<=0.01)	NE	0.03	1.26	1.28
Chromium	ND	ND	ND	ND	0.10	NE (Kp<=0.01)	NE	0.00	0.10	0.10
Lead	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	0.02	0.02	0.00	NE	4.34	NE (Kp<=0.01)	NE	0.04	4.34	4.38
Mercury	0.01	0.01	0.00	NE	ND	ND	ND	0.01	0.00	0.01
Nickel	ND	ND	ND	ND	1.87	NE (Kp<=0.01)	NE	0.00	1.87	1.87
Silver	ND	ND	ND	ND	0.75	NE (Kp<=0.01)	NE	0.00	0.75	0.75
Strontium	ND	ND	ND	ND	0.63	NE (Kp<=0.01)	NE	0.00	0.63	0.63
Thallium	ND	ND	ND	ND	78.52	NE (Kp<=0.01)	NE	0.00	78.52	78.52
Vanadium	0.01	0.03	0.00	NE	0.63	NE (Kp<=0.01)	NE	0.05	0.63	0.67
<i>Non-Metallic Anion</i>										
Perchlorate	ND	ND	ND	ND	1.05	NE (Kp<=0.01)	NE	0.00	1.05	1.05
<i>Pesticides</i>										
Aldrin	ND	ND	ND	ND	0.01	NE (Kp<=0.01)	NE	0.00	0.01	0.01
alpha-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
beta-BHC	ND	ND	ND	ND	NTV	NTV	NE	0.00	0.00	NA
deta-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
<i>Semi-Volatile Organics</i>										
2,4-Dinitrotoluene	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
Benzo(a)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Benzo(k)fluoranthene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	0.04	0.03	NE	0.00	0.07	0.07
Dibenzo(a,h)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
<i>Volatile Organics</i>										
Methylene chloride	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	0.00	0.00	0.00	0.00
Tetrachloroethene	ND	ND	ND	ND	0.01	0.03	0.00	0.00	0.04	0.04
Trichlorofluoromethane	ND	ND	ND	ND	0.00	0.00	0.00	0.00	0.00	0.00
Vinyl Chloride	ND	ND	ND	ND	0.01	NE (Kp<=0.01)	0.00	0.00	0.01	0.01

Table C-105
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 46 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total	
								Soil	Groundwater
Totals	0.2	0.2	0.0	0.0	99.5	0.1	0.0	0.4	99.6
									100.0

NE ($K_p \leq 0.01$) = Based on EPA 6 guidance, COPCs with a $K_p \leq 0.01$ were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-106
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 46 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	1.48E-12	2.84E-13	2.24E-16	NE	2.22E-11	9.18E-11	NE
Explosive							
RDX	ND	ND	ND	ND	1.12E-06	NE (Kp<=0.01)	NE
Metals							
Aluminum	2.82E-03	1.80E-04	4.26E-07	NE	2.80E-01	NE (Kp<=0.01)	NE
Antimony	1.46E-06	9.32E-08	2.20E-10	NE	2.20E-04	NE (Kp<=0.01)	NE
Barium	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE
Beryllium	ND	ND	ND	ND	2.66E-04	NE (Kp<=0.01)	NE
Cadmium	2.51E-06	1.61E-08	3.79E-10	NE	6.99E-05	NE (Kp<=0.01)	NE
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Lead	3.32E-04	2.12E-05	5.02E-08	NE	2.35E-03	NE (Kp<=0.01)	NE
Manganese	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE
Mercury	NC	NC	NC	NE	ND	ND	ND
Nickel	ND	ND	ND	ND	4.16E-03	NE (Kp<=0.01)	NE
Silver	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Strontium	ND	ND	ND	ND	4.19E-02	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Vanadium	1.01E-05	6.46E-07	1.53E-09	NE	4.89E-04	NE (Kp<=0.01)	NE
Non-Metallic Anion							
Perchlorate	ND	ND	ND	ND	1.05E-04	NE (Kp<=0.01)	NE
Pesticides							
Aldrin	ND	ND	ND	ND	2.20E-08	NE (Kp<=0.01)	NE
alpha-BHC	ND	ND	ND	ND	2.66E-08	3.25E-09	NE
beta-BHC	ND	ND	ND	ND	1.89E-08	2.31E-09	NE
delta-BHC	ND	ND	ND	ND	1.61E-08	1.32E-09	NE
Semi-Volatile Organics							
2,4-Dinitrotoluene	ND	ND	ND	ND	2.55E-07	NE (Kp<=0.01)	NE
Benzo(a)anthracene	8.04E-07	6.69E-07	1.22E-10	NE	ND	ND	ND
Benzo(a)pyrene	7.34E-07	6.11E-07	1.11E-10	NE	ND	ND	ND
Benzo(b)fluoranthene	1.57E-06	1.31E-06	2.38E-10	NE	ND	ND	ND
Benzo(k)fluoranthene	1.32E-07	1.10E-07	2.00E-11	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	9.44E-05	1.17E-05	NE
Dibenz(a,h)anthracene	1.33E-07	1.10E-07	2.01E-11	NE	ND	ND	ND
Indeno(1,2,3-cd)pyrene	5.59E-07	4.65E-07	8.45E-11	NE	ND	ND	ND
Volatile Organics							
Methylene chloride	ND	ND	ND	ND	4.89E-06	NE (Kp<=0.01)	8.56E-05
Tetrachloroethene	ND	ND	ND	ND	8.39E-06	3.36E-05	1.47E-04
Trichlorofluoromethane	ND	ND	ND	ND	7.34E-06	1.08E-05	1.28E-04
Vinyl Chloride	ND	ND	ND	ND	2.48E-06	NE (Kp<=0.01)	4.34E-05

Table C-106
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 46 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-107
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 46 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
Dioxin/Furan										
2,3,7,8-TCDD	2.2E-07	8.5E-08	7.4E-12	NE	3.3E-06	2.8E-05	NE	3.1E-07	3.1E-05	3.1E-05
Explosive										
RDX	ND	ND	ND	ND	1.2E-07	NE (Kp<=0.01)	NE	NA	1.2E-07	1.2E-07
Metals										
Aluminum	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Antimony	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Barium	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Beryllium	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Cadmium	NTV	NTV	6.8E-10	ND	NTV	NE (Kp<=0.01)	NE	6.8E-10	NA	6.8E-10
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Lead	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Mercury	NC	NC	NC	NE	ND	ND	ND	NA	NA	NA
Nickel	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Silver	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Strontium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Vanadium	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Non-Metallic Anion										
Perchlorate	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Pesticides										
Aldrin	ND	ND	ND	ND	3.7E-07	NE (Kp<=0.01)	NE	NA	3.7E-07	3.7E-07
alpha-BHC	ND	ND	ND	ND	1.7E-07	2.1E-08	NE	NA	1.9E-07	1.9E-07
beta-BHC	ND	ND	ND	ND	3.4E-08	4.6E-09	NE	NA	3.9E-08	3.9E-08
delta-BHC	ND	ND	ND	ND	2.9E-08	4.7E-09	NE	NA	3.4E-08	3.4E-08
Semi-Volatile Organics										
2,4-Dinitrotoluene	ND	ND	ND	ND	1.7E-07	NE (Kp<=0.01)	NE	NA	1.7E-07	1.7E-07
Benzo(a)anthracene	5.9E-07	5.5E-07	1.1E-14	NE	ND	ND	ND	1.1E-06	NA	1.1E-06
Benzo(a)pyrene	5.4E-06	5.0E-06	9.8E-14	NE	ND	ND	ND	1.0E-05	NA	1.0E-05
Benzo(b)fluoranthene	1.1E-06	1.1E-06	2.1E-11	NE	ND	ND	ND	2.2E-06	NA	2.2E-06
Benzo(k)fluoranthene	9.7E-09	9.0E-09	1.8E-13	NE	ND	ND	ND	1.9E-08	NA	1.9E-08
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	1.3E-06	8.6E-07	NE	2.2E-06	NA	2.2E-06
Dibenzo(a,h)anthracene	9.7E-07	9.1E-07	1.8E-14	NE	ND	ND	ND	1.9E-06	NA	1.9E-06
Indeno(1,2,3-cd)pyrene	4.1E-07	3.8E-07	7.4E-15	NE	ND	ND	ND	7.9E-07	NA	7.9E-07
Volatile Organics										
Methylene chloride	ND	ND	ND	ND	3.7E-08	NE (Kp<=0.01)	4.0E-08	NA	7.7E-08	7.7E-08
Tetrachloroethene	ND	ND	ND	ND	4.4E-07	1.7E-06	8.5E-11	NA	2.2E-06	2.2E-06
Trichlorofluoromethane	ND	ND	ND	ND	NTV	NTV	NTV	NA	NA	NA
Vinyl Chloride	ND	ND	ND	ND	3.7E-06	NE (Kp<=0.01)	3.8E-07	NA	4.1E-06	4.1E-06

Site46_riskcalcs(0_to_2)_rme.xls Future Maintenance Wkr (46)

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Table C-107
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 46 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
Totals	8.7E-06	8.0E-06	7.1E-10	0.0E+00	9.7E-06	3.0E-05	4.2E-07	1.7E-05	4.0E-05	5.7E-05

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-108
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 46 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
Dioxin/Furan										
2,3,7,8-TCDD	0.39	0.15	0.00	NE	5.83	48.27	NE	0.54	54.10	54.64
Explosive										
RDX	ND	ND	ND	ND	0.22	NE (Kp<=0.01)	NE	0.00	0.22	0.22
Metals										
Aluminum	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Antimony	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Barium	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Beryllium	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Cadmium	NTV	NTV	0.00	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	0.00
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Lead	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Mercury	NC	NC	NC	NE	ND	ND	ND	0.00	0.00	NA
Nickel	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Silver	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Strontium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Vanadium	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Non-Metallic Anion										
Perchlorate	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Pesticides										
Aldrin	ND	ND	ND	ND	0.66	NE (Kp<=0.01)	NE	0.00	0.66	0.66
alpha-BHC	ND	ND	ND	ND	0.29	0.04	NE	0.00	0.33	0.33
beta-BHC	ND	ND	ND	ND	0.06	0.01	NE	0.00	0.07	0.07
delta-BHC	ND	ND	ND	ND	0.05	0.01	NE	0.00	0.06	0.06
Semi-Volatile Organics										
2,4-Dinitrotoluene	ND	ND	ND	ND	0.30	NE (Kp<=0.01)	NE	0.00	0.30	0.30
Benzo(a)anthracene	1.03	0.96	0.00	NE	ND	ND	ND	1.99	0.00	1.99
Benzo(a)pyrene	9.39	8.78	0.00	NE	ND	ND	ND	18.16	0.00	18.16
Benzo(b)fluoranthene	2.01	1.88	0.00	NE	ND	ND	ND	3.89	0.00	3.89
Benzo(k)fluoranthene	0.02	0.02	0.00	NE	ND	ND	ND	0.03	0.00	0.03
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	2.31	1.51	NE	0.00	3.83	3.83
Dibenz(a,h)anthracene	1.70	1.59	0.00	NE	ND	ND	ND	3.29	0.00	3.29
Indeno(1,2,3-cd)pyrene	0.72	0.67	0.00	NE	ND	ND	ND	1.38	0.00	1.38
Volatiles Organics										
Methylene chloride	ND	ND	ND	ND	0.06	NE (Kp<=0.01)	0.07	0.00	0.13	0.13
Tetrachloroethene	ND	ND	ND	ND	0.76	3.06	0.00	0.00	3.82	3.82
Trichlorofluoromethane	ND	ND	ND	ND	NTV	NTV	NTV	0.00	0.00	NA
Vinyl Chloride	ND	ND	ND	ND	6.52	NE (Kp<=0.01)	0.67	0.00	7.19	7.19

Table C-108
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 46 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering		Inhalation of Volatiles While Showering		Total Groundwater	Total
						Groundwater	Groundwater	Groundwater	Groundwater		
Totals	15.2	14.0	0.0	0.0	17.1	52.9	0.7	29.3	70.7	100.0	

NE ($K_p < 0.01$) = Based on EPA 6 guidance, COPCs with a $K_p \leq 0.01$ were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-109
Set 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Current Trespasser - Site 47 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	5.04E-13	5.29E-14	7.62E-17	NE
<i>Metals</i>				
Aluminum	2.10E-03	7.37E-05	3.18E-07	NE
Antimony	1.49E-06	5.20E-08	2.25E-10	NE
Arsenic	1.08E-06	1.13E-07	1.63E-10	NE
Barium	8.16E-04	2.86E-05	1.23E-07	NE
Cadmium	ND	ND	ND	NE
Manganese	1.11E-04	3.90E-06	1.68E-08	NE
Mercury	1.55E-07	5.41E-09	2.34E-11	NE
Vanadium	6.66E-06	2.33E-07	1.01E-09	NE
<i>Non-Metallic Anion</i>				
Perchlorate	2.94E-05	1.03E-06	4.44E-09	NE
<i>Semi-Volatile Organics</i>				
2,6-Dinitrotoluene	1.29E-07	4.52E-08	1.95E-11	NE
Benzo(a)anthracene	4.70E-07	2.14E-07	7.10E-11	NE
Benzo(a)pyrene	4.50E-07	2.05E-07	6.80E-11	NE
Benzo(b)fluoranthene	6.85E-07	3.12E-07	1.04E-10	NE

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-110
Set 1 - RME
Summary of Hazard Quotients and Indices
Current Trespasser - Site 47 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total Hazard Index
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NA
<i>Metals</i>					
Aluminum	2.1E-03	7.4E-04	9.1E-05	NE	2.9E-03
Antimony	3.7E-03	8.7E-04	4.5E-07	NE	4.6E-03
Arsenic	3.6E-03	4.0E-04	NTV	NE	4.0E-03
Barium	1.2E-02	5.8E-03	2.5E-04	NE	1.8E-02
Cadmium	ND	ND	ND	NE	NA
Manganese	2.4E-03	1.4E-03	3.4E-04	NE	4.1E-03
Mercury	5.2E-04	2.6E-04	7.8E-08	NE	7.7E-04
Vanadium	9.5E-04	1.3E-03	2.0E-05	NE	2.3E-03
<i>Non-Metallic Anion</i>					
Perchlorate	3.3E-02	1.1E-03	NTV	NE	3.4E-02
<i>Semi-Volatile Organics</i>					
2,6-Dinitrotoluene	1.3E-04	5.3E-05	1.3E-07	NE	1.8E-04
Benzo(a)anthracene	NTV	NTV	NTV	NE	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	NA
Totals	5.8E-02	1.2E-02	7.0E-04	0.0E+00	7.0E-02

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-111
Set 1 - RME
Percent Contribution to the Total Hazard Index
Current Trespasser - Site 47 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NA
<i>Metals</i>					
Aluminum	2.99	1.05	0.13	NE	4.17
Antimony	5.28	1.23	0.00	NE	6.52
Arsenic	5.11	0.57	NTV	NE	5.68
Barium	16.58	8.29	0.36	NE	25.23
Cadmium	ND	ND	ND	NE	NA
Manganese	3.37	1.97	0.48	NE	5.82
Mercury	0.73	0.37	0.00	NE	1.10
Vanadium	1.35	1.82	0.03	NE	3.20
<i>Non-Metallic Anion</i>					
Perchlorate	46.40	1.62	NTV	NE	48.02
<i>Semi-Volatile Organics</i>					
2,6-Dinitrotoluene	0.18	0.08	0.00	NE	0.26
Benzo(a)anthracene	NTV	NTV	NTV	NE	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	NA
Totals	82.0	17.0	1.0	0.0	100.0

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-112
Set 1 -RME
Summary of Exposure Doses (Cancer Effects)
Current Trespasser - Site 47 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	8.64E-14	9.07E-15	1.31E-17	NE
<i>Metals</i>				
Aluminum	3.61E-04	1.26E-05	5.45E-08	NE
Antimony	2.55E-07	8.91E-09	3.85E-11	NE
Arsenic	1.85E-07	1.94E-08	2.79E-11	NE
Barium	NC	NC	NC	NE
Cadmium	ND	ND	ND	NE
Manganese	NC	NC	NC	NE
Mercury	NC	NC	NC	NE
Vanadium	1.14E-06	4.00E-08	1.73E-10	NE
<i>Non-Metallic Anion</i>				
Perchlorate	5.03E-06	1.76E-07	7.61E-10	NE
<i>Semi-Volatile Organics</i>				
2,6-Dinitrotoluene	2.21E-08	7.75E-09	3.35E-12	NE
Benzo(a)anthracene	8.05E-08	3.66E-08	1.22E-11	NE
Benzo(a)pyrene	7.72E-08	3.51E-08	1.17E-11	NE
Benzo(b)fluoranthene	1.17E-07	5.34E-08	1.78E-11	NE

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-113
Set 1 -RME
Summary of Potential Cancer Risks
Current Trespasser - Site 47 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total Potential Cancer Risk
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	1.3E-08	2.7E-09	4.3E-13	NE	1.6E-08
<i>Metals</i>					
Aluminum	NTV	NTV	NTV	NE	NA
Antimony	NTV	NTV	NTV	NE	NA
Arsenic	2.8E-07	3.1E-08	1.2E-10	NE	3.1E-07
Barium	NC	NC	NC	NE	NA
Cadmium	ND	ND	ND	NE	NA
Manganese	NC	NC	NC	NE	NA
Mercury	NC	NC	NC	NE	NA
Vanadium	NTV	NTV	NTV	NE	NA
<i>Non-Metallic Anion</i>					
Perchlorate	NTV	NTV	NTV	NE	NA
<i>Semi-Volatile Organics</i>					
2,6-Dinitrotoluene	1.5E-08	6.2E-09	NTV	NE	2.1E-08
Benzo(a)anthracene	5.9E-08	3.0E-08	1.1E-15	NE	8.9E-08
Benzo(a)pyrene	5.6E-07	2.9E-07	1.0E-14	NE	8.5E-07
Benzo(b)fluoranthene	8.6E-08	4.4E-08	1.6E-12	NE	1.3E-07
Totals	1.0E-06	4.0E-07	1.2E-10	0.0E+00	1.4E-06

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-114
Set 1 -RME
Percent Contribution to the Total Potential Cancer Risk
Current Trespasser - Site 47 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	0.92	0.19	0.00	NE	1.11
<i>Metals</i>					
Aluminum	NTV	NTV	NTV	NE	NA
Antimony	NTV	NTV	NTV	NE	NA
Arsenic	19.60	2.17	0.01	NE	21.78
Barium	NC	NC	NC	NE	NA
Cadmium	ND	ND	ND	NE	NA
Manganese	NC	NC	NC	NE	NA
Mercury	NC	NC	NC	NE	NA
Vanadium	NTV	NTV	NTV	NE	NA
<i>Non-Metallic Anion</i>					
Perchlorate	NTV	NTV	NTV	NE	NA
<i>Semi-Volatile Organics</i>					
2,6-Dinitrotoluene	1.06	0.44	NTV	NE	1.50
Benzo(a)anthracene	4.16	2.12	0.00	NE	6.28
Benzo(a)pyrene	39.82	20.36	0.00	NE	60.18
Benzo(b)fluoranthene	6.06	3.10	0.00	NE	9.16
Totals	71.6	28.4	0.0	0.0	100.0

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-115
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 47 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	2.52E-12	4.84E-13	3.81E-16	NE	2.82E-11	1.17E-10	NE
Explosive							
2,4,6-Trinitrotoluene	ND	ND	ND	ND	6.65E-05	NE (Kp<=0.01)	NE
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	8.41E-06	NE (Kp<=0.01)	NE
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	9.20E-06	NE (Kp<=0.01)	NE
RDX	ND	ND	ND	ND	6.07E-06	NE (Kp<=0.01)	NE
Metals							
Aluminum	1.05E-02	6.73E-04	1.59E-06	NE	8.41E-01	NE (Kp<=0.01)	NE
Antimony	7.43E-06	4.75E-07	1.12E-09	NE	7.44E-04	NE (Kp<=0.01)	NE
Arsenic	5.39E-06	1.04E-06	8.15E-10	NE	ND	ND	ND
Barium	4.08E-03	2.61E-04	6.17E-07	NE	ND	ND	ND
Beryllium	ND	ND	ND	ND	3.82E-05	NE (Kp<=0.01)	NE
Cadmium	ND	ND	ND	NE	1.96E-03	NE (Kp<=0.01)	NE
Chromium	ND	ND	ND	ND	4.21E-01	NE (Kp<=0.01)	NE
Cobalt	ND	ND	ND	ND	3.04E-03	NE (Kp<=0.01)	NE
Lead	ND	ND	ND	ND	2.43E-03	NE (Kp<=0.01)	NE
Manganese	5.57E-04	3.57E-05	8.42E-08	NE	7.58E-02	NE (Kp<=0.01)	NE
Mercury	7.73E-07	4.95E-08	1.17E-10	NE	ND	ND	ND
Nickel	ND	ND	ND	ND	7.83E-02	NE (Kp<=0.01)	NE
Silver	ND	ND	ND	ND	9.78E-03	NE (Kp<=0.01)	NE
Strontium	ND	ND	ND	ND	1.86E-01	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	9.10E-04	NE (Kp<=0.01)	NE
Tin	ND	ND	ND	ND	1.17E+00	NE (Kp<=0.01)	NE
Vanadium	3.33E-05	2.13E-06	5.03E-09	NE	1.27E-03	NE (Kp<=0.01)	NE
Non-Metallic Anion							
Perchlorate	1.47E-04	9.39E-06	2.22E-08	NE	8.11E-01	NE (Kp<=0.01)	NE
Pesticides							
Aldrin	ND	ND	ND	ND	6.16E-08	NE (Kp<=0.01)	NE
alpha-BHC	ND	ND	ND	ND	7.44E-08	9.09E-09	NE
beta-BHC	ND	ND	ND	ND	5.28E-08	6.46E-09	NE
delta-BHC	ND	ND	ND	ND	4.50E-08	3.69E-09	NE
Semi-Volatile Organics							
2,4-Dinitrotoluene	ND	ND	ND	ND	1.37E-05	NE (Kp<=0.01)	NE
2,6-Dinitrotoluene	6.46E-07	4.13E-07	9.76E-11	NE	1.37E-05	NE (Kp<=0.01)	NE
4-Chloroaniline	ND	ND	ND	ND	1.76E-04	NE (Kp<=0.01)	NE
Benzo(a)anthracene	2.35E-06	1.95E-06	3.55E-10	NE	ND	ND	ND

Site47_riskcalcs(0_to_0.5)_new.XLS Future Maintenance Wkr (47)

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Table C-115
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 47 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Benzo(a)pyrene	2.25E-06	1.87E-06	3.40E-10	NE	ND	ND	ND
Benzo(b)fluoranthene	3.42E-06	2.85E-06	5.18E-10	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	2.05E-04	2.55E-05	NE
Dibenzofuran	ND	ND	ND	ND	1.08E-04	4.27E-05	1.88E-03
Pentachlorophenol	ND	ND	ND	ND	7.73E-05	1.53E-04	NE
<i>Volatiles Organics</i>							
1,1,2-Trichloroethane	ND	ND	ND	ND	4.79E-05	3.53E-05	8.39E-04
1,2,3-Trichlorobenzene	ND	ND	ND	ND	5.48E-06	1.90E-06	9.59E-05
1,1-Dichloroethene	ND	ND	ND	ND	3.15E-04	4.20E-04	5.51E-03
1,2-Dichloroethane	ND	ND	ND	ND	5.58E-05	2.57E-05	9.76E-04
1,2-Dichloropropane	ND	ND	ND	ND	4.50E-06	3.93E-06	7.88E-05
Acetone	ND	ND	ND	ND	2.05E-01	NE (Kp<=0.01)	3.60E+00
Benzene	ND	ND	ND	ND	1.96E-05	1.35E-06	3.42E-04
Chloroform	ND	ND	ND	ND	1.17E-03	9.18E-04	2.05E-02
cis-1,2-Dichloroethene	ND	ND	ND	ND	2.05E-02	NE (Kp<=0.01)	3.58E-01
Methylene chloride	ND	ND	ND	ND	4.89E-05	NE (Kp<=0.01)	8.56E-04
Tetrachloroethene	ND	ND	ND	ND	1.64E-03	6.58E-03	2.88E-02
Trichloroethene	ND	ND	ND	ND	2.88E-01	3.84E-01	5.04E+00
Vinyl Chloride	ND	ND	ND	ND	1.24E-03	NE (Kp<=0.01)	2.17E-02

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-116
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 47 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
Dioxin/Furan										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	NA	NA	NA
Explosive										
2,4,6-Trinitrotoluene	ND	ND	ND	ND	1.3E-01	NE (Kp<=0.01)	NE	NA	1.3E-01	1.3E-01
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	5.0E-02	NE (Kp<=0.01)	NE	NA	5.0E-02	5.0E-02
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	5.5E-02	NE (Kp<=0.01)	NE	NA	5.5E-02	5.5E-02
RDX	ND	ND	ND	ND	2.0E-03	NE (Kp<=0.01)	NE	NA	2.0E-03	2.0E-03
Metals										
Aluminum	1.1E-02	6.7E-03	4.5E-04	NE	8.4E-01	NE (Kp<=0.01)	NE	1.8E-02	8.4E-01	8.6E-01
Antimony	1.9E-02	7.9E-03	2.2E-06	NE	1.9E+00	NE (Kp<=0.01)	NE	2.6E-02	1.9E+00	1.9E+00
Arsenic	1.8E-02	3.6E-03	NTV	NE	ND	ND	ND	2.2E-02	NA	2.2E-02
Barium	5.8E-02	5.3E-02	1.3E-03	NE	ND	ND	ND	1.1E-01	NA	1.1E-01
Beryllium	ND	ND	ND	ND	1.9E-02	NE (Kp<=0.01)	NE	NA	1.9E-02	1.9E-02
Cadmium	ND	ND	ND	ND	3.9E+00	NE (Kp<=0.01)	NE	NA	3.9E+00	3.9E+00
Chromium	ND	ND	ND	ND	2.8E-01	NE (Kp<=0.01)	NE	NA	2.8E-01	2.8E-01
Cobalt	ND	ND	ND	ND	1.5E-01	NE (Kp<=0.01)	NE	NA	1.5E-01	1.5E-01
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	1.2E-02	1.3E-02	1.7E-03	NE	1.6E+00	NE (Kp<=0.01)	NE	2.6E-02	1.6E+00	1.6E+00
Mercury	2.6E-03	2.4E-03	3.9E-07	NE	ND	ND	ND	4.9E-03	NA	4.9E-03
Nickel	ND	ND	ND	ND	3.9E+00	NE (Kp<=0.01)	NE	NA	3.9E+00	3.9E+00
Silver	ND	ND	ND	ND	2.0E+00	NE (Kp<=0.01)	NE	NA	2.0E+00	2.0E+00
Strontium	ND	ND	ND	ND	3.1E-01	NE (Kp<=0.01)	NE	NA	3.1E-01	3.1E-01
Thallium	ND	ND	ND	ND	1.1E+01	NE (Kp<=0.01)	NE	NA	1.1E+01	1.1E+01
Tin	ND	ND	ND	ND	2.0E+00	NE (Kp<=0.01)	NE	NA	2.0E+00	2.0E+00
Vanadium	4.8E-03	1.2E-02	1.0E-04	NE	1.8E-01	NE (Kp<=0.01)	NE	1.7E-02	1.8E-01	2.0E-01
Non-Metallic Anion										
Perchlorate	1.6E-01	1.0E-02	NTV	NE	9.0E+02	NE (Kp<=0.01)	NE	1.7E-01	9.0E+02	9.0E+02
Pesticides										
Aldrin	ND	ND	ND	ND	2.1E-03	NE (Kp<=0.01)	NE	NA	2.1E-03	2.1E-03
alpha-BHC	ND	ND	ND	ND	9.3E-06	1.2E-06	NE	NA	1.0E-05	1.0E-05
beta-BHC	ND	ND	ND	ND	NTV	NTV	NE	NA	NA	NA
delta-BHC	ND	ND	ND	ND	1.5E-04	2.5E-05	NE	NA	1.7E-04	1.7E-04
Semi-Volatile Organics										
2,4-Dinitrotoluene	ND	ND	ND	ND	6.8E-03	NE (Kp<=0.01)	NE	NA	6.8E-03	6.8E-03
2,6-Dinitrotoluene	6.5E-04	4.9E-04	6.5E-07	NE	1.4E-02	NE (Kp<=0.01)	NE	1.1E-03	1.4E-02	1.5E-02
4-Chloroaniline	ND	ND	ND	ND	4.4E-02	NE (Kp<=0.01)	NE	NA	4.4E-02	4.4E-02
Benzo(a)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	1.0E-02	6.7E-03	NE	NA	1.7E-02	1.7E-02
Dibenzofuran	ND	ND	ND	ND	2.7E-02	2.1E-02	NTV	NA	4.8E-02	4.8E-02

Site47_riskcalcs(0_to_0.5)_new.XLS Future Maintenance Wkr (47)

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Table C-116
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 47 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
Pentachlorophenol	ND	ND	ND	ND	2.6E-03	6.7E-03	NE	NA	9.3E-03	9.3E-03
<i>Volatile Organics</i>										
1,1,2-Trichloroethane	ND	ND	ND	ND	1.2E-02	1.1E-02	NTV	NA	2.3E-02	2.3E-02
1,2,3-Trichlorobenzene	ND	ND	ND	ND	1.8E-03	7.9E-04	2.4E-03	NA	5.0E-03	5.0E-03
1,1-Dichloroethene	ND	ND	ND	ND	3.5E-02	4.7E-02	NTV	NA	8.2E-02	8.2E-02
1,2-Dichloroethane	ND	ND	ND	ND	1.9E-03	8.6E-04	2.0E-01	NA	2.0E-01	2.0E-01
1,2-Dichloropropane	ND	ND	ND	ND	5.0E-05	5.9E-05	2.0E-02	NA	2.0E-02	2.0E-02
Acetone	ND	ND	ND	ND	2.1E+00	NE (Kp<=0.01)	6.1E+00	NA	8.1E+00	8.1E+00
Benzene	ND	ND	ND	ND	6.5E-03	4.6E-04	5.7E-02	NA	6.4E-02	6.4E-02
Chloroform	ND	ND	ND	ND	1.2E-01	4.6E-01	6.8E+01	NA	6.9E+01	6.9E+01
cis-1,2-Dichloroethene	ND	ND	ND	ND	2.0E+00	NE (Kp<=0.01)	4.5E-01	NA	2.5E+00	2.5E+00
Methylene chloride	ND	ND	ND	ND	8.2E-04	NE (Kp<=0.01)	2.9E-04	NA	1.1E-03	1.1E-03
Tetrachloroethene	ND	ND	ND	ND	1.6E-01	6.6E-01	5.9E-02	NA	8.8E-01	8.8E-01
Trichloroethene	ND	ND	ND	ND	4.8E+01	6.4E+01	NTV	NA	1.1E+02	1.1E+02
Vinyl Chloride	ND	ND	ND	ND	4.1E-01	NE (Kp<=0.01)	2.2E-01	NA	6.3E-01	6.3E-01
Totals	2.9E-01	1.1E-01	3.5E-03	0.0E+00	9.8E+02	6.5E+01	7.5E+01	4.0E-01	1.1E+03	1.1E+03

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-117
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 47 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	0.00	0.00	NA
<i>Explosive</i>										
2,4,6-Trinitrotoluene	ND	ND	ND	ND	0.01	NE (Kp<=0.01)	NE	0.00	0.01	0.01
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
RDX	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
<i>Metals</i>										
Aluminum	0.00	0.00	0.00	NE	0.07	NE (Kp<=0.01)	NE	0.00	0.07	0.08
Antimony	0.00	0.00	0.00	NE	0.17	NE (Kp<=0.01)	NE	0.00	0.17	0.17
Arsenic	0.00	0.00	NTV	NE	ND	ND	ND	0.00	0.00	0.00
Barium	0.01	0.00	0.00	NE	ND	ND	ND	0.01	0.00	0.01
Beryllium	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
Cadmium	ND	ND	ND	NE	0.35	NE (Kp<=0.01)	NE	0.00	0.35	0.35
Chromium	ND	ND	ND	ND	0.02	NE (Kp<=0.01)	NE	0.00	0.02	0.02
Cobalt	ND	ND	ND	ND	0.01	NE (Kp<=0.01)	NE	0.00	0.01	0.01
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	0.00	0.00	0.00	NE	0.14	NE (Kp<=0.01)	NE	0.00	0.14	0.15
Mercury	0.00	0.00	0.00	NE	ND	ND	ND	0.00	0.00	0.00
Nickel	ND	ND	ND	ND	0.35	NE (Kp<=0.01)	NE	0.00	0.35	0.35
Silver	ND	ND	ND	ND	0.17	NE (Kp<=0.01)	NE	0.00	0.17	0.17
Strontium	ND	ND	ND	ND	0.03	NE (Kp<=0.01)	NE	0.00	0.03	0.03
Thallium	ND	ND	ND	ND	1.01	NE (Kp<=0.01)	NE	0.00	1.01	1.01
Tin	ND	ND	ND	ND	0.17	NE (Kp<=0.01)	NE	0.00	0.17	0.17
Vanadium	0.00	0.00	0.00	NE	0.02	NE (Kp<=0.01)	NE	0.00	0.02	0.02
<i>Non-Metallic Anion</i>										
Perchlorate	0.01	0.00	NTV	NE	80.20	NE (Kp<=0.01)	NE	0.02	80.20	80.22
<i>Pesticides</i>										
Aldrin	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
alpha-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
beta-BHC	ND	ND	ND	ND	NTV	NTV	NE	0.00	0.00	NA
delta-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
<i>Semi-Volatile Organics</i>										
2,4-Dinitrotoluene	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
2,6-Dinitrotoluene	0.00	0.00	0.00	NE	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
4-Chloroaniline	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
Benzo(a)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
Dibenzofuran	ND	ND	ND	ND	0.00	0.00	NTV	0.00	0.00	0.00

Site47_riskcalcs(0_to_0.5)_new.XLS Future Maintenance Wkr (47)

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Table C-117
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 47 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
Pentachlorophenol	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
<i>Volatile Organics</i>										
1,1,2-Trichloroethane	ND	ND	ND	ND	0.00	0.00	NTV	0.00	0.00	0.00
1,2,3-Trichlorobenzene	ND	ND	ND	ND	0.00	0.00	0.00	0.00	0.00	0.00
1,1-Dichloroethene	ND	ND	ND	ND	0.00	0.00	NTV	0.00	0.01	0.01
1,2-Dichloroethane	ND	ND	ND	ND	0.00	0.00	0.02	0.00	0.02	0.02
1,2-Dichloropropane	ND	ND	ND	ND	0.00	0.00	0.00	0.00	0.00	0.00
Acetone	ND	ND	ND	ND	0.18	NE (Kp<=0.01)	0.54	0.00	0.73	0.73
Benzene	ND	ND	ND	ND	0.00	0.00	0.01	0.00	0.01	0.01
Chloroform	ND	ND	ND	ND	0.01	0.04	6.07	0.00	6.13	6.13
cis-1,2-Dichloroethene	ND	ND	ND	ND	0.18	NE (Kp<=0.01)	0.04	0.00	0.22	0.22
Methylene chloride	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	0.00	0.00	0.00	0.00
Tetrachloroethene	ND	ND	ND	ND	0.01	0.06	0.01	0.00	0.08	0.08
Trichloroethene	ND	ND	ND	ND	4.27	5.69	NTV	0.00	9.96	9.96
Vinyl Chloride	ND	ND	ND	ND	0.04	NE (Kp<=0.01)	0.02	0.00	0.06	0.06
Totals	0.0	0.0	0.0	0.0	87.5	5.8	6.7	0.0	100.0	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-118
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 47 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	9.00E-13	1.73E-13	1.36E-16	NE	1.01E-11	4.17E-11	NE
Explosive							
2,4,6-Trinitrotoluene	ND	ND	ND	ND	2.38E-05	NE (Kp<=0.01)	NE
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	3.01E-06	NE (Kp<=0.01)	NE
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	3.28E-06	NE (Kp<=0.01)	NE
RDX	ND	ND	ND	ND	2.17E-06	NE (Kp<=0.01)	NE
Metals							
Aluminum	3.76E-03	2.41E-04	5.68E-07	NE	3.01E-01	NE (Kp<=0.01)	NE
Antimony	2.65E-06	1.70E-07	4.01E-10	NE	2.66E-04	NE (Kp<=0.01)	NE
Arsenic	1.93E-06	3.70E-07	2.91E-10	NE	ND	ND	ND
Barium	NC	NC	NC	NE	ND	ND	ND
Beryllium	ND	ND	ND	ND	1.36E-05	NE (Kp<=0.01)	NE
Cadmium	ND	ND	ND	NE	6.99E-04	NE (Kp<=0.01)	NE
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Cobalt	ND	ND	ND	ND	1.09E-03	NE (Kp<=0.01)	NE
Lead	ND	ND	ND	ND	8.67E-04	NE (Kp<=0.01)	NE
Manganese	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE
Mercury	NC	NC	NC	NE	ND	ND	ND
Nickel	ND	ND	ND	ND	2.80E-02	NE (Kp<=0.01)	NE
Silver	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Strontium	ND	ND	ND	ND	6.64E-02	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Tin	ND	ND	ND	ND	4.19E-01	NE (Kp<=0.01)	NE
Vanadium	1.19E-05	7.61E-07	1.80E-09	NE	4.54E-04	NE (Kp<=0.01)	NE
Non-Metallic Anion							
Perchlorate	5.24E-05	3.35E-06	7.93E-09	NE	2.90E-01	NE (Kp<=0.01)	NE
Pesticides							
Aldrin	ND	ND	ND	ND	2.20E-08	NE (Kp<=0.01)	NE
alpha-BHC	ND	ND	ND	ND	2.66E-08	3.25E-09	NE
beta-BHC	ND	ND	ND	ND	1.89E-08	2.31E-09	NE
delta-BHC	ND	ND	ND	ND	1.61E-08	1.32E-09	NE
Semi-Volatile Organics							
2,4-Dinitrotoluene	ND	ND	ND	ND	4.89E-06	NE (Kp<=0.01)	NE
2,6-Dinitrotoluene	2.31E-07	1.48E-07	3.49E-11	NE	4.89E-06	NE (Kp<=0.01)	NE
4-Chloroaniline	ND	ND	ND	ND	6.29E-05	NE (Kp<=0.01)	NE
Benzo(a)anthracene	8.39E-07	6.98E-07	1.27E-10	NE	ND	ND	ND
Benzo(a)pyrene	8.04E-07	6.69E-07	1.22E-10	NE	ND	ND	ND
Benzo(b)fluoranthene	1.22E-06	1.02E-06	1.85E-10	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	7.34E-05	9.11E-06	NE
Dibenzofuran	ND	ND	ND	ND	NC	NC	NC

Table C-118
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 47 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Pentachlorophenol	ND	ND	ND	ND	2.76E-05	5.46E-05	NE
Volatile Organics							
1,1,2-Trichloroethane	ND	ND	ND	ND	1.71E-05	1.26E-05	3.00E-04
1,2,3-Trichlorobenzene	ND	ND	ND	ND	1.96E-06	6.79E-07	3.42E-05
1,1-Dichloroethene	ND	ND	ND	ND	1.13E-04	1.50E-04	1.97E-03
1,2-Dichloroethane	ND	ND	ND	ND	1.99E-05	9.16E-06	3.49E-04
1,2-Dichloropropane	ND	ND	ND	ND	1.61E-06	1.40E-06	2.81E-05
Acetone	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NC
Benzene	ND	ND	ND	ND	6.99E-06	4.82E-07	1.22E-04
Chloroform	ND	ND	ND	ND	4.19E-04	3.28E-04	7.34E-03
cis-1,2-Dichloroethene	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NC
Methylene chloride	ND	ND	ND	ND	1.75E-05	NE (Kp<=0.01)	3.06E-04
Tetrachloroethene	ND	ND	ND	ND	5.87E-04	2.35E-03	1.03E-02
Trichloroethene	ND	ND	ND	ND	1.03E-01	1.37E-01	1.80E+00
Vinyl Chloride	ND	ND	ND	ND	4.44E-04	NE (Kp<=0.01)	7.77E-03

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).
 NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-119
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 47 - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
Dioxin/Furan										
2,3,7,8-TCDD	1.3E-07	5.2E-08	4.5E-12	NE	1.5E-06	1.3E-05	NE	1.9E-07	1.4E-05	1.4E-05
Explosive										
2,4,6-Trinitrotoluene	ND	ND	ND	ND	7.1E-07	NE (Kp<=0.01)	NE	NA	7.1E-07	7.1E-07
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	3.0E-08	NE (Kp<=0.01)	NE	NA	3.0E-08	3.0E-08
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	3.3E-08	NE (Kp<=0.01)	NE	NA	3.3E-08	3.3E-08
RDX	ND	ND	ND	ND	2.4E-07	NE (Kp<=0.01)	NE	NA	2.4E-07	2.4E-07
Metals										
Aluminum	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Antimony	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Arsenic	2.9E-06	5.8E-07	1.3E-09	NE	ND	ND	ND	3.5E-06	NA	3.5E-06
Barium	NC	NC	NC	NE	ND	ND	ND	NA	NA	NA
Beryllium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Cadmium	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Cobalt	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Mercury	NC	NC	NC	NE	ND	ND	ND	NA	NA	NA
Nickel	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Silver	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Strontium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Tin	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Vanadium	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Non-Metallic Anion										
Perchlorate	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Pesticides										
Aldrin	ND	ND	ND	ND	3.7E-07	NE (Kp<=0.01)	NE	NA	3.7E-07	3.7E-07
alpha-BHC	ND	ND	ND	ND	1.7E-07	2.1E-08	NE	NA	1.9E-07	1.9E-07
beta-BHC	ND	ND	ND	ND	3.4E-08	4.6E-09	NE	NA	3.9E-08	3.9E-08
delta-BHC	ND	ND	ND	ND	2.9E-08	4.7E-09	NE	NA	3.4E-08	3.4E-08
Semi-Volatile Organics										
2,4-Dinitrotoluene	ND	ND	ND	ND	3.3E-06	NE (Kp<=0.01)	NE	NA	3.3E-06	3.3E-06
2,6-Dinitrotoluene	1.6E-07	1.2E-07	NTV	NE	3.3E-06	NE (Kp<=0.01)	NE	2.7E-07	3.3E-06	3.6E-06
4-Chloroaniline	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Benzo(a)anthracene	6.1E-07	5.7E-07	1.1E-14	NE	ND	ND	ND	1.2E-06	NA	1.2E-06
Benzo(a)pyrene	5.9E-06	5.5E-06	1.1E-13	NE	ND	ND	ND	1.1E-05	NA	1.1E-05
Benzo(b)fluoranthene	8.9E-07	8.3E-07	1.6E-11	NE	ND	ND	ND	1.7E-06	NA	1.7E-06
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	1.0E-06	6.7E-07	NE	NA	1.7E-06	1.7E-06
Dibenzofuran	ND	ND	ND	ND	NC	NC	NC	NA	NA	NA

Site47_riskcalcs(0_to_0.5)_new.XLS Future Maintenance Wkr (47)

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Table C-119
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 47 - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
Pentachlorophenol	ND	ND	ND	ND	3.3E-06	8.6E-06	NE	NA	1.2E-05	1.2E-05
<i>Volatile Organics</i>										
1,1,2-Trichloroethane	ND	ND	ND	ND	9.8E-07	8.9E-07	4.8E-09	NA	1.9E-06	1.9E-06
1,2,3-Trichlorobenzene	ND	ND	ND	ND	NTV	NTV	NTV	NA	NA	NA
1,1-Dichloroethene	ND	ND	ND	ND	6.8E-05	9.0E-05	9.8E-05	NA	2.6E-04	2.6E-04
1,2-Dichloroethane	ND	ND	ND	ND	1.8E-06	8.3E-07	9.1E-06	NA	1.2E-05	1.2E-05
1,2-Dichloropropane	ND	ND	ND	ND	1.1E-07	1.3E-07	NTV	NA	2.4E-07	2.4E-07
Acetone	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NC	NA	NA	NA
Benzene	ND	ND	ND	ND	3.8E-07	2.7E-08	9.5E-10	NA	4.1E-07	4.1E-07
Chloroform	ND	ND	ND	ND	2.6E-06	1.0E-05	1.7E-04	NA	1.8E-04	1.8E-04
cis-1,2-Dichloroethene	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NC	NA	NA	NA
Methylene chloride	ND	ND	ND	ND	1.3E-07	NE (Kp<=0.01)	1.4E-07	NA	2.7E-07	2.7E-07
Tetrachloroethene	ND	ND	ND	ND	3.1E-05	1.2E-04	6.0E-09	NA	1.5E-04	1.5E-04
Trichloroethene	ND	ND	ND	ND	1.1E-03	1.5E-03	3.1E-03	NA	5.7E-03	5.7E-03
Vinyl Chloride	ND	ND	ND	ND	6.7E-04	NE (Kp<=0.01)	6.8E-05	NA	7.3E-04	7.3E-04
Totals	1.1E-05	7.6E-06	1.3E-09	0.0E+00	1.9E-03	1.8E-03	3.4E-03	1.8E-05	7.1E-03	7.1E-03

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-120
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 47 - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
Dioxin/Furan										
2,3,7,8-TCDD	0.00	0.00	0.00	NE	0.02	0.18	NE	0.00	0.20	0.20
Explosive										
2,4,6-Trinitrotoluene	ND	ND	ND	ND	0.01	NE (Kp<=0.01)	NE	0.00	0.01	0.01
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
RDX	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
Metals										
Aluminum	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Antimony	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Arsenic	0.04	0.01	0.00	NE	ND	ND	ND	0.05	0.00	0.05
Barium	NC	NC	NC	NE	ND	ND	ND	0.00	0.00	NA
Beryllium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Cadmium	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Cobalt	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Lead	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Mercury	NC	NC	NC	NE	ND	ND	ND	0.00	0.00	NA
Nickel	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Silver	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Strontium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Tin	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Vanadium	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Non-Metallic Anion										
Perchlorate	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Pesticides										
Aldrin	ND	ND	ND	ND	0.01	NE (Kp<=0.01)	NE	0.00	0.01	0.01
alpha-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
beta-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
delta-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
Semi-Volatile Organics										
2,4-Dinitrotoluene	ND	ND	ND	ND	0.05	NE (Kp<=0.01)	NE	0.00	0.05	0.05
2,6-Dinitrotoluene	0.00	0.00	NTV	NE	0.05	NE (Kp<=0.01)	NE	0.00	0.05	0.05
4-Chloroaniline	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Benzo(a)anthracene	0.01	0.01	0.00	NE	ND	ND	ND	0.02	0.00	0.02
Benzo(a)pyrene	0.08	0.08	0.00	NE	ND	ND	ND	0.16	0.00	0.16
Benzo(b)fluoranthene	0.01	0.01	0.00	NE	ND	ND	ND	0.02	0.00	0.02
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	0.01	0.01	NE	0.00	0.02	0.02
Dibenzofuran	ND	ND	ND	ND	NC	NC	NC	0.00	0.00	NA

Site47_riskcalcs(0_to_0.5)_new.XLS Future Maintenance Wkr (47)

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Table C-120
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 47 - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total	
								Soil	Groundwater
Pentachlorophenol	ND	ND	ND	ND	0.05	0.12	NE	0.00	0.17
Volatile Organics									
1,1,2-Trichloroethane	ND	ND	ND	ND	0.01	0.01	0.00	0.00	0.03
1,2,3-Trichlorobenzene	ND	ND	ND	ND	NTV	NTV	NTV	0.00	NA
1,1-Dichloroethene	ND	ND	ND	ND	0.95	1.27	1.39	0.00	3.61
1,2-Dichloroethane	ND	ND	ND	ND	0.03	0.01	0.13	0.00	0.17
1,2-Dichloropropane	ND	ND	ND	ND	0.00	0.00	NTV	0.00	0.00
Acetone	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NC	0.00	NA
Benzene	ND	ND	ND	ND	0.01	0.00	0.00	0.00	0.01
Chloroform	ND	ND	ND	ND	0.04	0.14	2.38	0.00	2.56
cis-1,2-Dichloroethene	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NC	0.00	NA
Methylene chloride	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	0.00	0.00	0.00
Tetrachloroethene	ND	ND	ND	ND	0.43	1.72	0.00	0.00	2.15
Trichloroethene	ND	ND	ND	ND	15.95	21.27	43.13	0.00	80.35
Vinyl Chloride	ND	ND	ND	ND	9.39	NE (Kp<=0.01)	0.96	0.00	10.35
Totals	0.1	0.1	0.0	0.0	27.0	24.7	48.0	0.3	99.7
									100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-121
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 47 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	2.52E-12	4.84E-13	3.81E-16	NE	2.82E-11	1.17E-10	NE
Explosive							
2,4,6-Trinitrotoluene	ND	ND	ND	ND	6.65E-05	NE (Kp<=0.01)	NE
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	8.41E-06	NE (Kp<=0.01)	NE
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	9.20E-06	NE (Kp<=0.01)	NE
RDX	ND	ND	ND	ND	6.07E-06	NE (Kp<=0.01)	NE
Metals							
Aluminum	8.63E-03	5.52E-04	1.30E-06	NE	8.41E-01	NE (Kp<=0.01)	NE
Antimony	7.43E-06	4.75E-07	1.12E-09	NE	7.44E-04	NE (Kp<=0.01)	NE
Arsenic	4.60E-06	8.83E-07	6.95E-10	NE	ND	ND	ND
Barium	4.08E-03	2.61E-04	6.17E-07	NE	ND	ND	ND
Beryllium	ND	ND	ND	NE	3.82E-05	NE (Kp<=0.01)	NE
Cadmium	8.69E-06	5.56E-08	1.31E-09	NE	1.96E-03	NE (Kp<=0.01)	NE
Chromium	ND	ND	ND	NE	4.21E-01	NE (Kp<=0.01)	NE
Cobalt	ND	ND	ND	NE	3.04E-03	NE (Kp<=0.01)	NE
Lead	ND	ND	ND	NE	2.43E-03	NE (Kp<=0.01)	NE
Manganese	3.52E-04	2.25E-05	5.32E-08	NE	7.58E-02	NE (Kp<=0.01)	NE
Mercury	5.66E-06	3.62E-07	8.55E-10	NE	ND	ND	ND
Nickel	ND	ND	ND	NE	7.83E-02	NE (Kp<=0.01)	NE
Silver	ND	ND	ND	NE	9.78E-03	NE (Kp<=0.01)	NE
Strontium	ND	ND	ND	NE	1.86E-01	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	NE	9.10E-04	NE (Kp<=0.01)	NE
Tin	ND	ND	ND	NE	1.17E+00	NE (Kp<=0.01)	NE
Vanadium	3.33E-05	2.13E-06	5.03E-09	NE	1.27E-03	NE (Kp<=0.01)	NE
Non-Metallic Anion							
Perchlorate	1.76E-04	1.13E-05	2.66E-08	NE	8.11E-01	NE (Kp<=0.01)	NE
Pesticides							
Aldrin	ND	ND	ND	ND	6.16E-08	NE (Kp<=0.01)	NE
alpha-BHC	ND	ND	ND	ND	7.44E-08	9.09E-09	NE
beta-BHC	ND	ND	ND	ND	5.28E-08	6.46E-09	NE
delta-BHC	ND	ND	ND	ND	4.50E-08	3.69E-09	NE
Semi-Volatile Organics							
2,4-Dinitrotoluene	ND	ND	ND	ND	1.37E-05	NE (Kp<=0.01)	NE
2,6-Dinitrotoluene	6.46E-07	4.13E-07	9.76E-11	NE	1.37E-05	NE (Kp<=0.01)	NE
4-Chloroaniline	ND	ND	ND	ND	1.76E-04	NE (Kp<=0.01)	NE
Benzo(a)anthracene	2.35E-06	1.95E-06	3.55E-10	NE	ND	ND	ND
Benzo(a)pyrene	2.25E-06	1.87E-06	3.40E-10	NE	ND	ND	ND
Benzo(b)fluoranthene	3.42E-06	2.85E-06	5.18E-10	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	2.05E-04	2.55E-05	NE
Dibenzofuran	ND	ND	ND	ND	1.08E-04	4.27E-05	1.88E-03

Site47_riskcalcs(0_to_2)_rme.XLS Future Maintenance Wkr (47)

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Table C-121
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 47 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Pentachlorophenol	ND	ND	ND	ND	7.73E-05	1.53E-04	NE
Volatile Organics							
1,1,2-Trichloroethane	ND	ND	ND	ND	4.79E-05	3.53E-05	8.39E-04
1,2,3-Trichlorobenzene	ND	ND	ND	ND	5.48E-06	1.90E-06	9.59E-05
1,1-Dichloroethene	ND	ND	ND	ND	3.15E-04	4.20E-04	5.51E-03
1,2-Dichloroethane	ND	ND	ND	ND	5.58E-05	2.57E-05	9.76E-04
1,2-Dichloropropane	ND	ND	ND	ND	4.50E-06	3.93E-06	7.88E-05
Acetone	ND	ND	ND	ND	2.05E-01	NE (Kp<=0.01)	3.60E+00
Benzene	ND	ND	ND	ND	1.96E-05	1.35E-06	3.42E-04
Chloroform	ND	ND	ND	ND	1.17E-03	9.18E-04	2.03E-02
cis-1,2-Dichloroethene	ND	ND	ND	ND	2.05E-02	NE (Kp<=0.01)	3.58E-01
Methylene chloride	ND	ND	ND	ND	4.89E-05	NE (Kp<=0.01)	8.56E-04
Tetrachloroethene	ND	ND	ND	ND	1.64E-03	6.58E-03	2.88E-02
Trichloroethene	ND	ND	ND	ND	2.88E-01	3.84E-01	5.04E+00
Vinyl Chloride	ND	ND	ND	ND	1.24E-03	NE (Kp<=0.01)	2.17E-02

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-122
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 47 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
Dioxin/Furan										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	NA	NA	NA
Explosive										
2,4,6-Trinitrotoluene	ND	ND	ND	ND	1.3E-01	NE (Kp<=0.01)	NE	NA	1.3E-01	1.3E-01
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	5.0E-02	NE (Kp<=0.01)	NE	NA	5.0E-02	5.0E-02
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	5.5E-02	NE (Kp<=0.01)	NE	NA	5.5E-02	5.5E-02
RDX	ND	ND	ND	ND	2.0E-03	NE (Kp<=0.01)	NE	NA	2.0E-03	2.0E-03
Metals										
Aluminum	8.6E-03	5.5E-03	3.7E-04	NE	8.4E-01	NE (Kp<=0.01)	NE	1.5E-02	8.4E-01	8.6E-01
Antimony	1.9E-02	7.9E-03	2.2E-06	NE	1.9E+00	NE (Kp<=0.01)	NE	2.6E-02	1.9E+00	1.9E+00
Arsenic	1.5E-02	3.1E-03	NTV	NE	ND	ND	ND	1.8E-02	NA	1.8E-02
Barium	5.8E-02	5.3E-02	1.3E-03	NE	ND	ND	ND	1.1E-01	NA	1.1E-01
Beryllium	ND	ND	ND	ND	1.9E-02	NE (Kp<=0.01)	NE	1.9E-02	1.9E-02	1.9E-02
Cadmium	8.7E-03	2.2E-03	6.6E-06	NE	3.9E+00	NE (Kp<=0.01)	NE	1.1E-02	3.9E+00	3.9E+00
Chromium	ND	ND	ND	ND	2.8E-01	NE (Kp<=0.01)	NE	NA	2.8E-01	2.8E-01
Cobalt	ND	ND	ND	ND	1.5E-01	NE (Kp<=0.01)	NE	NA	1.5E-01	1.5E-01
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	7.5E-03	8.0E-03	1.1E-03	NE	1.6E+00	NE (Kp<=0.01)	NE	1.7E-02	1.6E+00	1.6E+00
Mercury	1.9E-02	1.7E-02	2.9E-06	NE	ND	ND	ND	3.6E-02	NA	3.6E-02
Nickel	ND	ND	ND	ND	3.9E+00	NE (Kp<=0.01)	NE	NA	3.9E+00	3.9E+00
Silver	ND	ND	ND	ND	2.0E+00	NE (Kp<=0.01)	NE	NA	2.0E+00	2.0E+00
Strontium	ND	ND	ND	ND	3.1E-01	NE (Kp<=0.01)	NE	NA	3.1E-01	3.1E-01
Thallium	ND	ND	ND	ND	1.1E+01	NE (Kp<=0.01)	NE	NA	1.1E+01	1.1E+01
Tin	ND	ND	ND	ND	2.0E+00	NE (Kp<=0.01)	NE	NA	2.0E+00	2.0E+00
Vanadium	4.8E-03	1.2E-02	1.0E-04	NE	1.8E-01	NE (Kp<=0.01)	NE	1.7E-02	1.8E-01	2.0E-01
Non-Metallic Anion										
Perchlorate	2.0E-01	1.3E-02	NTV	NE	9.0E+02	NE (Kp<=0.01)	NE	2.1E-01	9.0E+02	9.0E+02
Pesticides										
Aldrin	ND	ND	ND	ND	2.1E-03	NE (Kp<=0.01)	NE	NA	2.1E-03	2.1E-03
alpha-BHC	ND	ND	ND	ND	9.3E-06	1.2E-06	NE	NA	1.0E-05	1.0E-05
beta-BHC	ND	ND	ND	ND	NTV	NTV	NE	NA	NA	NA
delta-BHC	ND	ND	ND	ND	1.5E-04	2.5E-05	NE	NA	1.7E-04	1.7E-04
Semi-Volatile Organics										
2,4-Dinitrotoluene	ND	ND	ND	ND	6.8E-03	NE (Kp<=0.01)	NE	NA	6.8E-03	6.8E-03
2,6-Dinitrotoluene	6.5E-04	4.9E-04	6.5E-07	NE	1.4E-02	NE (Kp<=0.01)	NE	1.1E-03	1.4E-02	1.5E-02
4-Chloroaniline	ND	ND	ND	ND	4.4E-02	NE (Kp<=0.01)	NE	NA	4.4E-02	4.4E-02
Benzo(a)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	1.0E-02	6.7E-03	NE	NA	1.7E-02	1.7E-02
Dibenzofuran	ND	ND	ND	ND	2.7E-02	2.1E-02	NTV	NA	4.8E-02	4.8E-02

Site47_riskcalcs(0_to_2)_rme.xls Future Maintenance Wkr (47)

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Table C-122
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 47 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
Pentachlorophenol	ND	ND	ND	ND	2.6E-03	6.7E-03	NE	NA	9.3E-03	9.3E-03
<i>Volatiles Organics</i>										
1,1,2-Trichloroethane	ND	ND	ND	ND	1.2E-02	1.1E-02	NTV	NA	2.3E-02	2.3E-02
1,2,3-Trichlorobenzene	ND	ND	ND	ND	1.8E-03	7.9E-04	2.4E-03	NA	5.0E-03	5.0E-03
1,1-Dichloroethene	ND	ND	ND	ND	3.5E-02	4.7E-02	NTV	NA	8.2E-02	8.2E-02
1,2-Dichloroethane	ND	ND	ND	ND	1.9E-03	8.6E-04	2.0E-01	NA	2.0E-01	2.0E-01
1,2-Dichloropropane	ND	ND	ND	ND	5.0E-05	5.9E-05	2.0E-02	NA	2.0E-02	2.0E-02
Acetone	ND	ND	ND	ND	2.1E+00	NE (Kp<=0.01)	6.1E+00	NA	8.1E+00	8.1E+00
Benzene	ND	ND	ND	ND	6.5E-03	4.6E-04	5.7E-02	NA	6.4E-02	6.4E-02
Chloroform	ND	ND	ND	ND	1.2E-01	4.6E-01	6.8E+01	NA	6.9E+01	6.9E+01
cis-1,2-Dichloroethene	ND	ND	ND	ND	2.0E+00	NE (Kp<=0.01)	4.5E-01	NA	2.5E+00	2.5E+00
Methylene chloride	ND	ND	ND	ND	8.2E-04	NE (Kp<=0.01)	2.9E-04	NA	1.1E-03	1.1E-03
Tetrachloroethene	ND	ND	ND	ND	1.6E-01	6.6E-01	5.9E-02	NA	8.8E-01	8.8E-01
Trichloroethene	ND	ND	ND	ND	4.8E+01	6.4E+01	NTV	NA	1.1E+02	1.1E+02
Vinyl Chloride	ND	ND	ND	ND	4.1E-01	NE (Kp<=0.01)	2.2E-01	NA	6.3E-01	6.3E-01
Totals	3.4E-01	1.2E-01	2.8E-03	0.0E+00	9.8E+02	6.5E+01	7.5E+01	4.6E-01	1.1E+03	1.1E+03

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-123
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 47 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	0.00	0.00	NA
<i>Explosive</i>										
2,4,6-Trinitrotoluene	ND	ND	ND	ND	0.01	NE (Kp<=0.01)	NE	0.00	0.01	0.01
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
RDX	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
<i>Metals</i>										
Aluminum	0.00	0.00	0.00	NE	0.07	NE (Kp<=0.01)	NE	0.00	0.07	0.08
Antimony	0.00	0.00	0.00	NE	0.17	NE (Kp<=0.01)	NE	0.00	0.17	0.17
Arsenic	0.00	0.00	NTV	NE	ND	ND	ND	0.00	0.00	0.00
Barium	0.01	0.00	0.00	NE	ND	ND	ND	0.01	0.00	0.01
Beryllium	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
Cadmium	0.00	0.00	0.00	NE	0.35	NE (Kp<=0.01)	NE	0.00	0.35	0.35
Chromium	ND	ND	ND	ND	0.02	NE (Kp<=0.01)	NE	0.00	0.02	0.02
Cobalt	ND	ND	ND	ND	0.01	NE (Kp<=0.01)	NE	0.00	0.01	0.01
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	0.00	0.00	0.00	NE	0.14	NE (Kp<=0.01)	NE	0.00	0.14	0.15
Mercury	0.00	0.00	0.00	NE	ND	ND	ND	0.00	0.00	0.00
Nickel	ND	ND	ND	ND	0.35	NE (Kp<=0.01)	NE	0.00	0.35	0.35
Silver	ND	ND	ND	ND	0.17	NE (Kp<=0.01)	NE	0.00	0.17	0.17
Strontium	ND	ND	ND	ND	0.03	NE (Kp<=0.01)	NE	0.00	0.03	0.03
Thallium	ND	ND	ND	ND	1.01	NE (Kp<=0.01)	NE	0.00	1.01	1.01
Tin	ND	ND	ND	ND	0.17	NE (Kp<=0.01)	NE	0.00	0.17	0.17
Vanadium	0.00	0.00	0.00	NE	0.02	NE (Kp<=0.01)	NE	0.00	0.02	0.02
<i>Non-Metallic Anion</i>										
Perchlorate	0.02	0.00	NTV	NE	80.20	NE (Kp<=0.01)	NE	0.02	80.20	80.22
<i>Pesticides</i>										
Aldrin	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
alpha-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
beta-BHC	ND	ND	ND	ND	NTV	NTV	NE	0.00	0.00	NA
delta-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
<i>Semi-Volatile Organics</i>										
2,4-Dinitrotoluene	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
2,6-Dinitrotoluene	0.00	0.00	0.00	NE	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
4-Chloroaniline	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
Benzo(a)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
Dibenzofuran	ND	ND	ND	ND	0.00	0.00	NTV	0.00	0.00	0.00

Site47_riskcalcs(0_to_2)_rme.XLS Future Maintenance Wkr (47)

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Table C-123
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 47 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
Pentachlorophenol	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
<i>Volatile Organics</i>										
1,1,2-Trichloroethane	ND	ND	ND	ND	0.00	0.00	NTV	0.00	0.00	0.00
1,2,3-Trichlorobenzene	ND	ND	ND	ND	0.00	0.00	0.00	0.00	0.00	0.00
1,1-Dichloroethene	ND	ND	ND	ND	0.00	0.00	NTV	0.00	0.01	0.01
1,2-Dichloroethane	ND	ND	ND	ND	0.00	0.00	0.02	0.00	0.02	0.02
1,2-Dichloropropane	ND	ND	ND	ND	0.00	0.00	0.00	0.00	0.00	0.00
Acetone	ND	ND	ND	ND	0.18	NE (Kp<=0.01)	0.54	0.00	0.73	0.73
Benzene	ND	ND	ND	ND	0.00	0.00	0.01	0.00	0.01	0.01
Chloroform	ND	ND	ND	ND	0.01	0.04	6.07	0.00	6.13	6.13
cis-1,2-Dichloroethene	ND	ND	ND	ND	0.18	NE (Kp<=0.01)	0.04	0.00	0.22	0.22
Methylene chloride	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	0.00	0.00	0.00	0.00
Tetrachloroethene	ND	ND	ND	ND	0.01	0.06	0.01	0.00	0.08	0.08
Trichloroethene	ND	ND	ND	ND	4.27	5.69	NTV	0.00	9.96	9.96
Vinyl Chloride	ND	ND	ND	ND	0.04	NE (Kp<=0.01)	0.02	0.00	0.06	0.06
Totals	0.0	0.0	0.0	0.0	87.5	5.8	6.7	0.0	100.0	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-124
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 47 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	9.00E-13	1.73E-13	1.36E-16	NE	1.01E-11	4.17E-11	NE
Explosive							
2,4,6-Trinitrotoluene	ND	ND	ND	ND	2.38E-05	NE (Kp<=0.01)	NE
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	3.01E-06	NE (Kp<=0.01)	NE
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	3.28E-06	NE (Kp<=0.01)	NE
RDX	ND	ND	ND	ND	2.17E-06	NE (Kp<=0.01)	NE
Metals							
Aluminum	3.08E-03	1.97E-04	4.66E-07	NE	3.01E-01	NE (Kp<=0.01)	NE
Antimony	2.65E-06	1.70E-07	4.01E-10	NE	2.66E-04	NE (Kp<=0.01)	NE
Arsenic	1.64E-06	3.15E-07	2.48E-10	NE	ND	ND	ND
Barium	NC	NC	NC	NE	ND	ND	ND
Beryllium	ND	ND	ND	ND	1.36E-05	NE (Kp<=0.01)	NE
Cadmium	3.10E-06	1.99E-08	4.69E-10	NE	6.99E-04	NE (Kp<=0.01)	NE
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Cobalt	ND	ND	ND	ND	1.09E-03	NE (Kp<=0.01)	NE
Lead	ND	ND	ND	ND	8.67E-04	NE (Kp<=0.01)	NE
Manganese	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE
Mercury	NC	NC	NC	NE	ND	ND	ND
Nickel	ND	ND	ND	ND	2.80E-02	NE (Kp<=0.01)	NE
Silver	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Strontium	ND	ND	ND	ND	6.64E-02	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Tin	ND	ND	ND	ND	4.19E-01	NE (Kp<=0.01)	NE
Vanadium	1.19E-05	7.61E-07	1.80E-09	NE	4.54E-04	NE (Kp<=0.01)	NE
Non-Metallic Anion							
Perchlorate	6.29E-05	4.03E-06	9.51E-09	NE	2.90E-01	NE (Kp<=0.01)	NE
Pesticides							
Aldrin	ND	ND	ND	ND	2.20E-08	NE (Kp<=0.01)	NE
alpha-BHC	ND	ND	ND	ND	2.66E-08	3.25E-09	NE
beta-BHC	ND	ND	ND	ND	1.89E-08	2.31E-09	NE
delta-BHC	ND	ND	ND	ND	1.61E-08	1.32E-09	NE
Semi-Volatile Organics							
2,4-Dinitrotoluene	ND	ND	ND	ND	4.89E-06	NE (Kp<=0.01)	NE
2,6-Dinitrotoluene	2.31E-07	1.48E-07	3.49E-11	NE	4.89E-06	NE (Kp<=0.01)	NE
4-Chloroaniline	ND	ND	ND	ND	6.29E-05	NE (Kp<=0.01)	NE
Benzo(a)anthracene	8.39E-07	6.98E-07	1.27E-10	NE	ND	ND	ND
Benzo(a)pyrene	8.04E-07	6.69E-07	1.22E-10	NE	ND	ND	ND
Benzo(b)fluoranthene	1.22E-06	1.02E-06	1.85E-10	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	7.34E-05	9.11E-06	NE
Dibenzofuran	ND	ND	ND	ND	NC	NC	NC

Table C-124
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 47 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Pentachlorophenol	ND	ND	ND	ND	2.76E-05	5.46E-05	NE
<i>Volatile Organics</i>							
1,1,2-Trichloroethane	ND	ND	ND	ND	1.71E-05	1.26E-05	3.00E-04
1,2,3-Trichlorobenzene	ND	ND	ND	ND	1.96E-06	6.79E-07	3.42E-05
1,1-Dichloroethene	ND	ND	ND	ND	1.13E-04	1.50E-04	1.97E-03
1,2-Dichloroethane	ND	ND	ND	ND	1.99E-05	9.16E-06	3.49E-04
1,2-Dichloropropane	ND	ND	ND	ND	1.61E-06	1.40E-06	2.81E-05
Acetone	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NC
Benzene	ND	ND	ND	ND	6.99E-06	4.82E-07	1.22E-04
Chloroform	ND	ND	ND	ND	4.19E-04	3.28E-04	7.34E-03
cis-1,2-Dichloroethene	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NC
Methylene chloride	ND	ND	ND	ND	1.75E-05	NE (Kp<=0.01)	3.06E-04
Tetrachloroethene	ND	ND	ND	ND	5.87E-04	2.35E-03	1.03E-02
Trichloroethene	ND	ND	ND	ND	1.03E-01	1.37E-01	1.80E+00
Vinyl Chloride	ND	ND	ND	ND	4.44E-04	NE (Kp<=0.01)	7.77E-03

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-125
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 47 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
Dioxin/Furan										
2,3,7,8-TCDD	1.3E-07	5.2E-08	4.5E-12	NE	1.5E-06	1.3E-05	NE	1.9E-07	1.4E-05	1.4E-05
Explosive										
2,4,6-Trinitrotoluene	ND	ND	ND	ND	7.1E-07	NE (Kp<=0.01)	NE	NA	7.1E-07	7.1E-07
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	3.0E-08	NE (Kp<=0.01)	NE	NA	3.0E-08	3.0E-08
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	3.3E-08	NE (Kp<=0.01)	NE	NA	3.3E-08	3.3E-08
RDX	ND	ND	ND	ND	2.4E-07	NE (Kp<=0.01)	NE	NA	2.4E-07	2.4E-07
Metals										
Aluminum	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Antimony	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Arsenic	2.5E-06	5.0E-07	1.1E-09	NE	ND	ND	ND	3.0E-06	NA	3.0E-06
Barium	NC	NC	NC	NE	ND	ND	ND	NA	NA	NA
Beryllium	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Cadmium	NTV	NTV	8.4E-10	NE	NTV	NE (Kp<=0.01)	NE	8.4E-10	NA	8.4E-10
Chromium	ND	ND	ND	NE	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Chromium	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Cobalt	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Lead	ND	ND	ND	NE	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	NC	NC	NC	NE	ND	ND	ND	NA	NA	NA
Mercury	NC	NC	NC	NE	ND	ND	ND	NA	NA	NA
Nickel	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Silver	ND	ND	ND	NE	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Sroutium	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Thallium	ND	ND	ND	NE	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Tin	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Vanadium	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Non-Metallic Anion										
Perchlorate	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Pesticides										
Aldrin	ND	ND	ND	ND	3.7E-07	NE (Kp<=0.01)	NE	NA	3.7E-07	3.7E-07
alpha-BHC	ND	ND	ND	ND	1.7E-07	2.1E-08	NE	NA	1.9E-07	1.9E-07
beta-BHC	ND	ND	ND	ND	3.4E-08	4.6E-09	NE	NA	3.9E-08	3.9E-08
delta-BHC	ND	ND	ND	ND	2.9E-08	4.7E-09	NE	NA	3.4E-08	3.4E-08
Semi-Volatile Organics										
2,4-Dinitrotoluene	ND	ND	ND	ND	3.3E-06	NE (Kp<=0.01)	NE	NA	3.3E-06	3.3E-06
2,6-Dinitrotoluene	1.6E-07	1.2E-07	NTV	NE	3.3E-06	NE (Kp<=0.01)	NE	2.7E-07	3.3E-06	3.6E-06
4-Chloroaniline	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Benzo(a)anthracene	6.1E-07	5.7E-07	1.1E-14	NE	ND	ND	ND	1.2E-06	NA	1.2E-06
Benzo(a)pyrene	5.9E-06	5.5E-06	1.1E-13	NE	ND	ND	ND	1.1E-05	NA	1.1E-05
Benzo(b)fluoranthene	8.9E-07	8.3E-07	1.6E-11	NE	ND	ND	ND	1.7E-06	NA	1.7E-06
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	1.0E-06	6.7E-07	NE	NA	1.7E-06	1.7E-06
Dibenzofuran	ND	ND	ND	ND	NC	NC	NC	NA	NA	NA
Pentachlorophenol	ND	ND	ND	ND	3.3E-06	8.6E-06	NE	NA	1.2E-05	1.2E-05
Volatile Organics										
1,1,2-Trichloroethane	ND	ND	ND	ND	9.8E-07	8.9E-07	4.8E-09	NA	1.9E-06	1.9E-06
1,2,3-Trichlorobenzene	ND	ND	ND	ND	NTV	NTV	NTV	NA	NA	NA

Table C-125
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 47 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact		Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
						While Showering Groundwater	Groundwater				
1,1-Dichloroethene	ND	ND	ND	ND	6.8E-05	9.0E-05	9.8E-05	9.8E-05	NA	2.6E-04	2.6E-04
1,2-Dichloroethane	ND	ND	ND	ND	1.8E-06	8.3E-07	9.1E-06	9.1E-06	NA	1.2E-05	1.2E-05
1,2-Dichloropropane	ND	ND	ND	ND	1.1E-07	1.3E-07	NTV	NTV	NA	2.4E-07	2.4E-07
Acetone	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NC	NC	NA	NA	NA
Benzene	ND	ND	ND	ND	3.8E-07	2.7E-08	9.5E-10	9.5E-10	NA	4.1E-07	4.1E-07
Chloroform	ND	ND	ND	ND	2.6E-06	1.0E-05	1.7E-04	1.7E-04	NA	1.8E-04	1.8E-04
cis-1,2-Dichloroethene	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NC	NC	NA	NA	NA
Methylene chloride	ND	ND	ND	ND	1.3E-07	NE (Kp<=0.01)	1.4E-07	1.4E-07	NA	2.7E-07	2.7E-07
Tetrachloroethene	ND	ND	ND	ND	3.1E-05	1.2E-04	6.0E-09	6.0E-09	NA	1.5E-04	1.5E-04
Trichloroethene	ND	ND	ND	ND	1.1E-03	1.5E-03	3.1E-03	3.1E-03	NA	5.7E-03	5.7E-03
Vinyl Chloride	ND	ND	ND	ND	6.7E-04	NE (Kp<=0.01)	6.8E-05	6.8E-05	NA	7.3E-04	7.3E-04
Totals	1.0E-05	7.6E-06	1.9E-09	0.0E+00	1.9E-03	1.8E-03	3.4E-03	3.4E-03	1.8E-05	7.1E-03	7.1E-03

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995)

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-126
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 47 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
Dioxin/Furan										
2,3,7,8-TCDD	0.00	0.00	0.00	NE	0.02	0.18	NE	0.00	0.20	0.20
Explosive										
2,4,6-Trinitrotoluene	ND	ND	ND	ND	0.01	NE (Kp<=0.01)	NE	0.00	0.01	0.01
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
RDX	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
Metals										
Aluminum	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Antimony	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Arsenic	0.03	0.01	0.00	NE	ND	ND	ND	0.04	0.00	0.04
Barium	NC	NC	NC	NE	ND	ND	ND	0.00	0.00	NA
Beryllium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Cadmium	NTV	NTV	0.00	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	0.00
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Cobalt	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Lead	ND	ND	ND	NE	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	NC	NC	NC	NE	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Mercury	NC	NC	NC	NE	ND	ND	ND	0.00	0.00	NA
Nickel	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Silver	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Strontium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Tin	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Vanadium	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Non-Metallic Anion										
Perchlorate	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Pesticides										
Aldrin	ND	ND	ND	ND	0.01	NE (Kp<=0.01)	NE	0.00	0.01	0.01
alpha-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
beta-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
delta-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
Semi-Volatile Organics										
2,4-Dinitrotoluene	ND	ND	ND	ND	0.05	NE (Kp<=0.01)	NE	0.00	0.05	0.05
2,6-Dinitrotoluene	0.00	0.00	NTV	NE	0.05	NE (Kp<=0.01)	NE	0.00	0.05	0.05
4-Chloroaniline	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Benzo(a)anthracene	0.01	0.01	0.00	NE	ND	ND	ND	0.02	0.00	0.02
Benzo(a)pyrene	0.08	0.08	0.00	NE	ND	ND	ND	0.16	0.00	0.16
Benzo(b)fluoranthene	0.01	0.01	0.00	NE	ND	ND	ND	0.02	0.00	0.02
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	0.01	0.01	NE	0.00	0.02	0.02
Dibenzofuran	ND	ND	ND	ND	NC	NC	NC	0.00	0.00	NA
Pentachlorophenol	ND	ND	ND	ND	0.05	0.12	NE	0.00	0.17	0.17
Volatile Organics										
1,1,2-Trichloroethane	ND	ND	ND	ND	0.01	0.01	0.00	0.00	0.03	0.03
1,2,3-Trichlorobenzene	ND	ND	ND	ND	NTV	NTV	NTV	0.00	0.00	NA

Table C-126
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 47 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
1,1-Dichloroethene	ND	ND	ND	ND	0.95	1.27	1.39	0.00	3.61	3.61
1,2-Dichloroethane	ND	ND	ND	ND	0.03	0.01	0.13	0.00	0.17	0.17
1,2-Dichloropropane	ND	ND	ND	ND	0.00	0.00	NTV	0.00	0.00	0.00
Acetone	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NC	0.00	0.00	NA
Benzene	ND	ND	ND	ND	0.01	0.00	0.00	0.00	0.01	0.01
Chloroform	ND	ND	ND	ND	0.04	0.14	2.38	0.00	2.56	2.56
cis-1,2-Dichloroethene	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NC	0.00	0.00	NA
Methylene chloride	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	0.00	0.00	0.00	0.00
Tetrachloroethene	ND	ND	ND	ND	0.43	1.72	0.00	0.00	2.15	2.15
Trichloroethene	ND	ND	ND	ND	15.95	21.28	43.13	0.00	80.36	80.36
Vinyl Chloride	ND	ND	ND	ND	9.39	NE (Kp<=0.01)	0.96	0.00	10.36	10.36
Totals	0.1	0.1	0.0	0.0	27.0	24.7	48.0	0.2	99.8	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-127
Set 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Current Trespasser - Site 48 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	3.10E-12	3.25E-13	4.69E-16	NE
<i>Metals</i>				
Aluminum	2.74E-03	9.59E-05	4.14E-07	NE
Antimony	ND	ND	ND	NE
Barium	1.35E-04	4.72E-06	2.04E-08	NE
Cadmium	ND	ND	ND	NE
Vanadium	8.29E-06	2.90E-07	1.25E-09	NE
<i>Semi-Volatile Organics</i>				
Benzo(a)anthracene	3.72E-07	1.69E-07	5.62E-11	NE
Benzo(a)pyrene	3.13E-07	1.42E-07	4.73E-11	NE
Benzo(b)fluoranthene	5.68E-07	2.58E-07	8.58E-11	NE
Dibenzo(a,h)anthracene	4.50E-08	2.05E-08	6.80E-12	NE
Indeno(1,2,3-cd)pyrene	1.47E-07	6.68E-08	2.22E-11	NE
<i>Volatile Organics</i>				
Vinyl Chloride	ND	ND	ND	6.81E-05

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-128
Set 1 - RME
Summary of Hazard Quotients and Indices
Current Trespasser - Site 48 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total Hazard Index
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NA
<i>Metals</i>					
Aluminum	2.7E-03	9.6E-04	1.2E-04	NE	3.8E-03
Antimony	ND	ND	ND	NE	NA
Barium	1.9E-03	9.6E-04	4.2E-05	NE	2.9E-03
Cadmium	ND	ND	ND	NE	NA
Vanadium	1.2E-03	1.6E-03	2.5E-05	NE	2.8E-03
<i>Semi-Volatile Organics</i>					
Benzo(a)anthracene	NTV	NTV	NTV	NE	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	NA
Dibenzo(a,h)anthracene	NTV	NTV	NTV	NE	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NE	NA
<i>Volatile Organics</i>					
Vinyl Chloride	ND	ND	ND	6.8E-04	6.8E-04
Totals	5.9E-03	3.5E-03	1.9E-04	6.8E-04	1.0E-02

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-129
Set 1 - RME
Percent Contribution to the Total Hazard Index
Current Trespasser - Site 48 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NA
<i>Metals</i>					
Aluminum	26.77	9.37	1.16	NE	37.30
Antimony	ND	ND	ND	NE	NA
Barium	18.83	9.41	0.41	NE	28.64
Cadmium	ND	ND	ND	NE	NA
Vanadium	11.58	15.58	0.25	NE	27.40
<i>Semi-Volatile Organics</i>					
Benzo(a)anthracene	NTV	NTV	NTV	NE	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	NA
Dibenzo(a,h)anthracene	NTV	NTV	NTV	NE	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NE	NA
<i>Volatile Organics</i>					
Vinyl Chloride	ND	ND	ND	6.65	6.65
Totals	57.2	34.4	1.8	6.7	100.0

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-130
Set 1 -RME
Summary of Exposure Doses (Cancer Effects)
Current Trespasser - Site 48 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	5.31E-13	5.58E-14	8.03E-17	NE
<i>Metals</i>				
Aluminum	4.70E-04	1.64E-05	7.10E-08	NE
Antimony	ND	ND	ND	NE
Barium	NC	NC	NC	NE
Cadmium	ND	ND	ND	NE
Vanadium	1.42E-06	4.98E-08	2.15E-10	NE
<i>Semi-Volatile Organics</i>				
Benzo(a)anthracene	6.37E-08	2.90E-08	9.64E-12	NE
Benzo(a)pyrene	5.37E-08	2.44E-08	8.12E-12	NE
Benzo(b)fluoranthene	9.73E-08	4.43E-08	1.47E-11	NE
Dibenzo(a,h)anthracene	7.72E-09	3.51E-09	1.17E-12	NE
Indeno(1,2,3-cd)pyrene	2.52E-08	1.14E-08	3.80E-12	NE
<i>Volatile Organics</i>				
Vinyl Chloride	ND	ND	ND	1.17E-05

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-131
Set 1 -RME
Summary of Potential Cancer Risks
Current Trespasser - Site 48 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total Potential Cancer Risk
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	8.0E-08	1.7E-08	2.7E-12	NE	9.6E-08
<i>Metals</i>					
Aluminum	NTV	NTV	NTV	NE	NA
Antimony	ND	ND	ND	NE	NA
Barium	NC	NC	NC	NE	NA
Cadmium	ND	ND	ND	NE	NA
Vanadium	NTV	NTV	NTV	NE	NA
<i>Semi-Volatile Organics</i>					
Benzo(a)anthracene	4.7E-08	2.4E-08	8.5E-16	NE	7.0E-08
Benzo(a)pyrene	3.9E-07	2.0E-07	7.1E-15	NE	5.9E-07
Benzo(b)fluoranthene	7.1E-08	3.6E-08	1.3E-12	NE	1.1E-07
Dibenzo(a,h)anthracene	5.6E-08	2.9E-08	1.0E-15	NE	8.5E-08
Indeno(1,2,3-cd)pyrene	1.8E-08	9.4E-09	3.3E-16	NE	2.8E-08
<i>Volatile Organics</i>					
Vinyl Chloride	ND	ND	ND	1.0E-07	1.0E-07
Totals	6.6E-07	3.2E-07	4.0E-12	1.0E-07	1.1E-06

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-132
Set 1 -RME
Percent Contribution to the Total Potential Cancer Risk
Current Trespasser - Site 48 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	7.37	1.55	0.00	NE	8.91
<i>Metals</i>					
Aluminum	NTV	NTV	NTV	NE	NA
Antimony	ND	ND	ND	NE	NA
Barium	NC	NC	NC	NE	NA
Cadmium	ND	ND	ND	NE	NA
Vanadium	NTV	NTV	NTV	NE	NA
<i>Semi-Volatile Organics</i>					
Benzo(a)anthracene	4.30	2.20	0.00	NE	6.50
Benzo(a)pyrene	36.22	18.52	0.00	NE	54.74
Benzo(b)fluoranthene	6.56	3.36	0.00	NE	9.92
Dibenzo(a,h)anthracene	5.21	2.66	0.00	NE	7.87
Indeno(1,2,3-cd)pyrene	1.70	0.87	0.00	NE	2.57
<i>Volatile Organics</i>					
Vinyl Chloride	ND	ND	ND	9.49	9.49
Totals	61.4	29.1	0.0	9.5	100.0

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-133
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 48 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	1.55E-11	2.98E-12	2.34E-15	NE	2.41E-10	9.99E-10	NE
Explosive							
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	6.26E-06	NE (Kp<=0.01)	NE
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	1.27E-06	NE (Kp<=0.01)	NE
Metals							
Aluminum	1.37E-02	8.77E-04	2.07E-06	NE	1.58E+00	NE (Kp<=0.01)	NE
Antimony	ND	ND	ND	NE	4.99E-04	NE (Kp<=0.01)	NE
Barium	6.74E-04	4.32E-05	1.02E-07	NE	ND	ND	ND
Beryllium	ND	ND	ND	NE	2.05E-06	NE (Kp<=0.01)	NE
Cadmium	ND	ND	ND	NE	3.91E-06	NE (Kp<=0.01)	NE
Chromium	ND	ND	ND	ND	6.65E-01	NE (Kp<=0.01)	NE
Lead	ND	ND	ND	ND	2.61E-03	NE (Kp<=0.01)	NE
Manganese	ND	ND	ND	ND	1.86E-02	NE (Kp<=0.01)	NE
Nickel	ND	ND	ND	ND	3.91E-02	NE (Kp<=0.01)	NE
Silver	ND	ND	ND	ND	1.76E-02	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	2.01E-03	NE (Kp<=0.01)	NE
Vanadium	4.15E-05	2.65E-06	6.27E-09	NE	2.45E-04	NE (Kp<=0.01)	NE
Non-Metallic Anion							
Perchlorate	ND	ND	ND	ND	1.57E-03	NE (Kp<=0.01)	NE
Pesticides							
Aldrin	ND	ND	ND	ND	6.16E-08	NE (Kp<=0.01)	NE
alpha-BHC	ND	ND	ND	ND	7.44E-08	9.09E-09	NE
beta-BHC	ND	ND	ND	ND	5.28E-08	6.46E-09	NE
delta-BHC	ND	ND	ND	ND	4.50E-08	3.69E-09	NE
Semi-Volatile Organics							
2,4-Dinitrotoluene	ND	ND	ND	ND	9.20E-07	NE (Kp<=0.01)	NE
2,6-Dinitrotoluene	ND	ND	ND	ND	2.54E-06	NE (Kp<=0.01)	NE
Benzo(a)anthracene	1.86E-06	1.55E-06	2.81E-10	NE	ND	ND	ND
Benzo(a)pyrene	1.57E-06	1.30E-06	2.37E-10	NE	ND	ND	ND
Benzo(b)fluoranthene	2.84E-06	2.36E-06	4.29E-10	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	7.53E-05	9.36E-06	NE
Dibenz(a,h)anthracene	2.25E-07	1.87E-07	3.40E-11	NE	ND	ND	ND
Indeno(1,2,3-cd)pyrene	7.34E-07	6.11E-07	1.11E-10	NE	ND	ND	ND
Volatile Organics							
Tetrachloroethene	ND	ND	ND	ND	1.96E-05	7.83E-05	3.42E-04
Trichloroethene	ND	ND	ND	ND	8.81E-05	1.17E-04	1.54E-03
Vinyl Chloride	ND	ND	ND	3.40E-04	ND	ND	ND

Table C-133
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 48 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
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NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-134
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 48 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
Dioxin/Furan										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	NA	NA	NA
Explosive										
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	3.8E-02	NE (Kp<=0.01)	NE	NA	3.8E-02	3.8E-02
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	7.6E-03	NE (Kp<=0.01)	NE	NA	7.6E-03	7.6E-03
Metals										
Aluminum	1.4E-02	8.8E-03	5.9E-04	NE	1.6E+00	NE (Kp<=0.01)	NE	2.3E-02	1.6E+00	1.6E+00
Antimony	ND	ND	ND	NE	1.2E+00	NE (Kp<=0.01)	NE	NA	1.2E+00	1.2E+00
Barium	9.6E-03	8.8E-03	2.1E-04	NE	ND	ND	ND	1.9E-02	NA	1.9E-02
Beryllium	ND	ND	ND	ND	1.0E-03	NE (Kp<=0.01)	NE	NA	1.0E-03	1.0E-03
Cadmium	ND	ND	ND	NE	7.8E-03	NE (Kp<=0.01)	NE	NA	7.8E-03	7.8E-03
Chromium	ND	ND	ND	ND	4.4E-01	NE (Kp<=0.01)	NE	NA	4.4E-01	4.4E-01
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	ND	ND	ND	ND	4.0E-01	NE (Kp<=0.01)	NE	NA	4.0E-01	4.0E-01
Nickel	ND	ND	ND	ND	2.0E+00	NE (Kp<=0.01)	NE	NA	2.0E+00	2.0E+00
Silver	ND	ND	ND	ND	3.5E+00	NE (Kp<=0.01)	NE	NA	3.5E+00	3.5E+00
Thallium	ND	ND	ND	ND	2.5E+01	NE (Kp<=0.01)	NE	NA	2.5E+01	2.5E+01
Vanadium	5.9E-03	1.5E-02	1.3E-04	NE	3.5E-02	NE (Kp<=0.01)	NE	2.1E-02	3.5E-02	5.6E-02
Non-Metallic Anion										
Perchlorate	ND	ND	ND	ND	1.7E+00	NE (Kp<=0.01)	NE	NA	1.7E+00	1.7E+00
Pesticides										
Aldrin	ND	ND	ND	ND	2.1E-03	NE (Kp<=0.01)	NE	NA	2.1E-03	2.1E-03
alpha-BHC	ND	ND	ND	ND	9.3E-06	1.2E-06	NE	NA	1.0E-05	1.0E-05
beta-BHC	ND	ND	ND	ND	NTV	NTV	NE	NA	NA	NA
delta-BHC	ND	ND	ND	ND	1.5E-04	2.5E-05	NE	NA	1.7E-04	1.7E-04
Semi-Volatile Organics										
2,4-Dinitrotoluene	ND	ND	ND	ND	4.6E-04	NE (Kp<=0.01)	NE	NA	4.6E-04	4.6E-04
2,6-Dinitrotoluene	ND	ND	ND	ND	2.5E-03	NE (Kp<=0.01)	NE	NA	2.5E-03	2.5E-03
Benzo(a)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	3.8E-03	2.5E-03	NE	NA	6.2E-03	6.2E-03
Dibenzo(a,h)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Volatile Organics										
Tetrachloroethene	ND	ND	ND	ND	2.0E-03	7.8E-03	7.0E-04	NA	1.0E-02	1.0E-02
Trichloroethene	ND	ND	ND	ND	1.5E-02	2.0E-02	NTV	NA	3.4E-02	3.4E-02
Vinyl Chloride	ND	ND	ND	3.4E-03	ND	ND	ND	3.4E-03	NA	3.4E-03
Totals	2.9E-02	3.2E-02	9.3E-04	3.4E-03	3.6E+01	3.0E-02	7.0E-04	6.6E-02	3.6E+01	3.6E+01

Site48_riskcalcs(0_to_0.5)_new.XLS Future Maintenance Wkr (48)

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Table C-134
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 48 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
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NE ($Kp \leq 0.01$) = Based on EPA 6 guidance, COPCs with a $Kp \leq 0.01$ were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-135
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 48 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
Dioxin/Furan										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	0.00	0.00	NA
Explosive										
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	0.10	NE (Kp<=0.01)	NE	0.00	0.10	0.10
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	0.02	NE (Kp<=0.01)	NE	0.00	0.02	0.02
Metals										
Aluminum	0.04	0.02	0.00	NE	4.36	NE (Kp<=0.01)	NE	0.06	4.36	4.42
Antimony	ND	ND	ND	NE	3.45	NE (Kp<=0.01)	NE	0.00	3.45	3.45
Barium	0.03	0.02	0.00	NE	ND	ND	NE	0.05	0.00	0.05
Beryllium	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
Cadmium	ND	ND	ND	NE	0.02	NE (Kp<=0.01)	NE	0.00	0.02	0.02
Chromium	ND	ND	ND	ND	1.23	NE (Kp<=0.01)	NE	0.00	1.23	1.23
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	ND	ND	ND	ND	1.09	NE (Kp<=0.01)	NE	0.00	1.09	1.09
Nickel	ND	ND	ND	ND	5.41	NE (Kp<=0.01)	NE	0.00	5.41	5.41
Silver	ND	ND	ND	ND	9.74	NE (Kp<=0.01)	NE	0.00	9.74	9.74
Thallium	ND	ND	ND	ND	69.33	NE (Kp<=0.01)	NE	0.00	69.33	69.33
Vanadium	0.02	0.04	0.00	NE	0.10	NE (Kp<=0.01)	NE	0.06	0.10	0.15
Non-Metallic Anion										
Perchlorate	ND	ND	ND	ND	4.81	NE (Kp<=0.01)	NE	0.00	4.81	4.81
Pesticides										
Aldrin	ND	ND	ND	ND	0.01	NE (Kp<=0.01)	NE	0.00	0.01	0.01
alpha-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
beta-BHC	ND	ND	ND	ND	NTV	NTV	NE	0.00	0.00	NA
delta-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
Semi-Volatile Organics										
2,4-Dinitrotoluene	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
2,6-Dinitrotoluene	ND	ND	ND	ND	0.01	NE (Kp<=0.01)	NE	0.00	0.01	0.01
Benzo(a)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	0.01	0.01	NE	0.00	0.02	0.02
Dibenzo(a,h)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Volatile Organics										
Tetrachloroethene	ND	ND	ND	ND	0.01	0.02	0.00	0.00	0.03	0.03
Trichloroethene	ND	ND	ND	ND	0.04	0.05	NTV	0.00	0.09	0.09
Vinyl Chloride	ND	ND	ND	0.01	ND	ND	ND	0.01	0.00	0.01
Totals	0.1	0.1	0.0	0.0	99.7	0.1	0.0	0.2	99.8	100.0

Table C-135
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 48 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering		Total Groundwater	Total Soil	Total
							Groundwater	Groundwater			

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-136
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 48 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	5.53E-12	1.06E-12	8.37E-16	NE	8.62E-11	3.57E-10	NE
Explosive							
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	2.24E-06	NE (Kp<=0.01)	NE
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	4.54E-07	NE (Kp<=0.01)	NE
Metals							
Aluminum	4.89E-03	3.13E-04	7.40E-07	NE	5.63E-01	NE (Kp<=0.01)	NE
Antimony	ND	ND	ND	NE	1.78E-04	NE (Kp<=0.01)	NE
Barium	ND	NC	NC	NE	ND	ND	ND
Beryllium	ND	ND	ND	ND	7.34E-07	NE (Kp<=0.01)	NE
Cadmium	ND	ND	ND	NE	1.40E-06	NE (Kp<=0.01)	NE
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Lead	ND	ND	ND	ND	9.33E-04	NE (Kp<=0.01)	NE
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Nickel	ND	ND	ND	ND	1.40E-02	NE (Kp<=0.01)	NE
Silver	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Vanadium	1.48E-05	9.48E-07	2.24E-09	NE	8.74E-05	NE (Kp<=0.01)	NE
Non-Metallic Anion							
Perchlorate	ND	ND	ND	ND	5.59E-04	NE (Kp<=0.01)	NE
Pesticides							
Aldrin	ND	ND	ND	ND	2.20E-08	NE (Kp<=0.01)	NE
alpha-BHC	ND	ND	ND	ND	2.66E-08	3.25E-09	NE
beta-BHC	ND	ND	ND	ND	1.89E-08	2.31E-09	NE
delta-BHC	ND	ND	ND	ND	1.61E-08	1.32E-09	NE
Semi-Volatile Organics							
2,4-Dinitrotoluene	ND	ND	ND	ND	3.28E-07	NE (Kp<=0.01)	NE
2,6-Dinitrotoluene	ND	ND	ND	ND	9.09E-07	NE (Kp<=0.01)	NE
Benzo(a)anthracene	6.64E-07	5.52E-07	1.00E-10	NE	ND	ND	ND
Benzo(a)pyrene	5.59E-07	4.65E-07	8.45E-11	NE	ND	ND	ND
Benzo(b)fluoranthene	1.01E-06	8.43E-07	1.53E-10	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	2.69E-05	3.34E-06	NE
Dibenz(a,h)anthracene	8.04E-08	6.69E-08	1.22E-11	NE	ND	ND	ND
Indeno(1,2,3-cd)pyrene	2.62E-07	2.18E-07	3.96E-11	NE	ND	ND	ND
Volatile Organics							
Tetrachloroethene	ND	ND	ND	ND	6.99E-06	2.80E-05	1.22E-04
Trichloroethene	ND	ND	ND	ND	3.15E-05	4.20E-05	5.50E-04
Vinyl Chloride	ND	ND	ND	1.22E-04	ND	ND	ND

Table C-136
Set 1 - RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 48 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion	Dermal Contact	Inhalation	Inhalation	Ingestion	Dermal Contact	Inhalation of Volatiles
	Soil (0 to 0.5 ft.) (mg/kg-day)	Soil (0 to 0.5 ft.) (mg/kg-day)	of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Groundwater (mg/kg-day)	While Showering Groundwater (mg/kg-day)	While Showering Groundwater (mg/m ³)

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-137
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 48 - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
Dioxin/Furan										
2,3,7,8-TCDD	8.3E-07	3.2E-07	2.8E-11	NE	1.3E-05	1.1E-04	NE	1.1E-06	1.2E-04	1.2E-04
Explosive										
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	2.2E-08	NE (Kp<=0.01)	NE	NA	2.2E-08	2.2E-08
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	4.5E-09	NE (Kp<=0.01)	NE	NA	4.5E-09	4.5E-09
Metals										
Aluminum	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Antimony	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Barium	NC	NC	NC	NE	ND	ND	ND	NA	NA	NA
Beryllium	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Cadmium	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Chromium	ND	ND	ND	NE	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Lead	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	ND	ND	ND	NE	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Nickel	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Silver	ND	ND	ND	NE	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Thallium	ND	ND	ND	NE	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Vanadium	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Non-Metallic Anion										
Perchlorate	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Pesticides										
Aldrin	ND	ND	ND	ND	3.7E-07	NE (Kp<=0.01)	NE	NA	3.7E-07	3.7E-07
alpha-BHC	ND	ND	ND	ND	1.7E-07	2.1E-08	NE	NA	1.9E-07	1.9E-07
beta-BHC	ND	ND	ND	ND	3.4E-08	4.6E-09	NE	NA	3.9E-08	3.9E-08
delta-BHC	ND	ND	ND	ND	2.9E-08	4.7E-09	NE	NA	3.4E-08	3.4E-08
Semi-Volatile Organics										
2,4-Dinitrotoluene	ND	ND	ND	ND	2.2E-07	NE (Kp<=0.01)	NE	NA	2.2E-07	2.2E-07
2,6-Dinitrotoluene	ND	ND	ND	ND	6.2E-07	NE (Kp<=0.01)	NE	NA	6.2E-07	6.2E-07
Benzo(a)anthracene	4.8E-07	4.5E-07	8.8E-15	NE	ND	ND	ND	9.4E-07	NA	9.4E-07
Benzo(a)pyrene	4.1E-06	3.8E-06	7.4E-14	NE	ND	ND	ND	7.9E-06	NA	7.9E-06
Benzo(b)fluoranthene	7.4E-07	6.9E-07	1.3E-11	NE	ND	ND	ND	1.4E-06	NA	1.4E-06
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	3.8E-07	2.5E-07	NE	NA	6.2E-07	6.2E-07
Dibenz(a,h)anthracene	5.9E-07	5.5E-07	1.1E-14	NE	ND	ND	ND	1.1E-06	NA	1.1E-06
Indeno(1,2,3-cd)pyrene	1.9E-07	1.8E-07	3.5E-15	NE	ND	ND	ND	3.7E-07	NA	3.7E-07
Volatile Organics										
Tetrachloroethene	ND	ND	ND	ND	3.6E-07	1.5E-06	7.1E-11	NA	1.8E-06	1.8E-06
Trichloroethene	ND	ND	ND	ND	3.5E-07	4.6E-07	9.4E-07	NA	1.7E-06	1.7E-06
Vinyl Chloride	ND	ND	ND	1.1E-06	ND	ND	ND	1.1E-06	NA	1.1E-06
Totals	6.9E-06	6.0E-06	4.1E-11	1.1E-06	1.5E-05	1.1E-04	9.4E-07	1.4E-05	1.3E-04	1.4E-04

Table C-137
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 48 - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
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NE (Kp<0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-138
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 48 - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	0.59	0.23	0.00	NE	9.26	76.65	NE	0.82	85.91	86.73
<i>Explosive</i>										
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	0.02	NE (Kp<=0.01)	NE	0.00	0.02	0.02
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
<i>Metals</i>										
Aluminum	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Antimony	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Barium	NC	NC	NC	NE	ND	ND	ND	0.00	0.00	NA
Beryllium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Cadmium	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Nickel	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Silver	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Vanadium	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
<i>Non-Metallic Anion</i>										
Perchlorate	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
<i>Pesticides</i>										
Aldrin	ND	ND	ND	ND	0.27	NE (Kp<=0.01)	NE	0.00	0.27	0.27
alpha-BHC	ND	ND	ND	ND	0.12	0.02	NE	0.00	0.13	0.13
beta-BHC	ND	ND	ND	ND	0.02	0.00	NE	0.00	0.03	0.03
delta-BHC	ND	ND	ND	ND	0.02	0.00	NE	0.00	0.02	0.02
<i>Semi-Volatile Organics</i>										
2,4-Dinitrotoluene	ND	ND	ND	ND	0.16	NE (Kp<=0.01)	NE	0.00	0.16	0.16
2,6-Dinitrotoluene	ND	ND	ND	ND	0.44	NE (Kp<=0.01)	NE	0.00	0.44	0.44
Benzo(a)anthracene	0.35	0.32	0.00	NE	ND	ND	ND	0.67	0.00	0.67
Benzo(a)pyrene	2.92	2.73	0.00	NE	ND	ND	ND	5.66	0.00	5.66
Benzo(b)fluoranthene	0.53	0.50	0.00	NE	ND	ND	ND	1.03	0.00	1.03
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	0.27	0.18	NE	0.00	0.45	0.45
Dibenzo(a,h)anthracene	0.42	0.39	0.00	NE	ND	ND	ND	0.81	0.00	0.81
Indeno(1,2,3-cd)pyrene	0.14	0.13	0.00	NE	ND	ND	ND	0.27	0.00	0.27
<i>Volatile Organics</i>										
Tetrachloroethene	ND	ND	ND	ND	0.26	1.04	0.00	0.00	1.30	1.30
Trichloroethene	ND	ND	ND	ND	0.25	0.33	0.67	0.00	1.25	1.25
Vinyl Chloride	ND	ND	ND	0.77	ND	ND	ND	0.77	0.00	0.77
Totals	5.0	4.3	0.0	0.8	11.1	78.2	0.7	10.0	90.0	100.0

Site48_riskcalcs(0_to_0.5)_new.XLS Future Maintenance Wkr (48)

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Table C-138
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 48 - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total	
								Soil	Groundwater

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-139
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 48 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	1.55E-11	2.98E-12	2.34E-15	NE	2.41E-10	9.99E-10	NE
Explosive							
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	6.26E-06	NE (Kp<=0.01)	NE
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	1.27E-06	NE (Kp<=0.01)	NE
Metals							
Aluminum	1.07E-02	6.86E-04	1.62E-06	NE	1.58E+00	NE (Kp<=0.01)	NE
Antimony	7.79E-06	4.98E-07	1.18E-09	NE	4.99E-04	NE (Kp<=0.01)	NE
Barium	4.42E-04	2.83E-05	6.68E-08	NE	ND	ND	ND
Beryllium	ND	ND	ND	NE	2.05E-06	NE (Kp<=0.01)	NE
Cadmium	4.66E-06	2.98E-08	7.04E-10	NE	3.91E-06	NE (Kp<=0.01)	NE
Chromium	ND	ND	ND	ND	6.65E-01	NE (Kp<=0.01)	NE
Lead	ND	ND	ND	ND	2.61E-03	NE (Kp<=0.01)	NE
Manganese	ND	ND	ND	ND	1.86E-02	NE (Kp<=0.01)	NE
Nickel	ND	ND	ND	ND	3.91E-02	NE (Kp<=0.01)	NE
Silver	ND	ND	ND	ND	1.76E-02	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	2.01E-03	NE (Kp<=0.01)	NE
Vanadium	4.15E-05	2.65E-06	6.27E-09	NE	2.45E-04	NE (Kp<=0.01)	NE
Non-Metallic Anion							
Perchlorate	ND	ND	ND	ND	1.57E-03	NE (Kp<=0.01)	NE
Pesticides							
Aldrin	ND	ND	ND	ND	6.16E-08	NE (Kp<=0.01)	NE
alpha-BHC	ND	ND	ND	ND	7.44E-08	9.09E-09	NE
beta-BHC	ND	ND	ND	ND	5.28E-08	6.46E-09	NE
delta-BHC	ND	ND	ND	ND	4.50E-08	3.69E-09	NE
Semi-Volatile Organics							
2,4-Dinitrotoluene	ND	ND	ND	ND	9.20E-07	NE (Kp<=0.01)	NE
2,6-Dinitrotoluene	ND	ND	ND	ND	2.54E-06	NE (Kp<=0.01)	NE
Benzo(a)anthracene	1.86E-06	1.55E-06	2.81E-10	NE	ND	ND	ND
Benzo(a)pyrene	1.57E-06	1.30E-06	2.37E-10	NE	ND	ND	ND
Benzo(b)fluoranthene	2.84E-06	2.36E-06	4.29E-10	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	7.53E-05	9.36E-06	NE
Dibenz(a,h)anthracene	2.25E-07	1.87E-07	3.40E-11	NE	ND	ND	ND
Indeno(1,2,3-cd)pyrene	7.34E-07	6.11E-07	1.11E-10	NE	ND	ND	ND
Volatile Organics							
Tetrachloroethene	ND	ND	ND	ND	1.96E-05	7.83E-05	3.42E-04
Trichloroethene	ND	ND	ND	ND	8.81E-05	1.17E-04	1.54E-03
Vinyl Chloride	ND	ND	ND	3.40E-04	ND	ND	ND

Table C-139
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 48 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
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NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-140
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 48 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
Dioxin/Furan										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	NA	NA	NA
Explosive										
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	3.8E-02	NE (Kp<=0.01)	NE	NA	3.8E-02	3.8E-02
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	7.6E-03	NE (Kp<=0.01)	NE	NA	7.6E-03	7.6E-03
Metals										
Aluminum	1.1E-02	6.9E-03	4.6E-04	NE	1.6E+00	NE (Kp<=0.01)	NE	1.8E-02	1.6E+00	1.6E+00
Antimony	1.9E-02	8.3E-03	2.4E-06	NE	1.2E+00	NE (Kp<=0.01)	NE	2.8E-02	1.2E+00	1.3E+00
Barium	6.3E-03	5.8E-03	1.4E-04	NE	ND	ND	NE	1.2E-02	NA	1.2E-02
Beryllium	ND	ND	ND	ND	1.0E-03	NE (Kp<=0.01)	NE	NA	1.0E-03	1.0E-03
Cadmium	4.7E-03	1.2E-03	3.5E-06	NE	7.8E-03	NE (Kp<=0.01)	NE	5.9E-03	7.8E-03	1.4E-02
Chromium	ND	ND	ND	ND	4.4E-01	NE (Kp<=0.01)	NE	NA	4.4E-01	4.4E-01
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	ND	ND	ND	ND	4.0E-01	NE (Kp<=0.01)	NE	NA	4.0E-01	4.0E-01
Nickel	ND	ND	ND	ND	2.0E+00	NE (Kp<=0.01)	NE	NA	2.0E+00	2.0E+00
Silver	ND	ND	ND	ND	3.5E+00	NE (Kp<=0.01)	NE	NA	3.5E+00	3.5E+00
Thallium	ND	ND	ND	ND	2.5E+01	NE (Kp<=0.01)	NE	NA	2.5E+01	2.5E+01
Vanadium	5.9E-03	1.5E-02	1.3E-04	NE	3.5E-02	NE (Kp<=0.01)	NE	2.1E-02	3.5E-02	5.6E-02
Non-Metallic Anion										
Perchlorate	ND	ND	ND	ND	1.7E+00	NE (Kp<=0.01)	NE	NA	1.7E+00	1.7E+00
Pesticides										
Aldrin	ND	ND	ND	ND	2.1E-03	NE (Kp<=0.01)	NE	NA	2.1E-03	2.1E-03
alpha-BHC	ND	ND	ND	ND	9.3E-06	1.2E-06	NE	NA	1.0E-05	1.0E-05
beta-BHC	ND	ND	ND	ND	NTV	NTV	NE	NA	NA	NA
delta-BHC	ND	ND	ND	ND	1.5E-04	2.5E-05	NE	NA	1.7E-04	1.7E-04
Semi-Volatile Organics										
2,4-Dinitrotoluene	ND	ND	ND	ND	4.6E-04	NE (Kp<=0.01)	NE	NA	4.6E-04	4.6E-04
2,6-Dinitrotoluene	ND	ND	ND	ND	2.5E-03	NE (Kp<=0.01)	NE	NA	2.5E-03	2.5E-03
Benzo(a)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Benzo(b)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Benzo(k)fluoranthene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	3.8E-03	2.5E-03	NE	NA	6.2E-03	6.2E-03
Dibenzo(a,h)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Volatile Organics										
Tetrachloroethene	ND	ND	ND	ND	2.0E-03	7.8E-03	7.0E-04	NA	1.0E-02	1.0E-02
Trichloroethene	ND	ND	ND	ND	1.5E-02	2.0E-02	NTV	NA	3.4E-02	3.4E-02
Vinyl Chloride	ND	ND	ND	3.4E-03	ND	ND	ND	3.4E-03	NA	3.4E-03
Totals	4.7E-02	3.7E-02	7.3E-04	3.4E-03	3.6E-01	3.0E-02	7.0E-04	8.8E-02	3.6E+01	3.6E+01

Site48_riskcalcs(0_to_2)_rme.XLS Future Maintenance Wkr (48)

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Table C-140
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 48 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
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NE ($K_p \leq 0.01$) = Based on EPA guidance, COPCs with a $K_p \leq 0.01$ were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-141
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 48 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
Dioxin/Furan										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	0.00	0.00	NA
Explosive										
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	0.10	NE (Kp<=0.01)	NE	0.00	0.10	0.10
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	0.02	NE (Kp<=0.01)	NE	0.00	0.02	0.02
Metals										
Aluminum	0.03	0.02	0.00	NE	4.35	NE (Kp<=0.01)	NE	0.05	4.35	4.40
Antimony	0.05	0.02	0.00	NE	3.45	NE (Kp<=0.01)	NE	0.08	3.45	3.52
Barium	0.02	0.02	0.00	NE	ND	ND	ND	0.03	0.00	0.03
Beryllium	ND	ND	ND	NE	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
Cadmium	0.01	0.00	0.00	NE	0.02	NE (Kp<=0.01)	NE	0.02	0.02	0.04
Chromium	ND	ND	ND	ND	1.23	NE (Kp<=0.01)	NE	0.00	1.23	1.23
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	ND	ND	ND	ND	1.09	NE (Kp<=0.01)	NE	0.00	1.09	1.09
Nickel	ND	ND	ND	ND	5.41	NE (Kp<=0.01)	NE	0.00	5.41	5.41
Silver	ND	ND	ND	ND	9.73	NE (Kp<=0.01)	NE	0.00	9.73	9.73
Thallium	ND	ND	ND	ND	69.29	NE (Kp<=0.01)	NE	0.00	69.29	69.29
Vanadium	0.02	0.04	0.00	NE	0.10	NE (Kp<=0.01)	NE	0.06	0.10	0.15
Non-Metallic Anion										
Perchlorate	ND	ND	ND	ND	4.81	NE (Kp<=0.01)	NE	0.00	4.81	4.81
Pesticides										
Aldrin	ND	ND	ND	ND	0.01	NE (Kp<=0.01)	NE	0.00	0.01	0.01
alpha-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
beta-BHC	ND	ND	ND	ND	NTV	NTV	NE	0.00	0.00	NA
delta-BHC	ND	ND	ND	ND	0.00	0.00	NE	0.00	0.00	0.00
Semi-Volatile Organics										
2,4-Dinitrotoluene	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
2,6-Dinitrotoluene	ND	ND	ND	ND	0.01	NE (Kp<=0.01)	NE	0.00	0.01	0.01
Benzo(a)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Benzo(a)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	0.01	0.01	NE	0.00	0.02	0.02
Dibenzo(a,h)anthracene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Volatile Organics										
Tetrachloroethene	ND	ND	ND	ND	0.01	0.02	0.00	0.00	0.03	0.03
Trichloroethene	ND	ND	ND	ND	0.04	0.05	NTV	0.00	0.09	0.09
Vinyl Chloride	ND	ND	ND	0.01	ND	ND	ND	0.01	0.00	0.01
Totals	0.1	0.1	0.0	0.0	99.7	0.1	0.0	0.2	99.8	100.0

Site48_riskcalcs(0_to_2)_rme.XLS Future Maintenance Wkr (48)

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Table C-141
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 48 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater		Total Groundwater	Total Soil	Total

NE ($K_p \leq 0.01$) = Based on EPA 6 guidance, COPCs with a $K_p \leq 0.01$ were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-142
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 48 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	5.53E-12	1.06E-12	8.37E-16	NE	8.62E-11	3.57E-10	NE
Explosive							
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	2.24E-06	NE (Kp<=0.01)	NE
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	4.54E-07	NE (Kp<=0.01)	NE
Metals							
Aluminum	3.83E-03	2.45E-04	5.78E-07	NE	5.63E-01	NE (Kp<=0.01)	NE
Antimony	2.78E-06	1.78E-07	4.21E-10	NE	1.78E-04	NE (Kp<=0.01)	NE
Barium	NC	NC	NC	NE	ND	ND	ND
Beryllium	ND	ND	ND	ND	7.34E-07	NE (Kp<=0.01)	NE
Cadmium	1.66E-06	1.06E-08	2.51E-10	NE	1.40E-06	NE (Kp<=0.01)	NE
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Lead	ND	ND	ND	ND	9.33E-04	NE (Kp<=0.01)	NE
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Nickel	ND	ND	ND	ND	1.40E-02	NE (Kp<=0.01)	NE
Silver	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Vanadium	1.48E-05	9.48E-07	2.24E-09	NE	8.74E-05	NE (Kp<=0.01)	NE
Non-Metallic Anion							
Perchlorate	ND	ND	ND	ND	5.59E-04	NE (Kp<=0.01)	NE
Pesticides							
Aldrin	ND	ND	ND	ND	2.20E-08	NE (Kp<=0.01)	NE
alpha-BHC	ND	ND	ND	ND	2.66E-08	3.25E-09	NE
beta-BHC	ND	ND	ND	ND	1.89E-08	2.31E-09	NE
delta-BHC	ND	ND	ND	ND	1.61E-08	1.32E-09	NE
Semi-Volatile Organics							
2,4-Dinitrotoluene	ND	ND	ND	ND	3.28E-07	NE (Kp<=0.01)	NE
2,6-Dinitrotoluene	ND	ND	ND	ND	9.09E-07	NE (Kp<=0.01)	NE
Benzo(a)anthracene	6.64E-07	5.52E-07	1.00E-10	NE	ND	ND	ND
Benzo(a)pyrene	5.59E-07	4.65E-07	8.45E-11	NE	ND	ND	ND
Benzo(b)fluoranthene	1.01E-06	8.43E-07	1.53E-10	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	2.69E-05	3.34E-06	NE
Dibenzo(a,h)anthracene	8.04E-08	6.69E-08	1.22E-11	NE	ND	ND	ND
Indeno(1,2,3-cd)pyrene	2.62E-07	2.18E-07	3.96E-11	NE	ND	ND	ND
Volatile Organics							
Tetrachloroethene	ND	ND	ND	ND	6.99E-06	2.80E-05	1.22E-04
Trichloroethene	ND	ND	ND	ND	3.15E-05	4.20E-05	5.50E-04
Vinyl Chloride	ND	ND	ND	1.22E-04	ND	ND	ND

Table C-142
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 48 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation		Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
			Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)			

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-143
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 48 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
Dioxin/Furan										
2,3,7,8-TCDD	8.3E-07	3.2E-07	2.8E-11	NE	1.3E-05	1.1E-04	NE	1.1E-06	1.2E-04	1.2E-04
Explosive										
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	2.2E-08	NE (Kp<=0.01)	NE	NA	2.2E-08	2.2E-08
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	4.5E-09	NE (Kp<=0.01)	NE	NA	4.5E-09	4.5E-09
Metals										
Aluminum	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Antimony	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Barium	NC	NC	NC	NE	ND	ND	ND	NA	NA	NA
Beryllium	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Cadmium	NTV	NTV	4.5E-10	NE	NTV	NE (Kp<=0.01)	NE	4.5E-10	NA	4.5E-10
Chromium	ND	ND	ND	NE	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Lead	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	ND	ND	ND	NE	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Nickel	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Silver	ND	ND	ND	NE	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Thallium	ND	ND	ND	NE	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Vanadium	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Non-Metallic Anion										
Perchlorate	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Pesticides										
Aldrin	ND	ND	ND	ND	3.7E-07	NE (Kp<=0.01)	NE	NA	3.7E-07	3.7E-07
alpha-BHC	ND	ND	ND	ND	1.7E-07	2.1E-08	NE	NA	1.9E-07	1.9E-07
beta-BHC	ND	ND	ND	ND	3.4E-08	4.6E-09	NE	NA	3.9E-08	3.9E-08
delta-BHC	ND	ND	ND	ND	2.9E-08	4.7E-09	NE	NA	3.4E-08	3.4E-08
Semi-Volatile Organics										
2,4-Dinitrotoluene	ND	ND	ND	ND	2.2E-07	NE (Kp<=0.01)	NE	NA	2.2E-07	2.2E-07
2,6-Dinitrotoluene	ND	ND	ND	ND	6.2E-07	NE (Kp<=0.01)	NE	NA	6.2E-07	6.2E-07
Benzo(a)anthracene	4.8E-07	4.5E-07	8.8E-15	NE	ND	ND	ND	9.4E-07	NA	9.4E-07
Benzo(a)pyrene	4.1E-06	3.8E-06	7.4E-14	NE	ND	ND	ND	7.9E-06	NA	7.9E-06
Benzo(b)fluoranthene	7.4E-07	6.9E-07	1.3E-11	NE	ND	ND	ND	1.4E-06	NA	1.4E-06
Bis(2-ethylhexyl)phthalate	ND	ND	ND	NE	3.8E-07	2.5E-07	NE	NA	6.2E-07	6.2E-07
Dibenzo(a,h)anthracene	5.9E-07	5.5E-07	1.1E-14	NE	ND	ND	ND	1.1E-06	NA	1.1E-06
Indeno(1,2,3-cd)pyrene	1.9E-07	1.8E-07	3.5E-15	NE	ND	ND	ND	3.7E-07	NA	3.7E-07
Volatile Organics										
Tetrachloroethene	ND	ND	ND	ND	3.6E-07	1.5E-06	7.1E-11	NA	1.8E-06	1.8E-06
Trichloroethene	ND	ND	ND	ND	3.5E-07	4.6E-07	9.4E-07	NA	1.7E-06	1.7E-06
Vinyl Chloride	ND	ND	ND	1.1E-06	ND	ND	ND	1.1E-06	NA	1.1E-06
Totals	6.9E-06	6.0E-06	4.9E-10	1.1E-06	1.5E-05	1.1E-04	9.4E-07	1.4E-05	1.3E-04	1.4E-04

Site48_riskcalcs(0_to_2)_rme.XLS Future Maintenance Wkr (48)

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Table C-143
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 48 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering		Inhalation of Volatiles While Showering		Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
						Groundwater	Groundwater	Groundwater	Groundwater			

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-144
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 48 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
Dioxin/Furan										
2,3,7,8-TCDD	0.59	0.23	0.00	NE	9.26	76.65	NE	0.82	85.90	86.73
Explosive										
2-Amino-4,6-dinitrotoluene	ND	ND	ND	ND	0.02	NE (Kp<=0.01)	NE	0.00	0.02	0.02
4-Amino-2,6-dinitrotoluene	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
Metals										
Aluminum	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Antimony	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Barium	NC	NC	NC	NE	ND	ND	ND	0.00	0.00	NA
Beryllium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Cadmium	NTV	NTV	0.00	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	0.00
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Lead	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Nickel	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Silver	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Vanadium	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Non-Metallic Anion										
Perchlorate	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Pesticides										
Aldrin	ND	ND	ND	ND	0.27	NE (Kp<=0.01)	NE	0.00	0.27	0.27
alpha-BHC	ND	ND	ND	ND	0.12	0.02	NE	0.00	0.13	0.13
beta-BHC	ND	ND	ND	ND	0.02	0.00	NE	0.00	0.03	0.03
delta-BHC	ND	ND	ND	ND	0.02	0.00	NE	0.00	0.02	0.02
Semi-Volatile Organics										
2,4-Dinitrotoluene	ND	ND	ND	ND	0.16	NE (Kp<=0.01)	NE	0.00	0.16	0.16
2,6-Dinitrotoluene	ND	ND	ND	ND	0.44	NE (Kp<=0.01)	NE	0.00	0.44	0.44
Benzo(a)anthracene	0.35	0.32	0.00	NE	ND	ND	ND	0.67	0.00	0.67
Benzo(a)pyrene	2.92	2.73	0.00	NE	ND	ND	ND	5.66	0.00	5.66
Benzo(b)fluoranthene	0.53	0.50	0.00	NE	ND	ND	ND	1.03	0.00	1.03
Bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	0.27	0.18	NE	0.00	0.45	0.45
Dibenz(a,h)anthracene	0.42	0.39	0.00	NE	ND	ND	ND	0.81	0.00	0.81
Indeno(1,2,3-cd)pyrene	0.14	0.13	0.00	NE	ND	ND	ND	0.27	0.00	0.27
Volatile Organics										
Tetrachloroethene	ND	ND	ND	ND	0.26	1.04	0.00	0.00	1.30	1.30
Trichloroethene	ND	ND	ND	ND	0.25	0.33	0.67	0.00	1.25	1.25
Vinyl Chloride	ND	ND	ND	0.77	ND	ND	ND	0.77	0.00	0.77
Totals	5.0	4.3	0.0	0.8	11.1	78.2	0.7	10.0	90.0	100.0

Site48_riskcalcs(0_to_2)_rme.XLS Future Maintenance Wkr (48)

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Table C-144
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 48 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Inhalation of Volatiles While Showering		Total Soil	Total Groundwater	Total
						Groundwater	Groundwater			

NE ($K_p \leq 0.01$) = Based on EPA 6 guidance, COPCs with a $K_p \leq 0.01$ were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-145
Set 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Current Trespasser - Site 50 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	1.56E-12	1.63E-13	2.35E-16	NE
<i>Metals</i>				
Vanadium	1.39E-05	4.86E-07	2.10E-09	NE
<i>Non-Metallic Anion</i>				
Perchlorate	7.06E-09	2.47E-10	1.07E-12	NE

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-146
Set 1 - RME
Summary of Hazard Quotients and Indices
Current Trespasser - Site 50 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total Hazard Index
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NA
<i>Metals</i>					
Vanadium	2.0E-03	2.7E-03	4.2E-05	NE	4.7E-03
<i>Non-Metallic Anion</i>					
Perchlorate	7.8E-06	2.7E-07	NTV	NE	8.1E-06
Totals	2.0E-03	2.7E-03	4.2E-05	0.0E+00	4.7E-03

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-147
Set 1 - RME
Percent Contribution to the Total Hazard Index
Current Trespasser - Site 50 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NA
<i>Metals</i>					
Vanadium	42.17	56.77	0.89	NE	99.83
<i>Non-Metallic Anion</i>					
Perchlorate	0.17	0.01	NTV	NE	0.17
Totals	42.3	56.8	0.9	0.0	100.0

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-148
Set 1 -RME
Summary of Exposure Doses (Cancer Effects)
Current Trespasser - Site 50 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	2.67E-13	2.80E-14	4.03E-17	NE
<i>Metals</i>				
Vanadium	2.38E-06	8.34E-08	3.60E-10	NE
<i>Non-Metallic Anion</i>				
Perchlorate	1.21E-09	4.24E-11	1.83E-13	NE

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-149
Set 1 -RME
Summary of Potential Cancer Risks
Current Trespasser - Site 50 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total Potential Cancer Risk
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	4.0E-08	8.4E-09	1.3E-12	NE	4.8E-08
<i>Metals</i>					
Vanadium	NTV	NTV	NTV	NE	NA
<i>Non-Metallic Anion</i>					
Perchlorate	NTV	NTV	NTV	NE	NA
Totals	4.0E-08	8.4E-09	1.3E-12	0.0E+00	4.8E-08

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-150
Set 1 -RME
Percent Contribution to the Total Potential Cancer Risk
Current Trespasser - Site 50 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	82.64	17.35	0.00	NE	100.00
<i>Metals</i>					
Vanadium	NTV	NTV	NTV	NE	NA
<i>Non-Metallic Anion</i>					
Perchlorate	NTV	NTV	NTV	NE	NA
Totals	82.6	17.4	0.0	0.0	100.0

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-151
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 50 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	7.78E-12	1.49E-12	1.18E-15	NE	7.15E-11	2.96E-10	NE
Metals							
Aluminum	ND	ND	ND	ND	9.69E-02	NE (Kp<=0.01)	NE
Antimony	ND	ND	ND	ND	1.37E-04	NE (Kp<=0.01)	NE
Chromium	ND	ND	ND	ND	1.96E-03	NE (Kp<=0.01)	NE
Manganese	ND	ND	ND	ND	1.09E-02	NE (Kp<=0.01)	NE
Nickel	ND	ND	ND	ND	6.75E-03	NE (Kp<=0.01)	NE
Strontium	ND	ND	ND	ND	3.33E-02	NE (Kp<=0.01)	NE
Vanadium	6.95E-05	4.45E-06	1.05E-08	NE	ND	ND	ND
Non-Metallic Anion							
Perchlorate	3.53E-08	2.26E-09	5.34E-12	NE	1.76E-01	NE (Kp<=0.01)	NE
Semi-Volatile Organics							
Naphthalene	ND	ND	ND	ND	1.27E-05	2.87E-06	2.23E-04
Volatile Organics							
1,1,2-Trichloroethane	ND	ND	ND	ND	3.52E-05	2.59E-05	6.16E-04
1,2,4-trimethylbenzene	ND	ND	ND	ND	3.82E-05	1.65E-05	6.68E-04
1,1-Dichloroethene	ND	ND	ND	ND	4.89E-04	6.53E-04	8.56E-03
1,2-Dichloroethane	ND	ND	ND	ND	9.59E-04	4.41E-04	1.68E-02
Acetone	ND	ND	ND	ND	6.56E-04	NE (Kp<=0.01)	1.15E-02
Benzene	ND	ND	ND	ND	2.15E-05	1.49E-06	3.77E-04
Chloroform	ND	ND	ND	ND	2.45E-04	1.91E-04	4.28E-03
cis-1,2-Dichloroethene	ND	ND	ND	ND	4.31E-02	NE (Kp<=0.01)	7.53E-01
trans-1,2-Dichloroethene	ND	ND	ND	ND	1.47E-04	7.47E-06	2.57E-03
Tetrachloroethene	ND	ND	ND	ND	3.42E-04	1.37E-03	5.99E-03
Trichloroethene	ND	ND	ND	ND	2.15E-01	2.87E-01	3.77E+00
Vinyl Chloride	ND	ND	ND	ND	9.78E-04	NE (Kp<=0.01)	1.71E-02

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).
 ND = Not detected in associated media or not selected as a chemical of potential concern.
 NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-152
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 50 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
Dioxin/Furan										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	NA	NA	NA
Metals										
Aluminum	ND	ND	ND	ND	9.7E-02	NE (Kp<=0.01)	NE	NA	9.7E-02	9.7E-02
Antimony	ND	ND	ND	ND	3.4E-01	NE (Kp<=0.01)	NE	NA	3.4E-01	3.4E-01
Chromium	ND	ND	ND	ND	1.3E-03	NE (Kp<=0.01)	NE	NA	1.3E-03	1.3E-03
Manganese	ND	ND	ND	ND	2.3E-01	NE (Kp<=0.01)	NE	NA	2.3E-01	2.3E-01
Nickel	ND	ND	ND	ND	3.4E-01	NE (Kp<=0.01)	NE	NA	3.4E-01	3.4E-01
Strontium	ND	ND	ND	ND	5.5E-02	NE (Kp<=0.01)	NE	NA	5.5E-02	5.5E-02
Vanadium	9.9E-03	2.4E-02	2.1E-04	NE	ND	ND	ND	3.5E-02	NA	3.5E-02
Non-Metallic Anion										
Perchlorate	3.9E-05	2.5E-06	NTV	NE	2.0E+02	NE (Kp<=0.01)	NE	4.2E-05	2.0E+02	2.0E+02
Semi-Volatile Organics										
Naphthalene	ND	ND	ND	ND	6.4E-04	1.6E-04	7.4E-02	NA	7.5E-02	7.5E-02
Volatile Organics										
1,1,2-Trichloroethane	ND	ND	ND	ND	8.8E-03	8.0E-03	NTV	NA	1.7E-02	1.7E-02
1,2,4-trimethylbenzene	ND	ND	ND	ND	7.6E-04	4.1E-04	1.1E-01	NA	1.1E-01	1.1E-01
1,1-Dichloroethene	ND	ND	ND	ND	5.4E-02	7.3E-02	NTV	NA	1.3E-01	1.3E-01
1,2-Dichloroethane	ND	ND	ND	ND	3.2E-02	1.5E-02	3.4E+00	NA	3.4E+00	3.4E+00
Acetone	ND	ND	ND	ND	6.6E-03	NE (Kp<=0.01)	1.9E-02	NA	2.6E-02	2.6E-02
Benzene	ND	ND	ND	ND	7.2E-03	5.1E-04	6.3E-02	NA	7.0E-02	7.0E-02
Chloroform	ND	ND	ND	ND	2.4E-02	9.6E-02	1.4E+01	NA	1.4E+01	1.4E+01
cis-1,2-Dichloroethene	ND	ND	ND	ND	4.3E+00	NE (Kp<=0.01)	9.5E-01	NA	5.3E+00	5.3E+00
trans-1,2-Dichloroethene	ND	ND	ND	ND	7.3E-03	3.7E-04	3.2E-03	NA	1.1E-02	1.1E-02
Tetrachloroethene	ND	ND	ND	ND	3.4E-02	1.4E-01	1.2E-02	NA	1.8E-01	1.8E-01
Trichloroethene	ND	ND	ND	ND	3.6E+01	4.8E+01	NTV	NA	8.4E+01	8.4E+01
Vinyl Chloride	ND	ND	ND	ND	3.3E-01	NE (Kp<=0.01)	1.7E-01	NA	5.0E-01	5.0E-01
Totals	1.0E-02	2.4E-02	2.1E-04	0.0E+00	2.4E+02	4.8E+01	1.9E+01	3.5E-02	3.0E+02	3.0E+02

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-153
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 50 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 0.5 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	0.00	0.00	NA
<i>Metals</i>										
Aluminum	ND	ND	ND	ND	0.03	NE (Kp<=0.01)	NE	0.00	0.03	0.03
Antimony	ND	ND	ND	ND	0.11	NE (Kp<=0.01)	NE	0.00	0.11	0.11
Chromium	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
Manganese	ND	ND	ND	ND	0.08	NE (Kp<=0.01)	NE	0.00	0.08	0.08
Nickel	ND	ND	ND	ND	0.11	NE (Kp<=0.01)	NE	0.00	0.11	0.11
Strontium	ND	ND	ND	ND	0.02	NE (Kp<=0.01)	NE	0.00	0.02	0.02
Vanadium	0.00	0.01	0.00	NE	ND	ND	ND	0.01	0.00	0.01
<i>Non-Metallic Anion</i>										
Perchlorate	0.00	0.00	NTV	NE	64.24	NE (Kp<=0.01)	NE	0.00	64.24	64.24
<i>Semi-Volatile Organics</i>										
Naphthalene	ND	ND	ND	ND	0.00	0.00	0.02	0.00	0.02	0.02
<i>Volatile Organics</i>										
1,1,2-Trichloroethane	ND	ND	ND	ND	0.00	0.00	NTV	0.00	0.01	0.01
1,2,4-trimethylbenzene	ND	ND	ND	ND	0.00	0.00	0.04	0.00	0.04	0.04
1,1-Dichloroethene	ND	ND	ND	ND	0.02	0.02	NTV	0.00	0.04	0.04
1,2-Dichloroethane	ND	ND	ND	ND	0.01	0.00	1.10	0.00	1.12	1.12
Acetone	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	0.01	0.00	0.01	0.01
Benzene	ND	ND	ND	ND	0.00	0.00	0.02	0.00	0.02	0.02
Chloroform	ND	ND	ND	ND	0.01	0.03	4.67	0.00	4.71	4.71
cis-1,2-Dichloroethene	ND	ND	ND	ND	1.41	NE (Kp<=0.01)	0.31	0.00	1.73	1.73
trans-1,2-Dichloroethene	ND	ND	ND	ND	0.00	0.00	0.00	0.00	0.00	0.00
Tetrachloroethene	ND	ND	ND	ND	0.01	0.04	0.00	0.00	0.06	0.06
Trichloroethene	ND	ND	ND	ND	11.78	15.71	NTV	0.00	27.49	27.49
Vinyl Chloride	ND	ND	ND	ND	0.11	NE (Kp<=0.01)	0.06	0.00	0.16	0.16
Totals	0.0	0.0	0.0	0.0	77.9	15.8	6.2	0.0	100.0	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-153
Set I - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 50 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NTV	NTV	NE	0.00	0.00	NA
<i>Metals</i>										
Aluminum	ND	ND	ND	ND	0.03	NE (Kp<=0.01)	NE	0.00	0.03	0.03
Antimony	ND	ND	ND	ND	0.11	NE (Kp<=0.01)	NE	0.00	0.11	0.11
Chromium	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	NE	0.00	0.00	0.00
Manganese	ND	ND	ND	ND	0.08	NE (Kp<=0.01)	NE	0.00	0.08	0.08
Nickel	ND	ND	ND	ND	0.11	NE (Kp<=0.01)	NE	0.00	0.11	0.11
Strontium	ND	ND	ND	ND	0.02	NE (Kp<=0.01)	NE	0.00	0.02	0.02
Vanadium	0.00	0.01	0.00	NE	ND	ND	ND	0.01	0.00	0.01
<i>Non-Metallic Anion</i>										
Perchlorate	0.00	0.00	NTV	NE	64.24	NE (Kp<=0.01)	NE	0.00	64.24	64.24
<i>Semi-Volatile Organics</i>										
Naphthalene	ND	ND	ND	ND	0.00	0.00	0.02	0.00	0.02	0.02
<i>Volatile Organics</i>										
1,1,2-Trichloroethane	ND	ND	ND	ND	0.00	0.00	NTV	0.00	0.01	0.01
1,2,4-trimethylbenzene	ND	ND	ND	ND	0.00	0.00	0.04	0.00	0.04	0.04
1,1-Dichloroethene	ND	ND	ND	ND	0.02	0.02	NTV	0.00	0.04	0.04
1,2-Dichloroethane	ND	ND	ND	ND	0.01	0.00	1.10	0.00	1.12	1.12
Acetone	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	0.01	0.00	0.01	0.01
Benzene	ND	ND	ND	ND	0.00	0.00	0.02	0.00	0.02	0.02
Chloroform	ND	ND	ND	ND	0.01	0.03	4.67	0.00	4.71	4.71
cis-1,2-Dichloroethene	ND	ND	ND	ND	1.41	NE (Kp<=0.01)	0.31	0.00	1.73	1.73
trans-1,2-Dichloroethene	ND	ND	ND	ND	0.00	0.00	0.00	0.00	0.00	0.00
Tetrachloroethene	ND	ND	ND	ND	0.01	0.04	0.00	0.00	0.06	0.06
Trichloroethene	ND	ND	ND	ND	11.78	15.71	NTV	0.00	27.49	27.49
Vinyl Chloride	ND	ND	ND	ND	0.11	NE (Kp<=0.01)	0.06	0.00	0.16	0.16
Totals	0.0	0.0	0.0	0.0	77.9	15.8	6.2	0.0	100.0	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-154
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 50 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	2.78E-12	5.34E-13	4.20E-16	NE	2.56E-11	1.06E-10	NE
Metals							
Aluminum	ND	ND	ND	ND	3.46E-02	NE (Kp<=0.01)	NE
Antimony	ND	ND	ND	ND	4.89E-05	NE (Kp<=0.01)	NE
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Nickel	ND	ND	ND	ND	2.41E-03	NE (Kp<=0.01)	NE
Sroutium	ND	ND	ND	ND	1.19E-02	NE (Kp<=0.01)	NE
Vanadium	2.48E-05	1.59E-06	3.75E-09	NE	ND	ND	ND
Non-Metallic Anion							
Perchlorate	1.26E-08	8.07E-10	1.91E-12	NE	6.29E-02	NE (Kp<=0.01)	NE
Semi-Volatile Organics							
Naphthalene	ND	ND	ND	ND	NC	NC	NC
Volatile Organics							
1,1,2-Trichloroethane	ND	ND	ND	ND	1.26E-05	9.26E-06	2.20E-04
1,2,4-trimethylbenzene	ND	ND	ND	ND	1.36E-05	5.88E-06	2.39E-04
1,1-Dichloroethene	ND	ND	ND	ND	1.75E-04	2.33E-04	3.06E-03
1,2-Dichloroethane	ND	ND	ND	ND	3.42E-04	1.58E-04	5.99E-03
Acetone	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NC
Benzene	ND	ND	ND	ND	7.69E-06	5.30E-07	1.35E-04
Chloroform	ND	ND	ND	ND	8.74E-05	6.83E-05	1.53E-03
cis-1,2-Dichloroethene	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NC
trans-1,2-Dichloroethene	ND	ND	ND	ND	5.24E-05	2.67E-06	9.17E-04
Tetrachloroethene	ND	ND	ND	ND	1.22E-04	4.89E-04	2.14E-03
Trichloroethene	ND	ND	ND	ND	7.69E-02	1.03E-01	1.35E+00
Vinyl Chloride	ND	ND	ND	ND	3.49E-04	NE (Kp<=0.01)	6.12E-03

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-155
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 50 - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
Dioxin/Furan										
2,3,7,8-TCDD	4.2E-07	1.6E-07	1.4E-11	NE	3.8E-06	3.2E-05	NE	5.8E-07	3.6E-05	3.6E-05
Metals										
Aluminum	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Antimony	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Nickel	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Strontium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Vanadium	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
Non-Metallic Anion										
Perchlorate	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Semi-Volatile Organics										
Naphthalene	ND	ND	ND	ND	NC	NC	NC	NA	NA	NA
Volatile Organics										
1,1,2-Trichloroethane	ND	ND	ND	ND	7.2E-07	6.5E-07	3.5E-09	NA	1.4E-06	1.4E-06
1,2,4-trimethylbenzene	ND	ND	ND	ND	NTV	NTV	NTV	NA	NA	NA
1,1-Dichloroethene	ND	ND	ND	ND	1.0E-04	1.4E-04	1.5E-04	NA	4.0E-04	4.0E-04
1,2-Dichloroethane	ND	ND	ND	ND	3.1E-05	1.4E-05	1.6E-04	NA	2.0E-04	2.0E-04
Acetone	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NC	NA	NA	NA
Benzene	ND	ND	ND	ND	4.2E-07	3.0E-08	1.0E-09	NA	4.5E-07	4.5E-07
Chloroform	ND	ND	ND	ND	5.3E-07	2.1E-06	3.5E-05	NA	3.8E-05	3.8E-05
cis-1,2-Dichloroethene	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NC	NA	NA	NA
trans-1,2-Dichloroethene	ND	ND	ND	ND	NTV	NTV	NTV	NA	NA	NA
Tetrachloroethene	ND	ND	ND	ND	6.4E-06	2.5E-05	1.2E-09	NA	3.2E-05	3.2E-05
Trichloroethene	ND	ND	ND	ND	8.5E-04	1.1E-03	2.3E-03	NA	4.3E-03	4.3E-03
Vinyl Chloride	ND	ND	ND	ND	5.2E-04	NE (Kp<=0.01)	5.4E-05	NA	5.8E-04	5.8E-04
Totals	4.2E-07	1.6E-07	1.4E-11	0.0E+00	1.5E-03	1.3E-03	2.7E-03	5.8E-07	5.5E-03	5.5E-03

NE (Kp<=0.01) = Based on EPA 6 guidance. COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-156
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 50 - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
Dioxin/Furan										
2,3,7,8-TCDD	0.01	0.00	0.00	NE	0.07	0.57	NE	0.01	0.64	0.65
Metals										
Aluminum	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Antimony	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Chromium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Nickel	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Strontium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Vanadium	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
Non-Metallic Anion										
Perchlorate	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Semi-Volatile Organics										
Naphthalene	ND	ND	ND	ND	NC	NC	NC	0.00	0.00	NA
Volatile Organics										
1,1,2-Trichloroethane	ND	ND	ND	ND	0.01	0.01	0.00	0.00	0.02	0.02
1,2,4-trimethylbenzene	ND	ND	ND	ND	NTV	NTV	NTV	0.00	0.00	NA
1,1-Dichloroethene	ND	ND	ND	ND	1.89	2.52	2.76	0.00	7.17	7.17
1,2-Dichloroethane	ND	ND	ND	ND	0.56	0.26	2.81	0.00	3.63	3.63
Acetone	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NC	0.00	0.00	NA
Benzene	ND	ND	ND	ND	0.01	0.00	0.00	0.00	0.01	0.01
Chloroform	ND	ND	ND	ND	0.01	0.04	0.63	0.00	0.68	0.68
cis-1,2-Dichloroethene	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NC	0.00	0.00	NA
trans-1,2-Dichloroethene	ND	ND	ND	ND	NTV	NTV	NTV	0.00	0.00	NA
Tetrachloroethene	ND	ND	ND	ND	0.11	0.46	0.00	0.00	0.57	0.57
Trichloroethene	ND	ND	ND	ND	15.25	20.34	41.24	0.00	76.84	76.84
Vinyl Chloride	ND	ND	ND	ND	9.45	NE (Kp<=0.01)	0.97	0.00	10.42	10.42
Totals	0.0	0.0	0.0	0.0	27.4	24.2	48.4	0.0	100.0	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance. COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-157
Set 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Current Trespasser - Site 60 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	7.92E-13	8.31E-14	1.20E-16	NE
<i>Metals</i>				
Aluminum	ND	ND	ND	NE

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-158
Set 1 - RME
Summary of Hazard Quotients and Indices
Current Trespasser - Site 60 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total Hazard Index
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NA
<i>Metals</i>					
Aluminum	ND	ND	ND	NE	NA
Totals	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-159
Set 1 - RME
Percent Contribution to the Total Hazard Index
Current Trespasser - Site 60 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NA
<i>Metals</i>					
Aluminum	ND	ND	ND	NE	NA
Totals	0.0	0.0	0.0	0.0	0.0

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-160
Set 1 -RME
Summary of Exposure Doses (Cancer Effects)
Current Trespasser - Site 60 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	1.36E-13	1.42E-14	2.05E-17	NE
<i>Metals</i>				
Aluminum	ND	ND	ND	NE

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-161
Set 1 -RME
Summary of Potential Cancer Risks
Current Trespasser - Site 60 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total Potential Cancer Risk
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	2.0E-08	4.3E-09	6.8E-13	NE	2.5E-08
<i>Metals</i>					
Aluminum	ND	ND	ND	NE	NA
Totals	2.0E-08	4.3E-09	6.8E-13	0.0E+00	2.5E-08

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-162
Set 1 -RME
Percent Contribution to the Total Potential Cancer Risk
Current Trespasser - Site 60 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	82.64	17.35	0.00	NE	100.00
<i>Metals</i>					
Aluminum	ND	ND	ND	NE	NA
Totals	82.6	17.4	0.0	0.0	100.0

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-163
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 60 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
<i>Dioxin/Furan</i>							
2,3,7,8-TCDD	3.96E-12	7.60E-13	5.98E-16	NE	ND	ND	ND
<i>Metals</i>							
Aluminum	ND	ND	ND	NE	ND	ND	ND

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).
 ND = Not detected in associated media or not selected as a chemical of potential concern.
 NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-164
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 60 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact		Inhalation of Volatiles		Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
						While Showering Groundwater	While Showering Groundwater	While Showering Groundwater	While Showering Groundwater			
<i>Dioxin/Furan</i>												
2,3,7,8-TCDD	NTV	NTV	NTV	NE	ND	ND	ND	ND	ND	NA	NA	NA
<i>Metals</i>												
Aluminum	ND	ND	ND	NE	ND	ND	ND	ND	ND	NA	NA	NA
Totals	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-165
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 60 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering		Inhalation of Volatiles While Showering		Total Soil	Total Groundwater	Total
						Groundwater	Groundwater	Groundwater	Groundwater			
<i>Dioxin/Furan</i>												
2,3,7,8-TCDD	NTV	NTV	NTV	NE	ND	ND	ND	ND	ND	0.00	0.00	NA
<i>Metals</i>												
Aluminum	ND	ND	ND	NE	ND	ND	ND	ND	ND	0.00	0.00	NA
Totals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-166
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 60 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
<i>Dioxin/Furan</i>							
2,3,7,8-TCDD	1.41E-12	2.71E-13	2.14E-16	NE	ND	ND	ND
<i>Metals</i>							
Aluminum	ND	ND	ND	NE	ND	ND	ND

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-167
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 60 - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	2.1E-07	8.1E-08	7.1E-12	NE	ND	ND	ND	2.9E-07	NA	2.9E-07
<i>Metals</i>										
Aluminum	ND	ND	ND	NE	ND	ND	ND	NA	NA	NA
Totals	2.1E-07	8.1E-08	7.1E-12	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.9E-07	0.0E+00	2.9E-07

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-168
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 60 - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering		Inhalation of Volatiles While Showering		Total Soil	Total Groundwater	Total
						Groundwater	Groundwater	Groundwater	Groundwater			
<i>Dioxin/Furan</i>												
2,3,7,8-TCDD	72.25	27.74	0.00	NE	ND	ND	ND	ND	ND	100.00	0.00	100.00
<i>Metals</i>												
Aluminum	ND	ND	ND	NE	ND	ND	ND	ND	ND	0.00	0.00	NA
Totals	72.3	27.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-169
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 60 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
<i>Dioxin/Furan</i>							
2,3,7,8-TCDD	3.96E-12	7.60E-13	5.98E-16	NE	ND	ND	ND
<i>Metals</i>							
Aluminum	1.74E-02	1.11E-03	2.63E-06	NE	ND	ND	ND

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).
 ND = Not detected in associated media or not selected as a chemical of potential concern.
 NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-170
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 60 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
<i>Metals</i>										
Aluminum	1.7E-02	1.1E-02	7.5E-04	NE	ND	ND	ND	2.9E-02	NA	2.9E-02
Totals	1.7E-02	1.1E-02	7.5E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.9E-02	0.0E+00	2.9E-02

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

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Table C-171
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 60 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
<i>Metals</i>										
Aluminum	59.41	38.02	2.57	NE	ND	ND	ND	100.00	0.00	100.00
Totals	59.4	38.0	2.6	0.0	0.0	0.0	0.0	100.0	0.0	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-172
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 60 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
<i>Dioxin/Furan</i> 2,3,7,8-TCDD	1.41E-12	2.71E-13	2.14E-16	NE	ND	ND	ND
<i>Metals</i> Aluminum	6.22E-03	3.98E-04	9.40E-07	NE	ND	ND	ND

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-173
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 60 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering		Inhalation of Volatiles While Showering		Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
						Groundwater	Groundwater	Groundwater	Groundwater			
<i>Dioxin/Furan</i>												
2,3,7,8-TCDD	2.1E-07	8.1E-08	7.1E-12	NE	ND	ND	ND	ND	ND	2.9E-07	NA	2.9E-07
<i>Metals</i>												
Aluminum	NTV	NTV	NTV	NE	ND	ND	ND	ND	ND	NA	NA	NA
Totals	2.1E-07	8.1E-08	7.1E-12	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.9E-07	0.0E+00	2.9E-07

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-174
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 60 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering		Inhalation of Volatiles While Showering		Total Groundwater	Total
						Groundwater	Soil	Groundwater	Soil		
<i>Dioxin/Furan</i>											
2,3,7,8-TCDD	72.25	27.74	0.00	NE	ND	ND	100.00	ND	100.00	0.00	100.00
<i>Metals</i>											
Aluminum	NTV	NTV	NTV	NE	ND	ND	0.00	ND	0.00	0.00	NA
Totals	72.3	27.7	0.0	0.0	0.0	0.0	100.0	0.0	100.0	0.0	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-175
Set 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Current Trespasser - Site 67 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	7.78E-13	8.17E-14	1.18E-16	NE
<i>Metals</i>				
Aluminum	ND	ND	ND	NE

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-176
Set 1 - RME
Summary of Hazard Quotients and Indices
Current Trespasser - Site 67 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total Hazard Index
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NA
<i>Metals</i>					
Aluminum	ND	ND	ND	NE	NA
Totals	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-177
Set 1 - RME
Percent Contribution to the Total Hazard Index
Current Trespasser - Site 67 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	NTV	NTV	NTV	NE	NA
<i>Metals</i>					
Aluminum	ND	ND	ND	NE	NA
Totals	0.0	0.0	0.0	0.0	0.0

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-178
Set 1 -RME
Summary of Exposure Doses (Cancer Effects)
Current Trespasser - Site 67 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	1.33E-13	1.40E-14	2.02E-17	NE
<i>Metals</i>				
Aluminum	ND	ND	ND	NE

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-179
Set 1 -RME
Summary of Potential Cancer Risks
Current Trespasser - Site 67 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total Potential Cancer Risk
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	2.0E-08	4.2E-09	6.7E-13	NE	2.4E-08
<i>Metals</i>					
Aluminum	ND	ND	ND	NE	NA
Totals	2.0E-08	4.2E-09	6.7E-13	0.0E+00	2.4E-08

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-180
Set 1 -RME
Percent Contribution to the Total Potential Cancer Risk
Current Trespasser - Site 67 - Exposure To On-Site Soil
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Total
<i>Dioxin/Furan</i>					
2,3,7,8-TCDD	82.64	17.35	0.00	NE	100.00
<i>Metals</i>					
Aluminum	ND	ND	ND	NE	NA
Totals	82.6	17.4	0.0	0.0	100.0

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-181
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 67 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
<i>Dioxin/Furan</i>							
2,3,7,8-TCDD	3.89E-12	7.47E-13	5.88E-16	NE	ND	ND	ND
<i>Metals</i>							
Aluminum	ND	ND	ND	NE	5.87E-02	NE (Kp<=0.01)	NE
Barium	ND	ND	ND	ND	3.24E-02	NE (Kp<=0.01)	NE
Manganese	ND	ND	ND	ND	3.41E-02	NE (Kp<=0.01)	NE
Nickel	ND	ND	ND	ND	1.78E-03	NE (Kp<=0.01)	NE
Strontium	ND	ND	ND	ND	7.44E-02	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	2.05E-05	NE (Kp<=0.01)	NE
<i>Volatile Organics</i>							
1,1,1-Trichloroethane	ND	ND	ND	ND	1.76E-02	2.51E-02	3.08E-01
1,1,2-Trichloroethane	ND	ND	ND	ND	3.23E-04	2.38E-04	5.65E-03
1,1,1-Dichloroethene	ND	ND	ND	ND	3.72E-03	4.96E-03	6.51E-02
1,2-Dichloroethane	ND	ND	ND	ND	2.64E-04	1.22E-04	4.62E-03
Methylene chloride	ND	ND	ND	ND	1.40E-05	NE (Kp<=0.01)	2.45E-04
Trichloroethene	ND	ND	ND	ND	6.16E-05	8.22E-05	1.08E-03

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-182
Set 1 -RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 67 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
<i>Metals</i>										
Aluminum	ND	ND	ND	NE	5.9E-02	NE (Kp<=0.01)	NE	NA	5.9E-02	5.9E-02
Barium	ND	ND	ND	ND	4.6E-01	NE (Kp<=0.01)	NE	NA	4.6E-01	4.6E-01
Manganese	ND	ND	ND	ND	7.2E-01	NE (Kp<=0.01)	NE	NA	7.2E-01	7.2E-01
Nickel	ND	ND	ND	ND	8.9E-02	NE (Kp<=0.01)	NE	NA	8.9E-02	8.9E-02
Strontium	ND	ND	ND	ND	1.2E-01	NE (Kp<=0.01)	NE	NA	1.2E-01	1.2E-01
Thallium	ND	ND	ND	ND	2.6E-01	NE (Kp<=0.01)	NE	NA	2.6E-01	2.6E-01
<i>Volatile Organics</i>										
1,1,1-Trichloroethane	ND	ND	ND	ND	6.3E-02	1.0E-01	1.4E-01	NA	3.0E-01	3.0E-01
1,1,2-Trichloroethane	ND	ND	ND	ND	8.1E-02	7.3E-02	NTV	NA	1.5E-01	1.5E-01
1,1-Dichloroethene	ND	ND	ND	ND	4.1E-01	5.3E-01	NTV	NA	9.6E-01	9.6E-01
1,2-Dichloroethane	ND	ND	ND	ND	8.8E-03	4.1E-03	9.2E-01	NA	9.4E-01	9.4E-01
Methylene chloride	ND	ND	ND	ND	2.3E-04	NE (Kp<=0.01)	8.2E-05	NA	3.1E-04	3.1E-04
Trichloroethene	ND	ND	ND	ND	1.0E-02	1.4E-02	NTV	NA	2.4E-02	2.4E-02
Totals	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E+00	7.4E-01	1.1E+00	0.0E+00	4.1E+00	4.1E+00

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NTV = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-183
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 67 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
<i>Metals</i>										
Aluminum	ND	ND	ND	NE	1.43	NE (Kp<=0.01)	NE	0.00	1.43	1.43
Barium	ND	ND	ND	ND	11.29	NE (Kp<=0.01)	NE	0.00	11.29	11.29
Manganese	ND	ND	ND	ND	17.68	NE (Kp<=0.01)	NE	0.00	17.68	17.68
Nickel	ND	ND	ND	ND	2.17	NE (Kp<=0.01)	NE	0.00	2.17	2.17
Strontium	ND	ND	ND	ND	3.02	NE (Kp<=0.01)	NE	0.00	3.02	3.02
Thallium	ND	ND	ND	ND	6.27	NE (Kp<=0.01)	NE	0.00	6.27	6.27
<i>Volatile Organics</i>										
1,1,1-Trichloroethane	ND	ND	ND	ND	1.53	2.43	3.41	0.00	7.38	7.38
1,1,2-Trichloroethane	ND	ND	ND	ND	1.97	1.79	NTV	0.00	3.76	3.76
1,1-Dichloroethene	ND	ND	ND	ND	10.08	13.45	NTV	0.00	23.53	23.53
1,2-Dichloroethane	ND	ND	ND	ND	0.21	0.10	22.56	0.00	22.88	22.88
Methylene chloride	ND	ND	ND	ND	0.01	NE (Kp<=0.01)	0.00	0.00	0.01	0.01
Trichloroethene	ND	ND	ND	ND	0.25	0.33	NTV	0.00	0.59	0.59
Totals	0.0	0.0	0.0	0.0	55.9	18.1	26.0	0.0	100.0	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-184
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 67 - Exposure To On-Site Soil (0 to 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 0.5 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 0.5 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	1.39E-12	2.67E-13	2.10E-16	NE	ND	ND	ND
Metals							
Aluminum	ND	ND	ND	NE	2.10E-02	NE (Kp<=0.01)	NE
Barium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Nickel	ND	ND	ND	ND	6.36E-04	NE (Kp<=0.01)	NE
Strontium	ND	ND	ND	ND	2.66E-02	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Volatile Organics							
1,1,1-Trichloroethane	ND	ND	ND	ND	NC	NC	NC
1,1,2-Trichloroethane	ND	ND	ND	ND	1.15E-04	8.49E-05	2.02E-03
1,1-Dichloroethene	ND	ND	ND	ND	1.33E-03	1.77E-03	2.32E-02
1,2-Dichloroethane	ND	ND	ND	ND	9.44E-05	4.34E-05	1.65E-03
Methylene chloride	ND	ND	ND	ND	5.00E-06	NE (Kp<=0.01)	8.75E-05
Trichloroethene	ND	ND	ND	ND	2.20E-05	2.94E-05	3.85E-04

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-185
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 67 - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	2.1E-07	8.0E-08	6.9E-12	NE	ND	ND	ND	2.9E-07	NA	2.9E-07
<i>Metals</i>										
Aluminum	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Barium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Nickel	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Strontium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
<i>Volatile Organics</i>										
1,1,1-Trichloroethane	ND	ND	ND	ND	NC	NC	NC	NA	NA	NA
1,1,2-Trichloroethane	ND	ND	ND	ND	6.6E-06	6.0E-06	3.2E-08	NA	1.3E-05	1.3E-05
1,1-Dichloroethene	ND	ND	ND	ND	8.0E-04	1.1E-03	1.2E-03	NA	3.0E-03	3.0E-03
1,2-Dichloroethane	ND	ND	ND	ND	8.6E-06	3.9E-06	4.3E-05	NA	5.5E-05	5.5E-05
Methylene chloride	ND	ND	ND	ND	3.7E-08	NE (Kp<=0.01)	4.1E-08	NA	7.9E-08	7.9E-08
Trichloroethene	ND	ND	ND	ND	2.4E-07	3.2E-07	6.5E-07	NA	1.2E-06	1.2E-06
Totals	2.1E-07	8.0E-08	6.9E-12	0.0E+00	8.1E-04	1.1E-03	1.2E-03	2.9E-07	3.1E-03	3.1E-03

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available

Table C-186
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 67 - Exposure To On-Site Soil (0 To 0.5 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 0.5 ft.)	Dermal Contact Soil (0 to 0.5 ft.)	Inhalation of Particulates Soil (0 to 0.5 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	0.01	0.00	0.00	NE	ND	ND	ND	0.01	0.00	0.01
<i>Metals</i>										
Aluminum	ND	ND	ND	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Barium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Nickel	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Strontium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
<i>Volatile Organics</i>										
1,1,1-Trichloroethane	ND	ND	ND	ND	NC	NC	NC	0.00	0.00	NA
1,1,2-Trichloroethane	ND	ND	ND	ND	0.21	0.19	0.00	0.00	0.41	0.41
1,1-Dichloroethene	ND	ND	ND	ND	25.78	34.38	37.59	0.00	97.75	97.75
1,2-Dichloroethane	ND	ND	ND	ND	0.28	0.13	1.39	0.00	1.79	1.79
Methylene chloride	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	0.00	0.00	0.00	0.00
Trichloroethene	ND	ND	ND	ND	0.01	0.01	0.02	0.00	0.04	0.04
Totals	0.0	0.0	0.0	0.0	26.3	34.7	39.0	0.0	100.0	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-187
SET 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Maintenance Worker - Site 67 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	3.89E-12	7.47E-13	5.88E-16	NE	ND	ND	ND
Metals							
Aluminum	1.53E-02	9.77E-04	2.31E-06	NE	5.87E-02	NE (Kp<=0.01)	NE
Barium	ND	ND	ND	ND	3.24E-02	NE (Kp<=0.01)	NE
Manganese	ND	ND	ND	ND	3.41E-02	NE (Kp<=0.01)	NE
Nickel	ND	ND	ND	ND	1.78E-03	NE (Kp<=0.01)	NE
Strontium	ND	ND	ND	ND	7.44E-02	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	2.05E-05	NE (Kp<=0.01)	NE
Volatile Organics							
1,1,1-Trichloroethane	ND	ND	ND	ND	1.76E-02	2.51E-02	3.08E-01
1,1,2-Trichloroethane	ND	ND	ND	ND	3.23E-04	2.38E-04	5.65E-03
1,1-Dichloroethane	ND	ND	ND	ND	3.72E-03	4.96E-03	6.51E-02
1,2-Dichloroethane	ND	ND	ND	ND	2.64E-04	1.22E-04	4.62E-03
Methylene chloride	ND	ND	ND	ND	1.40E-05	NE (Kp<=0.01)	2.45E-04
Trichloroethene	ND	ND	ND	ND	6.16E-05	8.22E-05	1.08E-03

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995)
 ND = Not detected in associated media or not selected as a chemical of potential concern.
 NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-188
Set 1 - RME
Summary of Hazard Quotients and Indices
Future Maintenance Worker - Site 67 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Hazard Index Soil	Hazard Index Groundwater	Total Hazard Index
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	ND	ND	ND	NA	NA	NA
<i>Metals</i>										
Aluminum	1.5E-02	9.8E-03	6.6E-04	NE	5.9E-02	NE (Kp<=0.01)	NE	2.6E-02	5.9E-02	8.4E-02
Barium	ND	ND	ND	NE	4.6E-01	NE (Kp<=0.01)	NE	NA	4.6E-01	4.6E-01
Manganese	ND	ND	ND	ND	7.2E-01	NE (Kp<=0.01)	NE	NA	7.2E-01	7.2E-01
Nickel	ND	ND	ND	ND	8.9E-02	NE (Kp<=0.01)	NE	NA	8.9E-02	8.9E-02
Strontium	ND	ND	ND	ND	1.2E-01	NE (Kp<=0.01)	NE	NA	1.2E-01	1.2E-01
Thallium	ND	ND	ND	ND	2.6E-01	NE (Kp<=0.01)	NE	NA	2.6E-01	2.6E-01
<i>Volatile Organics</i>										
1,1,1-Trichloroethane	ND	ND	ND	ND	6.3E-02	1.0E-01	1.4E-01	NA	3.0E-01	3.0E-01
1,1,2-Trichloroethane	ND	ND	ND	ND	8.1E-02	7.3E-02	NTV	NA	1.5E-01	1.5E-01
1,1-Dichloroethene	ND	ND	ND	ND	4.1E-01	5.5E-01	NTV	NA	9.6E-01	9.6E-01
1,2-Dichloroethane	ND	ND	ND	ND	8.8E-03	4.1E-03	9.2E-01	NA	9.4E-01	9.4E-01
Methylene chloride	ND	ND	ND	ND	2.3E-04	NE (Kp<=0.01)	8.2E-05	NA	3.1E-04	3.1E-04
Trichloroethene	ND	ND	ND	ND	1.0E-02	1.4E-02	NTV	NA	2.4E-02	2.4E-02
Totals	1.5E-02	9.8E-03	6.6E-04	0.0E+00	2.3E+00	7.4E-01	1.1E+00	2.6E-02	4.1E+00	4.1E+00

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-189
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Maintenance Worker - Site 67 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	NTV	NTV	NTV	NE	ND	ND	ND	0.00	0.00	NA
<i>Metals</i>										
Aluminum	0.37	0.24	0.02	NE	1.42	NE (Kp<=0.01)	NE	0.62	1.42	2.05
Barium	ND	ND	ND	ND	11.22	NE (Kp<=0.01)	NE	0.00	11.22	11.22
Manganese	ND	ND	ND	ND	17.57	NE (Kp<=0.01)	NE	0.00	17.57	17.57
Nickel	ND	ND	ND	ND	2.16	NE (Kp<=0.01)	NE	0.00	2.16	2.16
Strontium	ND	ND	ND	ND	3.01	NE (Kp<=0.01)	NE	0.00	3.01	3.01
Thallium	ND	ND	ND	ND	6.23	NE (Kp<=0.01)	NE	0.00	6.23	6.23
<i>Volatile Organics</i>										
1,1,1-Trichloroethane	ND	ND	ND	ND	1.53	2.42	3.39	0.00	7.33	7.33
1,1,2-Trichloroethane	ND	ND	ND	ND	1.96	1.78	NTV	0.00	3.74	3.74
1,1-Dichloroethene	ND	ND	ND	ND	10.02	13.36	NTV	0.00	23.38	23.38
1,2-Dichloroethane	ND	ND	ND	ND	0.21	0.10	22.42	0.00	22.73	22.73
Methylene chloride	ND	ND	ND	ND	0.01	NE (Kp<=0.01)	0.00	0.00	0.01	0.01
Trichloroethene	ND	ND	ND	ND	0.25	0.33	NTV	0.00	0.58	0.58
Totals	0.4	0.2	0.0	0.0	55.6	18.0	25.8	0.6	99.4	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-190
Set 1- RME
Summary of Exposure Doses (Cancer Effects)
Future Maintenance Worker - Site 67 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.) (mg/kg-day)	Dermal Contact Soil (0 to 2 ft.) (mg/kg-day)	Inhalation of Particulates Soil (0 to 2 ft.) (mg/m ³)	Inhalation of Volatiles Soil (0 to 7 ft.) (mg/m ³)	Ingestion Groundwater (mg/kg-day)	Dermal Contact While Showering Groundwater (mg/kg-day)	Inhalation of Volatiles While Showering Groundwater (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	1.39E-12	2.67E-13	2.10E-16	NE	ND	ND	ND
Metals							
Aluminum	5.45E-03	3.49E-04	8.24E-07	NE	2.10E-02	NE (Kp<=0.01)	NE
Barium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Nickel	ND	ND	ND	ND	6.36E-04	NE (Kp<=0.01)	NE
Strontium	ND	ND	ND	ND	2.66E-02	NE (Kp<=0.01)	NE
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE
Volatile Organics							
1,1,1-Trichloroethane	ND	ND	ND	ND	NC	NC	NC
1,1,2-Trichloroethane	ND	ND	ND	ND	1.15E-04	8.49E-05	2.02E-03
1,1-Dichloroethene	ND	ND	ND	ND	1.33E-03	1.77E-03	2.32E-02
1,2-Dichloroethane	ND	ND	ND	ND	9.44E-05	4.34E-05	1.65E-03
Methylene chloride	ND	ND	ND	ND	5.00E-06	NE (Kp<=0.01)	8.75E-05
Trichloroethene	ND	ND	ND	ND	2.20E-05	2.94E-05	3.85E-04

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

Table C-191
Set 1 - RME
Summary of Potential Cancer Risks
Future Maintenance Worker - Site 67 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Cancer Risk Soil	Cancer Risk Groundwater	Total Potential Cancer Risk
Dioxin/Furan										
2,3,7,8-TCDD	2.1E-07	8.0E-08	6.9E-12	NE	ND	ND	ND	2.9E-07	NA	2.9E-07
Metals										
Aluminum	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Barium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Nickel	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Strontium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	NA	NA	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	NA	NA	NA
Volatile Organics										
1,1,1-Trichloroethane	ND	ND	ND	ND	NC	NC	NC	NA	NA	NA
1,1,2-Trichloroethane	ND	ND	ND	ND	6.6E-06	6.0E-06	3.2E-08	NA	1.3E-05	1.3E-05
1,1-Dichloroethene	ND	ND	ND	ND	8.0E-04	1.1E-03	1.2E-03	NA	3.0E-03	3.0E-03
1,2-Dichloroethane	ND	ND	ND	ND	8.6E-06	3.9E-06	4.3E-05	NA	5.5E-05	5.5E-05
Methylene chloride	ND	ND	ND	ND	3.7E-08	NE (Kp<=0.01)	4.1E-08	NA	7.9E-08	7.9E-08
Trichloroethene	ND	ND	ND	ND	2.4E-07	3.2E-07	6.5E-07	NA	1.2E-06	1.2E-06
Totals	2.1E-07	8.0E-08	6.9E-12	0.0E+00	8.1E-04	1.1E-03	1.2E-03	2.9E-07	3.1E-03	3.1E-03

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

Table C-192
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Maintenance Worker - Site 67 - Exposure To On-Site Soil (0 To 2 Feet) And Groundwater
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Soil (0 to 2 ft.)	Dermal Contact Soil (0 to 2 ft.)	Inhalation of Particulates Soil (0 to 2 ft.)	Inhalation of Volatiles Soil (0 to 7 ft.)	Ingestion Groundwater	Dermal Contact While Showering Groundwater	Inhalation of Volatiles While Showering Groundwater	Total Soil	Total Groundwater	Total
<i>Dioxin/Furan</i>										
2,3,7,8-TCDD	0.01	0.00	0.00	NE	ND	ND	ND	0.01	0.00	0.01
<i>Metals</i>										
Aluminum	NTV	NTV	NTV	NE	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Barium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Manganese	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
Nickel	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Strontium	ND	ND	ND	ND	NTV	NE (Kp<=0.01)	NE	0.00	0.00	NA
Thallium	ND	ND	ND	ND	NC	NE (Kp<=0.01)	NE	0.00	0.00	NA
<i>Volatile Organics</i>										
1,1,1-Trichloroethane	ND	ND	ND	ND	NC	NC	NC	0.00	0.00	NA
1,1,2-Trichloroethane	ND	ND	ND	ND	0.21	0.19	0.00	0.00	0.41	0.41
1,1,1-Dichloroethene	ND	ND	ND	ND	25.78	34.38	37.59	0.00	97.75	97.75
1,2-Dichloroethane	ND	ND	ND	ND	0.28	0.13	1.39	0.00	1.79	1.79
Methylene chloride	ND	ND	ND	ND	0.00	NE (Kp<=0.01)	0.00	0.00	0.00	0.00
Trichloroethene	ND	ND	ND	ND	0.01	0.01	0.02	0.00	0.04	0.04
Totals	0.0	0.0	0.0	0.0	26.3	34.7	39.0	0.0	100.0	100.0

NE (Kp<=0.01) = Based on EPA 6 guidance, COPCs with a Kp <= 0.01 were not evaluated for dermal contact while showering (EPA, 1995).

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NTV = No toxicity value available.

0.00 = Contribution to risk was less than 0.01 percent.

Table C-193
Set 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Current On-Site Trespasser - Exposure To Central Creek Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Sediment (mg/kg-day)	Dermal Contact Sediment (mg/kg-day)	Dermal Contact Surface Water (mg/kg-day)	Ingestion Fish (mg/kg-day)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	6.69E-14	8.23E-15	2.46E-11	3.54E-10
<i>Metals</i>				
Aluminum	1.02E-03	4.17E-05	ND	9.03E-01
Antimony	ND	ND	5.63E-07	2.08E-04
Arsenic	6.36E-07	7.82E-08	ND	5.64E-04
Barium	1.76E-05	7.22E-07	ND	1.56E-02
Beryllium	2.00E-07	8.18E-09	ND	1.77E-04
Cadmium	1.23E-06	5.03E-09	ND	4.11E-03
Chromium	4.70E-06	1.93E-07	ND	1.81E-03
Cobalt	2.94E-06	1.20E-07	ND	2.60E-03
Copper	2.02E-06	8.26E-08	ND	5.96E-04
Lead	2.66E-06	1.09E-07	ND	1.65E-03
Manganese	8.28E-05	3.39E-06	4.99E-05	1.84E-01
Nickel	4.89E-06	2.01E-07	ND	4.34E-03
Selenium	3.72E-07	1.52E-08	ND	3.30E-04
Strontium	5.28E-06	2.17E-07	9.18E-06	5.09E-03
Vanadium	5.28E-06	2.17E-07	ND	4.69E-03
Zinc	9.59E-06	3.93E-07	ND	5.39E-03
<i>Volatile Organics</i>				
Methylene chloride	ND	ND	1.28E-06	1.74E-05

ND = Not detected in associated media or not selected as a chemical of potential concern.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

Table C-194
Set 1 - RME
Summary of Hazard Quotients and Indices
Current On-Site Trespasser - Exposure To Central Creek Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Sediment	Dermal Contact Sediment	Hazard Index Sediment	Dermal Contact Surface Water	Ingestion Fish	Total Hazard Index
<i>Dioxin/Furan</i>						
2,3,7,8-TCDD	NTV	NTV	NA	NTV	NTV	NA
<i>Metals</i>						
Aluminum	1.0E-03	4.2E-04	1.4E-03	ND	9.0E-01	9.0E-01
Antimony	ND	ND	NA	9.4E-03	5.2E-01	5.3E-01
Arsenic	2.1E-03	2.7E-04	2.4E-03	ND	1.9E+00	1.9E+00
Barium	2.5E-04	1.5E-04	4.0E-04	ND	2.2E-01	2.2E-01
Beryllium	1.0E-04	5.8E-04	6.8E-04	ND	8.9E-02	8.9E-02
Cadmium	1.2E-03	2.0E-04	1.4E-03	ND	4.1E+00	4.1E+00
Chromium	3.1E-06	9.9E-06	1.3E-05	ND	1.2E-03	1.2E-03
Cobalt	1.5E-04	7.5E-06	1.5E-04	ND	1.3E-01	1.3E-01
Copper	5.0E-05	3.6E-06	5.4E-05	ND	1.5E-02	1.5E-02
Lead	NTV	NTV	NA	ND	NTV	NA
Manganese	1.8E-03	1.2E-03	3.0E-03	1.8E-02	1.3E+00	1.3E+00
Nickel	2.4E-04	2.5E-04	5.0E-04	ND	2.2E-01	2.2E-01
Selenium	7.4E-05	6.1E-06	8.0E-05	ND	6.6E-02	6.6E-02
Strontium	8.8E-06	1.8E-06	1.1E-05	7.6E-05	8.5E-03	8.6E-03
Vanadium	7.5E-04	1.2E-03	1.9E-03	ND	6.7E-01	6.7E-01
Zinc	3.2E-05	6.6E-06	3.9E-05	ND	1.8E-02	1.8E-02
<i>Volatile Organics</i>						
Methylene chloride	ND	ND	NA	2.2E-05	2.9E-04	3.1E-04
Totals	7.8E-03	4.3E-03	1.2E-02	2.7E-02	1.0E+01	1.0E+01

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

NTV = No toxicity value available.

Table C-195
Set 1 - RME
Percent Contribution to the Total Hazard Index
Current On-Site Trespasser - Exposure To Central Creek Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Sediment	Dermal Contact Sediment	Total Sediment	Dermal Contact Surface Water	Ingestion Fish	Total
<i>Dioxin/Furan</i>						
2,3,7,8-TCDD	NTV	NTV	NA	NTV	NTV	NA
<i>Metals</i>						
Aluminum	0.01	0.00	0.01	ND	8.84	8.86
Antimony	ND	ND	NA	0.09	5.10	5.19
Arsenic	0.02	0.00	0.02	ND	18.42	18.45
Barium	0.00	0.00	0.00	ND	2.19	2.19
Beryllium	0.00	0.01	0.01	ND	0.87	0.87
Cadmium	0.01	0.00	0.01	ND	40.28	40.29
Chromium	0.00	0.00	0.00	ND	0.01	0.01
Cobalt	0.00	0.00	0.00	ND	1.28	1.28
Copper	0.00	0.00	0.00	ND	0.15	0.15
Lead	NTV	NTV	NA	ND	NTV	NA
Manganese	0.02	0.01	0.03	0.17	12.89	13.10
Nickel	0.00	0.00	0.00	ND	2.13	2.13
Selenium	0.00	0.00	0.00	ND	0.65	0.65
Strontium	0.00	0.00	0.00	0.00	0.08	0.08
Vanadium	0.01	0.01	0.02	ND	6.56	6.58
Zinc	0.00	0.00	0.00	ND	0.18	0.18
<i>Volatile Organics</i>						
Methylene chloride	ND	ND	NA	0.00	0.00	0.00
Totals	0.1	0.0	0.1	0.3	99.6	100.0

0.00 = Contribution to risk was less than 0.01 percent.

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

NTV = No toxicity value available.

Table C-196
Set 1 - RME
Summary of Exposure Doses (Cancer Effects)
Current On-Site Trespasser - Exposure To Central Creek Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Sediment (mg/kg-day)	Dermal Contact Sediment (mg/kg-day)	Dermal Contact Surface Water (mg/kg-day)	Ingestion Fish (mg/kg-day)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	1.15E-14	1.41E-15	4.22E-12	6.07E-11
<i>Metals</i>				
Aluminum	1.74E-04	7.15E-06	ND	1.55E-01
Antimony	ND	ND	9.66E-08	3.57E-05
Arsenic	1.09E-07	1.34E-08	ND	9.67E-05
Barium	NC	NC	ND	NC
Beryllium	3.42E-08	1.40E-09	ND	3.04E-05
Cadmium	2.10E-07	8.62E-10	ND	7.05E-04
Chromium	NC	NC	ND	NC
Cobalt	5.03E-07	2.06E-08	ND	4.46E-04
Copper	NC	NC	ND	NC
Lead	4.56E-07	1.87E-08	ND	2.83E-04
Manganese	NC	NC	NC	NC
Nickel	8.39E-07	3.44E-08	ND	7.44E-04
Selenium	NC	NC	ND	NC
Strontium	9.06E-07	3.71E-08	1.57E-06	8.73E-04
Vanadium	9.06E-07	3.71E-08	ND	8.03E-04
Zinc	NC	NC	ND	NC
<i>Volatile Organics</i>				
Methylene chloride	ND	ND	2.19E-07	2.98E-06

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

Table C-197
Set 1 - RME
Summary of Potential Cancer Risks
Current On-Site Trespasser - Exposure To Central Creek Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Sediment	Dermal Contact Sediment	Total Sediment	Dermal Contact Surface Water	Ingestion Fish	Total Potential Cancer Risk
<i>Dioxin/Furan</i>						
2,3,7,8-TCDD	1.7E-09	4.2E-10	2.1E-09	1.3E-06	9.1E-06	1.0E-05
<i>Metals</i>						
Aluminum	NTV	NTV	NA	ND	NTV	NA
Antimony	ND	ND	NA	NTV	NTV	NA
Arsenic	1.6E-07	2.1E-08	1.8E-07	ND	1.5E-04	1.5E-04
Barium	NC	NC	NA	ND	NC	NA
Beryllium	NTV	NTV	NA	ND	NTV	NA
Cadmium	NTV	NTV	NA	ND	NTV	NA
Chromium	NC	NC	NA	ND	NC	NA
Cobalt	NTV	NTV	NA	ND	NTV	NA
Copper	NC	NC	NA	ND	NC	NA
Lead	NTV	NTV	NA	ND	NTV	NA
Manganese	NC	NC	NA	NC	NC	NA
Nickel	NTV	NTV	NA	ND	NTV	NA
Selenium	NC	NC	NA	ND	NC	NA
Strontium	NTV	NTV	NA	NTV	NTV	NA
Vanadium	NTV	NTV	NA	ND	NTV	NA
Zinc	NC	NC	NA	ND	NC	NA
<i>Volatile Organics</i>						
Methylene chloride	ND	ND	NA	1.7E-09	2.2E-08	2.4E-08
Totals	1.7E-07	2.2E-08	1.9E-07	1.3E-06	1.5E-04	1.6E-04

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

NTV = No toxicity value available.

Table C-198
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Current On-Site Trespasser - Exposure To Central Creek Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Sediment	Dermal Contact Sediment	Total Sediment	Dermal Contact Surface Water	Ingestion Fish	Total
<i>Dioxin/Furan</i>						
2,3,7,8-TCDD	0.00	0.00	0.00	0.81	5.85	6.67
<i>Metals</i>						
Aluminum	NTV	NTV	NA	ND	NTV	NA
Antimony	ND	ND	NA	NTV	NTV	NA
Arsenic	0.11	0.01	0.00	ND	93.20	93.32
Barium	NC	NC	NA	ND	NC	NA
Beryllium	NTV	NTV	NA	ND	NTV	NA
Cadmium	NTV	NTV	NA	ND	NTV	NA
Chromium	NC	NC	NA	ND	NC	NA
Cobalt	NTV	NTV	NA	ND	NTV	NA
Copper	NC	NC	NA	ND	NC	NA
Lead	NTV	NTV	NA	ND	NTV	NA
Manganese	NC	NC	NA	NC	NC	NA
Nickel	NTV	NTV	NA	ND	NTV	NA
Selenium	NC	NC	NA	ND	NC	NA
Strontium	NTV	NTV	NA	NTV	NTV	NA
Vanadium	NTV	NTV	NA	ND	NTV	NA
Zinc	NC	NC	NA	ND	NC	NA
<i>Volatile Organics</i>						
Methylene chloride	ND	ND	NA	0.00	0.01	0.02
Totals	0.1	0.0	0.0	0.8	99.1	100.0

0.00 = Contribution to risk was less than 0.01 percent.

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

NTV = No toxicity value available.

Table C-199
Set 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Current On-Site Trespasser - Exposure To Saunders Branch Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Sediment (mg/kg-day)	Dermal Contact Sediment (mg/kg-day)	Dermal Contact Surface Water (mg/kg-day)	Ingestion Fish (mg/kg-day)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	6.99E-14	8.59E-15	ND	1.45E-11
<i>Metals</i>				
Aluminum	6.85E-04	2.81E-05	ND	6.08E-01
Antimony	ND	ND	3.75E-07	1.39E-04
Arsenic	2.00E-06	2.46E-07	ND	1.77E-03
Barium	2.89E-05	1.18E-06	ND	2.56E-02
Beryllium	2.33E-07	9.55E-09	ND	2.07E-04
Chromium	7.87E-06	3.23E-07	ND	3.02E-03
Copper	6.97E-07	2.86E-08	ND	2.06E-04
Lead	5.79E-06	2.37E-07	ND	3.60E-03
Manganese	2.86E-05	1.17E-06	5.40E-06	2.53E-02
Nickel	2.70E-06	1.11E-07	ND	2.40E-03
Strontium	ND	ND	1.25E-06	6.94E-04
Vanadium	4.50E-06	1.85E-07	ND	3.99E-03
Zinc	2.94E-06	1.20E-07	ND	1.65E-03
<i>Volatile Organics</i>				
Acetone	1.08E-08	0.00E+00	ND	5.30E-07
Toluene	5.68E-09	0.00E+00	ND	6.38E-05

ND = Not detected in associated media or not selected as a chemical of potential concern.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

Table C-200
Set 1 - RME
Summary of Hazard Quotients and Indices
Current On-Site Trespasser - Exposure To Saunders Branch Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Sediment	Dermal Contact Sediment	Hazard Index Sediment	Dermal Contact Surface Water	Ingestion Fish	Total Hazard Index
<i>Dioxin/Furan</i>						
2,3,7,8-TCDD	NTV	NTV	NA	ND	NTV	NA
<i>Metals</i>						
Aluminum	6.8E-04	2.8E-04	9.7E-04	ND	6.1E-01	6.1E-01
Antimony	ND	ND	NA	6.3E-03	3.5E-01	3.5E-01
Arsenic	6.7E-03	8.6E-04	7.5E-03	ND	5.9E+00	5.9E+00
Barium	4.1E-04	2.4E-04	6.5E-04	ND	3.7E-01	3.7E-01
Beryllium	1.2E-04	6.8E-04	8.0E-04	ND	1.0E-01	1.0E-01
Chromium	5.2E-06	1.7E-05	2.2E-05	ND	2.0E-03	2.0E-03
Copper	1.7E-05	1.3E-06	1.9E-05	ND	5.1E-03	5.2E-03
Lead	NTV	NTV	NA	ND	NTV	NA
Manganese	6.1E-04	4.2E-04	1.0E-03	1.9E-03	1.8E-01	1.8E-01
Nickel	1.4E-04	1.4E-04	2.7E-04	ND	1.2E-01	1.2E-01
Strontium	ND	ND	NA	1.0E-05	1.2E-03	1.2E-03
Vanadium	6.4E-04	1.0E-03	1.7E-03	ND	5.7E-01	5.7E-01
Zinc	9.8E-06	2.0E-06	1.2E-05	ND	5.5E-03	5.5E-03
<i>Volatile Organics</i>						
Acetone	1.1E-07	0.0E+00	1.1E-07	ND	5.3E-06	5.4E-06
Toluene	2.8E-08	0.0E+00	2.8E-08	ND	3.2E-04	3.2E-04
Totals	9.3E-03	3.7E-03	1.3E-02	8.2E-03	8.2E+00	8.2E+00

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

NTV = No toxicity value available.

Table C-201
Set 1 - RME
Percent Contribution to the Total Hazard Index
Current On-Site Trespasser - Exposure To Saunders Branch Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Sediment	Dermal Contact Sediment	Total Sediment	Dermal Contact Surface Water	Ingestion Fish	Total
<i>Dioxin/Furan</i>						
2,3,7,8-TCDD	NTV	NTV	NA	ND	NTV	NA
<i>Metals</i>						
Aluminum	0.01	0.00	0.01	ND	7.38	7.39
Antimony	ND	ND	NA	0.08	4.22	4.29
Arsenic	0.08	0.01	0.09	ND	71.69	71.78
Barium	0.01	0.00	0.01	ND	4.45	4.45
Beryllium	0.00	0.01	0.01	ND	1.25	1.26
Chromium	0.00	0.00	0.00	ND	0.02	0.02
Copper	0.00	0.00	0.00	ND	0.06	0.06
Lead	NTV	NTV	NA	ND	NTV	NA
Manganese	0.01	0.01	0.01	0.02	2.20	2.23
Nickel	0.00	0.00	0.00	ND	1.45	1.46
Strontium	ND	ND	NA	0.00	0.01	0.01
Vanadium	0.01	0.01	0.02	ND	6.93	6.95
Zinc	0.00	0.00	0.00	ND	0.07	0.07
<i>Volatile Organics</i>						
Acetone	0.00	0.00	0.00	ND	0.00	0.00
Toluene	0.00	0.00	0.00	ND	0.00	0.00
Totals	0.1	0.0	0.2	0.1	99.7	100.0

0.00 = Contribution to risk was less than 0.01 percent.

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

NTV = No toxicity value available.

Table C-202
Set 1 - RME
Summary of Exposure Doses (Cancer Effects)
Current On-Site Trespasser - Exposure To Saunders Branch Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Sediment (mg/kg-day)	Dermal Contact Sediment (mg/kg-day)	Dermal Contact Surface Water (mg/kg-day)	Ingestion Fish (mg/kg-day)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	1.20E-14	1.47E-15	ND	2.48E-12
<i>Metals</i>				
Aluminum	1.17E-04	4.81E-06	ND	1.04E-01
Antimony	ND	ND	6.44E-08	2.38E-05
Arsenic	3.42E-07	4.21E-08	ND	3.04E-04
Barium	NC	NC	ND	NC
Beryllium	3.99E-08	1.64E-09	ND	3.54E-05
Chromium	NC	NC	ND	NC
Copper	NC	NC	ND	NC
Lead	9.93E-07	4.07E-08	ND	6.17E-04
Manganese	NC	NC	NC	NC
Nickel	4.63E-07	1.90E-08	ND	4.11E-04
Strontium	ND	ND	2.15E-07	1.19E-04
Vanadium	7.72E-07	3.16E-08	ND	6.84E-04
Zinc	NC	NC	ND	NC
<i>Volatile Organics</i>				
Acetone	NC	NC	ND	NC
Toluene	NC	NC	ND	NC

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

Table C-203
Set 1 - RME
Summary of Potential Cancer Risks
Current On-Site Trespasser - Exposure To Saunders Branch Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Sediment	Dermal Contact Sediment	Total Sediment	Dermal Contact Surface Water	Ingestion Fish	Total Potential Cancer Risk
<i>Dioxin/Furan</i>						
2,3,7,8-TCDD	1.8E-09	4.4E-10	2.2E-09	ND	3.7E-07	3.7E-07
<i>Metals</i>						
Aluminum	NTV	NTV	NA	ND	NTV	NA
Antimony	ND	ND	NA	NTV	NTV	NA
Arsenic	5.1E-07	6.6E-08	5.8E-07	ND	4.6E-04	4.6E-04
Barium	NC	NC	NA	ND	NC	NA
Beryllium	NTV	NTV	NA	ND	NTV	NA
Chromium	NC	NC	NA	ND	NC	NA
Copper	NC	NC	NA	ND	NC	NA
Lead	NTV	NTV	NA	ND	NTV	NA
Manganese	NC	NC	NA	NC	NC	NA
Nickel	NTV	NTV	NA	ND	NTV	NA
Strontium	ND	ND	NA	NTV	NTV	NA
Vanadium	NTV	NTV	NA	ND	NTV	NA
Zinc	NC	NC	NA	ND	NC	NA
<i>Volatile Organics</i>						
Acetone	NC	NC	NA	ND	NC	NA
Toluene	NC	NC	NA	ND	NC	NA
Totals	5.2E-07	6.7E-08	5.8E-07	0.0E+00	4.6E-04	4.6E-04

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

NTV = No toxicity value available.

Table C-204
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Current On-Site Trespasser - Exposure To Saunders Branch Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Sediment	Dermal Contact Sediment	Total Sediment	Dermal Contact Surface Water	Ingestion Fish	Total
<i>Dioxin/Furan</i>						
2,3,7,8-TCDD	0.00	0.00	0.00	ND	0.08	0.08
<i>Metals</i>						
Aluminum	NTV	NTV	NA	ND	NTV	NA
Antimony	ND	ND	NA	NTV	NTV	NA
Arsenic	0.11	0.01	0.00	ND	99.79	99.92
Barium	NC	NC	NA	ND	NC	NA
Beryllium	NTV	NTV	NA	ND	NTV	NA
Chromium	NC	NC	NA	ND	NC	NA
Copper	NC	NC	NA	ND	NC	NA
Lead	NTV	NTV	NA	ND	NTV	NA
Manganese	NC	NC	NA	NC	NC	NA
Nickel	NTV	NTV	NA	ND	NTV	NA
Strontium	ND	ND	NA	NTV	NTV	NA
Vanadium	NTV	NTV	NA	ND	NTV	NA
Zinc	NC	NC	NA	ND	NC	NA
<i>Volatile Organics</i>						
Acetone	NC	NC	NA	ND	NC	NA
Toluene	NC	NC	NA	ND	NC	NA
Totals	0.1	0.0	0.0	0.0	99.9	100.0

0.00 = Contribution to risk was less than 0.01 percent.

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

NTV = No toxicity value available.

Table C-205
Set 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Current On-Site Trespasser - Exposure To Goose Prairie Cr. Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Sediment (mg/kg-day)	Dermal Contact Sediment (mg/kg-day)	Dermal Contact Surface Water (mg/kg-day)	Ingestion Fish (mg/kg-day)
Dioxin/Furan				
2,3,7,8-TCDD	2.47E-12	3.03E-13	2.03E-11	5.10E-10
Explosive				
2,4,6-Trinitrotoluene	ND	ND	1.58E-06	7.69E-05
2-Amino-4,6-dinitrotoluene	ND	ND	1.47E-06	1.14E-04
RDX	ND	ND	8.73E-08	2.26E-05
Metals				
Aluminum	1.27E-03	5.20E-05	4.11E-05	1.12E+00
Antimony	ND	ND	9.49E-07	3.51E-04
Arsenic	8.18E-07	1.01E-07	ND	7.26E-04
Barium	2.84E-05	1.16E-06	ND	2.52E-02
Beryllium	2.35E-07	9.63E-09	ND	2.08E-04
Chromium	5.87E-06	2.41E-07	ND	2.26E-03
Cobalt	2.68E-06	1.10E-07	ND	2.38E-03
Copper	2.27E-06	9.31E-08	ND	6.71E-04
Cyanide	1.85E-07	7.61E-09	ND	1.65E-04
Lead	3.82E-06	1.56E-07	6.82E-08	2.37E-03
Manganese	7.10E-05	2.91E-06	9.51E-06	6.30E-02
Mercury	2.54E-08	1.04E-09	ND	1.20E-05
Nickel	5.66E-06	2.32E-07	ND	5.02E-03
Selenium	9.94E-07	4.08E-08	ND	8.82E-04
Silver	4.70E-07	1.93E-08	ND	4.17E-04
Strontium	1.60E-05	6.58E-07	2.88E-06	1.42E-02
Thallium	ND	ND	6.47E-08	5.97E-05
Vanadium	6.95E-06	2.85E-07	ND	6.16E-03
Zinc	1.23E-05	5.04E-07	ND	6.90E-03
Non-Metallic Anion				
Perchlorate	ND	ND	4.80E-14	2.61E-06
PCBs				
Aroclor 1254	7.63E-09	1.88E-09	ND	1.58E-06
Semi-Volatile Organics				
2,4-Dinitrotoluene	ND	ND	2.60E-07	4.45E-06
2,6-Dinitrotoluene	ND	ND	5.05E-07	1.26E-05
Bis(2-ethylhexyl)phthalate	ND	ND	2.99E-04	3.68E-02
Di-n-butyl phthalate	3.02E-07	1.24E-07	ND	3.86E-01
Naphthalene	1.66E-09	8.87E-10	ND	2.64E-06
Volatile Organics				
1,1-Dichloroethene	2.35E-10	0.00E+00	ND	9.02E-07
Acetone	9.10E-09	0.00E+00	5.81E-05	4.12E-04
cis-1,2-Dichloroethene	2.25E-08	0.00E+00	ND	1.00E-04
p-Cymene	8.06E-09	0.00E+00	ND	1.40E-03
Toluene	7.05E-10	0.00E+00	ND	7.92E-06
Trichloroethene	7.42E-09	0.00E+00	7.32E-05	9.71E-05
Vinyl Chloride	1.31E-08	0.00E+00	6.05E-07	7.99E-06

ND = Not detected in associated media or not selected as a chemical of potential concern.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

Table C-206
Set 1 - RME
Summary of Hazard Quotients and Indices
Current On-Site Trespasser - Exposure To Goose Prairie Cr. Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Sediment	Dermal Contact Sediment	Hazard Index Sediment	Dermal Contact Surface Water	Ingestion Fish	Total Hazard Index
<i>Dioxin/Furan</i>						
2,3,7,8-TCDD	NTV	NTV	NA	NTV	NTV	NA
<i>Explosive</i>						
2,4,6-Trinitrotoluene	ND	ND	NA	5.3E-03	1.5E-01	1.6E-01
2-Amino-4,6-dinitrotoluene	ND	ND	NA	1.8E-02	6.9E-01	7.0E-01
RDX	ND	ND	NA	2.9E-05	7.5E-03	7.6E-03
<i>Metals</i>						
Aluminum	1.3E-03	5.2E-04	1.8E-03	4.1E-04	1.1E+00	1.1E+00
Antimony	ND	ND	NA	1.6E-02	8.8E-01	8.9E-01
Arsenic	2.7E-03	3.5E-04	3.1E-03	ND	2.4E+00	2.4E+00
Barium	4.1E-04	2.4E-04	6.4E-04	ND	3.6E-01	3.6E-01
Beryllium	1.2E-04	6.9E-04	8.1E-04	ND	1.0E-01	1.0E-01
Chromium	3.9E-06	1.2E-05	1.6E-05	ND	1.5E-03	1.5E-03
Cobalt	1.3E-04	6.9E-06	1.4E-04	ND	1.2E-01	1.2E-01
Copper	5.7E-05	4.1E-06	6.1E-05	ND	1.7E-02	1.7E-02
Cyanide	9.3E-06	7.6E-07	1.0E-05	ND	8.2E-03	8.2E-03
Lead	NTV	NTV	NA	NTV	NTV	NA
Manganese	1.5E-03	1.0E-03	2.5E-03	3.4E-03	4.5E-01	4.6E-01
Mercury	8.5E-05	5.0E-05	1.3E-04	ND	4.0E-02	4.0E-02
Nickel	2.8E-04	2.9E-04	5.7E-04	ND	2.5E-01	2.5E-01
Selenium	2.0E-04	1.6E-05	2.2E-04	ND	1.8E-01	1.8E-01
Silver	9.4E-05	9.6E-05	1.9E-04	ND	8.3E-02	8.4E-02
Strontium	2.7E-05	5.5E-06	3.2E-05	2.4E-05	2.4E-02	2.4E-02
Thallium	ND	ND	NA	8.1E-04	7.5E-01	7.5E-01
Vanadium	9.9E-04	1.6E-03	2.6E-03	ND	8.8E-01	8.8E-01
Zinc	4.1E-05	8.4E-06	4.9E-05	ND	2.3E-02	2.3E-02
<i>Non-Metallic Anion</i>						
Perchlorate	ND	ND	NA	5.3E-11	2.9E-03	2.9E-03
<i>PCBs</i>						
Aroclor 1254	3.8E-04	1.0E-04	4.9E-04	ND	7.9E-02	7.9E-02
<i>Semi-Volatile Organics</i>						
2,4-Dinitrotoluene	ND	ND	NA	1.5E-04	2.2E-03	2.4E-03
2,6-Dinitrotoluene	ND	ND	NA	5.9E-04	1.3E-02	1.3E-02
Bis(2-ethylhexyl)phthalate	ND	ND	NA	7.9E-02	1.8E+00	1.9E+00
Di-n-butyl phthalate	3.0E-06	1.2E-06	4.3E-06	ND	3.9E+00	3.9E+00
Naphthalene	8.3E-08	5.0E-08	1.3E-07	ND	1.3E-04	1.3E-04
<i>Volatile Organics</i>						
1,1-Dichloroethene	2.6E-08	0.0E+00	2.6E-08	ND	1.0E-04	1.0E-04
Acetone	9.1E-08	0.0E+00	9.1E-08	7.0E-04	4.1E-03	4.8E-03
cis-1,2-Dichloroethene	2.3E-06	0.0E+00	2.3E-06	ND	1.0E-02	1.0E-02
p-Cymene	8.1E-08	0.0E+00	8.1E-08	ND	1.4E-02	1.4E-02
Toluene	3.5E-09	0.0E+00	3.5E-09	ND	4.0E-05	4.0E-05
Trichloroethene	1.2E-06	0.0E+00	1.2E-06	1.2E-02	1.6E-02	2.8E-02
Vinyl Chloride	4.4E-06	0.0E+00	4.4E-06	2.0E-04	2.7E-03	2.9E-03
Totals	8.3E-03	5.0E-03	1.3E-02	1.4E-01	1.4E+01	1.5E+01

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

NTV = No toxicity value available.

Table C-207
Set 1 - RME
Percent Contribution to the Total Hazard Index
Current On-Site Trespasser - Exposure To Goose Prairie Cr. Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Sediment	Dermal Contact Sediment	Total Sediment	Dermal Contact Surface Water	Ingestion Fish	Total
<i>Dioxin/Furan</i>						
2,3,7,8-TCDD	NTV	NTV	NA	NTV	NTV	NA
<i>Explosive</i>						
2,4,6-Trinitrotoluene	ND	ND	NA	0.04	1.06	1.09
2-Amino-4,6-dinitrotoluene	ND	ND	NA	0.12	4.72	4.84
RDX	ND	ND	NA	0.00	0.05	0.05
<i>Metals</i>						
Aluminum	0.01	0.00	0.01	0.00	7.73	7.75
Antimony	ND	ND	NA	0.11	6.03	6.14
Arsenic	0.02	0.00	0.02	ND	16.62	16.65
Barium	0.00	0.00	0.00	ND	2.47	2.48
Beryllium	0.00	0.00	0.01	ND	0.72	0.72
Chromium	0.00	0.00	0.00	ND	0.01	0.01
Cobalt	0.00	0.00	0.00	ND	0.82	0.82
Copper	0.00	0.00	0.00	ND	0.12	0.12
Cyanide	0.00	0.00	0.00	ND	0.06	0.06
Lead	NTV	NTV	NA	NTV	NTV	NA
Manganese	0.01	0.01	0.02	0.02	3.09	3.13
Mercury	0.00	0.00	0.00	ND	0.28	0.28
Nickel	0.00	0.00	0.00	ND	1.72	1.73
Selenium	0.00	0.00	0.00	ND	1.21	1.21
Silver	0.00	0.00	0.00	ND	0.57	0.57
Strontium	0.00	0.00	0.00	0.00	0.16	0.16
Thallium	ND	ND	NA	0.01	5.13	5.14
Vanadium	0.01	0.01	0.02	ND	6.05	6.07
Zinc	0.00	0.00	0.00	ND	0.16	0.16
<i>Non-Metallic Anion</i>						
Perchlorate	ND	ND	NA	0.00	0.02	0.02
<i>PCBs</i>						
Aroclor 1254	0.00	0.00	0.00	ND	0.54	0.55
<i>Semi-Volatile Organics</i>						
2,4-Dinitrotoluene	ND	ND	NA	0.00	0.02	0.02
2,6-Dinitrotoluene	ND	ND	NA	0.00	0.09	0.09
Bis(2-ethylhexyl)phthalate	ND	ND	NA	0.54	12.65	13.19
Di-n-butyl phthalate	0.00	0.00	0.00	ND	26.56	26.56
Naphthalene	0.00	0.00	0.00	ND	0.00	0.00
<i>Volatile Organics</i>						
1,1-Dichloroethene	0.00	0.00	0.00	ND	0.00	0.00
Acetone	0.00	0.00	0.00	0.00	0.03	0.03
cis-1,2-Dichloroethene	0.00	0.00	0.00	ND	0.07	0.07
p-Cymene	0.00	0.00	0.00	ND	0.10	0.10
Toluene	0.00	0.00	0.00	ND	0.00	0.00
Trichloroethene	0.00	0.00	0.00	0.08	0.11	0.20
Vinyl Chloride	0.00	0.00	0.00	0.00	0.02	0.02
Totals	0.1	0.0	0.1	0.9	99.0	100.0

0.00 = Contribution to risk was less than 0.01 percent.

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

NTV = No toxicity value available.

Table C-208
Set 1 - RME
Summary of Exposure Doses (Cancer Effects)
Current On-Site Trespasser - Exposure To Goose Prairie Cr. Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Sediment (mg/kg-day)	Dermal Contact Sediment (mg/kg-day)	Dermal Contact Surface Water (mg/kg-day)	Ingestion Fish (mg/kg-day)
<i>Dioxin/Furan</i>				
2,3,7,8-TCDD	4.23E-13	5.20E-14	3.48E-12	8.75E-11
<i>Explosive</i>				
2,4,6-Trinitrotoluene	ND	ND	2.70E-07	1.32E-05
2-Amino-4,6-dinitrotoluene	ND	ND	2.51E-07	1.96E-05
RDX	ND	ND	1.50E-08	3.87E-06
<i>Metals</i>				
Aluminum	2.17E-04	8.91E-06	7.05E-06	1.93E-01
Antimony	ND	ND	1.63E-07	6.01E-05
Arsenic	1.40E-07	1.72E-08	ND	1.24E-04
Barium	NC	NC	ND	NC
Beryllium	4.03E-08	1.65E-09	ND	3.57E-05
Chromium	NC	NC	ND	NC
Cobalt	4.60E-07	1.88E-08	ND	4.08E-04
Copper	NC	NC	ND	NC
Cyanide	NC	NC	ND	NC
Lead	6.54E-07	2.68E-08	1.17E-08	4.06E-04
Manganese	NC	NC	NC	NC
Mercury	NC	NC	ND	NC
Nickel	9.70E-07	3.98E-08	ND	8.60E-04
Selenium	NC	NC	ND	NC
Silver	NC	NC	ND	NC
Strontium	2.75E-06	1.13E-07	4.94E-07	2.44E-03
Thallium	ND	ND	NC	NC
Vanadium	1.19E-06	4.88E-08	ND	1.06E-03
Zinc	NC	NC	ND	NC
<i>Non-Metallic Anion</i>				
Perchlorate	ND	ND	8.23E-15	4.48E-07
<i>PCBs</i>				
Aroclor 1254	1.31E-09	3.22E-10	ND	2.71E-07
<i>Semi-Volatile Organics</i>				
2,4-Dinitrotoluene	ND	ND	4.46E-08	7.63E-07
2,6-Dinitrotoluene	ND	ND	8.65E-08	2.15E-06
Bis(2-ethylhexyl)phthalate	ND	ND	5.12E-05	6.31E-03
Di-n-butyl phthalate	NC	NC	ND	NC
Naphthalene	NC	NC	ND	NC
<i>Volatile Organics</i>				
1,1-Dichloroethene	4.03E-11	0.00E+00	ND	1.55E-07
Acetone	NC	NC	NC	NC
cis-1,2-Dichloroethene	NC	NC	ND	NC
p-Cymene	1.38E-09	0.00E+00	ND	2.39E-04
Toluene	NC	NC	ND	NC
Trichloroethene	1.27E-09	0.00E+00	1.25E-05	1.66E-05
Vinyl Chloride	2.24E-09	0.00E+00	1.04E-07	1.37E-06

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

Table C-209
Set 1 - RME
Summary of Potential Cancer Risks
Current On-Site Trespasser - Exposure To Goose Prairie Cr. Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Sediment	Dermal Contact Sediment	Total Sediment	Dermal Contact Surface Water	Ingestion Fish	Total Potential Cancer Risk
Dioxin/Furan						
2,3,7,8-TCDD	6.3E-08	1.6E-08	7.9E-08	1.0E-06	1.3E-05	1.4E-05
Explosive						
2,4,6-Trinitrotoluene	ND	ND	NA	1.4E-08	4.0E-07	4.1E-07
2-Amino-4,6-dinitrotoluene	ND	ND	NA	5.0E-09	2.0E-07	2.0E-07
RDX	ND	ND	NA	1.6E-09	4.3E-07	4.3E-07
Metals						
Aluminum	NTV	NTV	NA	NTV	NTV	NA
Antimony	ND	ND	NA	NTV	NTV	NA
Arsenic	2.1E-07	2.7E-08	2.4E-07	ND	1.9E-04	1.9E-04
Barium	NC	NC	NA	ND	NC	NA
Beryllium	NTV	NTV	NA	ND	NTV	NA
Chromium	NC	NC	NA	ND	NC	NA
Cobalt	NTV	NTV	NA	ND	NTV	NA
Copper	NC	NC	NA	ND	NC	NA
Cyanide	NC	NC	NA	ND	NC	NA
Lead	NTV	NTV	NA	NTV	NTV	NA
Manganese	NC	NC	NA	NC	NC	NA
Mercury	NC	NC	NA	ND	NC	NA
Nickel	NTV	NTV	NA	ND	NTV	NA
Selenium	NC	NC	NA	ND	NC	NA
Silver	NC	NC	NA	ND	NC	NA
Strontium	NTV	NTV	NA	NTV	NTV	NA
Thallium	ND	ND	NA	NC	NC	NA
Vanadium	NTV	NTV	NA	ND	NTV	NA
Zinc	NC	NC	NA	ND	NC	NA
Non-Metallic Anion						
Perchlorate	ND	ND	NA	NTV	NTV	NA
PCBs						
Aroclor 1254	2.6E-09	7.1E-10	3.3E-09	ND	5.4E-07	5.4E-07
Semi-Volatile Organics						
2,4-Dinitrotoluene	ND	ND	NA	3.6E-08	5.2E-07	5.5E-07
2,6-Dinitrotoluene	ND	ND	NA	6.9E-08	1.5E-06	1.5E-06
Bis(2-ethylhexyl)phthalate	ND	ND	NA	3.8E-06	8.8E-05	9.2E-05
Di-n-butyl phthalate	NC	NC	NA	ND	NC	NA
Naphthalene	NC	NC	NA	ND	NC	NA
Volatile Organics						
1,1-Dichloroethene	2.4E-11	0.0E+00	2.4E-11	ND	9.3E-08	9.3E-08
Acetone	NC	NC	NA	NC	NC	NA
cis-1,2-Dichloroethene	NC	NC	NA	ND	NC	NA
p-Cymene	NTV	NTV	NA	ND	NTV	NA
Toluene	NC	NC	NA	ND	NC	NA
Trichloroethene	1.4E-11	0.0E+00	1.4E-11	1.4E-07	1.8E-07	3.2E-07
Vinyl Chloride	3.4E-09	0.0E+00	3.4E-09	1.6E-07	2.1E-06	2.2E-06
Totals	2.8E-07	4.4E-08	3.2E-07	5.2E-06	2.9E-04	3.0E-04

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

NTV = No toxicity value available.

Table C-210
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Current On-Site Trespasser - Exposure To Goose Prairie Cr. Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Sediment	Dermal Contact Sediment	Total Sediment	Dermal Contact Surface Water	Ingestion Fish	Total
<i>Dioxin/Furan</i>						
2,3,7,8-TCDD	0.02	0.01	0.00	0.35	4.38	4.76
<i>Explosive</i>						
2,4,6-Trinitrotoluene	ND	ND	NA	0.00	0.13	0.14
2-Amino-4,6-dinitrotoluene	ND	ND	NA	0.00	0.07	0.07
RDX	ND	ND	NA	0.00	0.14	0.14
<i>Metals</i>						
Aluminum	NTV	NTV	NA	NTV	NTV	NA
Antimony	ND	ND	NA	NTV	NTV	NA
Arsenic	0.07	0.01	0.00	ND	62.31	62.39
Barium	NC	NC	NA	ND	NC	NA
Beryllium	NTV	NTV	NA	ND	NTV	NA
Chromium	NC	NC	NA	ND	NC	NA
Cobalt	NTV	NTV	NA	ND	NTV	NA
Copper	NC	NC	NA	ND	NC	NA
Cyanide	NC	NC	NA	ND	NC	NA
Lead	NTV	NTV	NA	NTV	NTV	NA
Manganese	NC	NC	NA	NC	NC	NA
Mercury	NC	NC	NA	ND	NC	NA
Nickel	NTV	NTV	NA	ND	NTV	NA
Selenium	NC	NC	NA	ND	NC	NA
Silver	NC	NC	NA	ND	NC	NA
Strontium	NTV	NTV	NA	NTV	NTV	NA
Thallium	ND	ND	NA	NC	NC	NA
Vanadium	NTV	NTV	NA	ND	NTV	NA
Zinc	NC	NC	NA	ND	NC	NA
<i>Non-Metallic Anion</i>						
Perchlorate	ND	ND	NA	NTV	NTV	NA
<i>PCBs</i>						
Aroclor 1254	0.00	0.00	0.00	ND	0.18	0.18
<i>Semi-Volatile Organics</i>						
2,4-Dinitrotoluene	ND	ND	NA	0.01	0.17	0.19
2,6-Dinitrotoluene	ND	ND	NA	0.02	0.49	0.51
Bis(2-ethylhexyl)phthalate	ND	ND	NA	1.26	29.49	30.75
Di-n-butyl phthalate	NC	NC	NA	ND	NC	NA
Naphthalene	NC	NC	NA	ND	NC	NA
<i>Volatile Organics</i>						
1,1-Dichloroethene	0.00	0.00	0.00	ND	0.03	0.03
Acetone	NC	NC	NA	NC	NC	NA
cis-1,2-Dichloroethene	NC	NC	NA	ND	NC	NA
p-Cymene	NTV	NTV	NA	ND	NTV	NA
Toluene	NC	NC	NA	ND	NC	NA
Trichloroethene	0.00	0.00	0.00	0.05	0.06	0.11
Vinyl Chloride	0.00	0.00	0.00	0.05	0.69	0.74
Totals	0.1	0.0	0.0	1.7	98.1	100.0

0.00 = Contribution to risk was less than 0.01 percent.

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

NTV = No toxicity value available.

Table C-211
Set 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Off-Site Child Resident - Exposure To Caddo Lake Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Sediment (mg/kg-day)	Swimming Scenario		Caddo Lake - Potable Water Source			
		Dermal Contact Sediment (mg/kg-day)	Dermal Contact Surface Water (mg/kg-day)	Ingestion Surface Water (mg/kg-day)	Ingestion Fish (mg/kg-day)	Ingestion Surface Water (mg/kg-day)	Inhalation of Volatiles While Showering Surface Water (mg/m ³)
Dioxin/Furan							
2,3,7,8-TCDD	4.38E-11	2.36E-12	ND	ND	1.51E-09	ND	ND
Metals							
Aluminum	1.07E-01	1.93E-03	ND	ND	1.59E+01	ND	ND
Arsenic	4.12E-05	2.23E-06	ND	ND	6.09E-03	ND	ND
Barium	1.45E-03	2.60E-05	ND	ND	2.14E-01	ND	ND
Beryllium	9.53E-06	1.72E-07	ND	ND	1.41E-03	ND	ND
Cadmium	3.97E-06	7.14E-09	ND	ND	2.22E-03	ND	ND
Chromium	1.72E-04	3.09E-06	ND	ND	1.10E-02	ND	ND
Cobalt	9.37E-05	1.69E-06	ND	ND	1.39E-02	ND	ND
Copper	1.12E-04	2.02E-06	ND	ND	5.54E-03	ND	ND
Lead	2.03E-03	3.66E-05	ND	ND	2.10E-01	ND	ND
Manganese	2.67E-03	4.81E-05	ND	ND	3.95E-01	ND	ND
Mercury	7.95E-06	1.43E-07	ND	ND	6.26E-04	ND	ND
Nickel	1.27E-04	2.28E-06	ND	ND	1.87E-02	ND	ND
Selenium	1.17E-05	2.11E-07	ND	ND	1.73E-03	ND	ND
Silver	5.86E-05	1.06E-06	ND	ND	8.67E-03	ND	ND
Strontium	2.33E-04	4.19E-06	ND	ND	3.44E-02	ND	ND
Thallium	5.97E-06	1.08E-07	ND	ND	8.83E-04	ND	ND
Vanadium	1.76E-04	3.18E-06	ND	ND	2.61E-02	ND	ND
Zinc	5.81E-04	1.05E-05	ND	ND	5.44E-02	ND	ND
Semi-Volatile Organics							
3-Methylphenol	4.56E-07	8.21E-08	ND	ND	3.33E-05	ND	ND
4-Methylphenol	4.56E-07	8.21E-08	ND	ND	2.08E-04	ND	ND
Acenaphthylene	5.17E-07	1.21E-07	ND	ND	1.33E-04	ND	ND
Anthracene	7.89E-06	1.85E-06	ND	ND	2.06E-03	ND	ND
Benzo(a)anthracene	1.63E-05	3.82E-06	ND	ND	3.89E-03	ND	ND
Benzo(a)pyrene	1.42E-05	3.32E-06	ND	ND	3.71E-03	ND	ND
Benzo(b)fluoranthene	1.65E-05	3.87E-06	ND	ND	4.32E-03	ND	ND
Benzo(g,h,i)perylene	1.49E-05	3.49E-06	ND	ND	3.89E-03	ND	ND
Benzo(k)fluoranthene	5.97E-06	1.40E-06	ND	ND	1.56E-03	ND	ND
Chrysene	1.57E-05	3.68E-06	ND	ND	3.56E-03	ND	ND
Dibenz(a,h)anthracene	4.85E-06	1.13E-06	ND	ND	1.27E-03	ND	ND
Dibenzofuran	4.28E-07	7.70E-08	ND	ND	1.12E-04	ND	ND
Ethylbenzene	1.93E-08	0.00E+00	ND	ND	8.63E-05	ND	ND
Fluoranthene	3.25E-05	7.60E-06	ND	ND	8.49E-03	ND	ND

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Table C-211
Set 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Off-Site Child Resident - Exposure To Caddo Lake Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Caddo Lake - Potable Water Source						
	Swimming Scenario			Inhalation of Volatiles		
	Incidental Ingestion Sediment	Dermal Contact Sediment	Dermal Contact Surface Water	Ingestion Surface Water	Dermal Contact While Showering Surface Water	While Showering Surface Water
Chemical	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)	(mg/m ³)
Fluorene	2.48E-06	5.81E-07	ND	6.48E-04	ND	ND
Phenanthrene	2.56E-05	5.99E-06	ND	6.68E-03	ND	ND
Phenol	3.66E-07	6.59E-08	ND	6.74E-05	ND	ND
Volatile Organics						
Acetone	6.79E-06	0.00E+00	ND	5.38E-05	ND	ND
Carbon disulfide	9.70E-07	0.00E+00	ND	6.69E-04	ND	ND
Trichlorofluoromethane	5.86E-08	0.00E+00	ND	8.12E-05	ND	ND

ND = Not deteRMEd in associated media or not seleRMEd as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

Table C-212
Set 1 - RME
Summary of Hazard Quotients and Indices
Future Off-Site Child Resident - Exposure To Caddo Lake Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Caddo Lake - Potable Water Source										Total Hazard Index
	Swimming Scenario					Inhalation of Volatiles					
	Incidental Ingestion Sediment	Dermal Contact Sediment	Dermal Contact Surface Water	Ingestion Surface Water	Ingestion Fish	Ingestion Surface Water	While Showering Surface Water	While Showering Surface Water	Hazard Index Sediment	Hazard Index Surface Water	
Dioxin/Furan											
2,3,7,8-TCDD	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA	NA
Metals											
Aluminum	1.1E-01	1.9E-02	ND	ND	1.6E+01	ND	ND	ND	1.3E-01	NA	1.6E+01
Arsenic	1.4E-01	7.8E-03	ND	ND	2.0E+01	ND	ND	ND	1.5E-01	NA	2.0E+01
Barium	2.1E-02	5.3E-03	ND	ND	3.1E+00	ND	ND	ND	2.6E-02	NA	3.1E+00
Beryllium	4.8E-03	1.2E-02	ND	ND	7.0E-01	ND	ND	ND	1.7E-02	NA	7.2E-01
Cadmium	4.0E-03	2.9E-04	ND	ND	2.2E+00	ND	ND	ND	4.3E-03	NA	2.2E+00
Chromium	1.1E-04	1.6E-04	ND	ND	7.3E-03	ND	ND	ND	2.7E-04	NA	7.6E-03
Cobalt	4.7E-03	1.1E-04	ND	ND	6.9E-01	ND	ND	ND	4.8E-03	NA	7.0E-01
Copper	2.8E-03	8.9E-05	ND	ND	1.4E-01	ND	ND	ND	2.9E-03	NA	1.4E-01
Lead	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA	NA
Manganese	5.7E-02	1.7E-02	ND	ND	7.9E+02	ND	ND	ND	7.4E-02	NA	7.9E+02
Mercury	2.6E-02	6.8E-03	ND	ND	2.1E+00	ND	ND	ND	3.3E-02	NA	2.1E+00
Nickel	6.3E-03	2.8E-03	ND	ND	9.4E-01	ND	ND	ND	9.2E-03	NA	9.4E-01
Selenium	2.3E-03	8.4E-05	ND	ND	3.5E-01	ND	ND	ND	2.4E-03	NA	3.5E-01
Silver	1.2E-02	5.3E-03	ND	ND	1.7E+00	ND	ND	ND	1.7E-02	NA	1.8E+00
Strontium	3.9E-04	3.5E-05	ND	ND	5.7E-02	ND	ND	ND	4.2E-04	NA	5.8E-02
Thallium	7.5E-02	1.3E-03	ND	ND	1.1E+01	ND	ND	ND	7.6E-02	NA	1.1E+01
Vanadium	2.5E-02	1.7E-02	ND	ND	3.7E+00	ND	ND	ND	4.3E-02	NA	3.8E+00
Zinc	1.9E-03	1.7E-04	ND	ND	1.8E-01	ND	ND	ND	2.1E-03	NA	1.8E-01
Semi-Volatile Organics											
3-Methylphenol	9.1E-06	3.3E-06	ND	ND	6.7E-04	ND	ND	ND	1.2E-05	NA	6.8E-04
4-Methylphenol	9.1E-05	2.5E-05	ND	ND	4.2E-02	ND	ND	ND	1.2E-04	NA	4.2E-02
Acenaphthylene	8.6E-06	2.3E-06	ND	ND	2.2E-03	ND	ND	ND	1.1E-05	NA	2.3E-03
Anthracene	2.6E-05	6.9E-06	ND	ND	6.9E-03	ND	ND	ND	3.3E-05	NA	6.9E-03
Benzo(a)anthracene	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA	NA
Benzo(a)pyrene	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA	NA
Benzo(b)fluoranthene	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA	NA
Benzo(g,h,i)perylene	5.0E-04	1.3E-04	ND	ND	1.3E-01	ND	ND	ND	6.3E-04	NA	1.3E-01
Benzo(k)fluoranthene	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA	NA
Chrysene	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA	NA
Dibenzo(a,h)anthracene	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA	NA
Dibenzofuran	1.1E-04	3.9E-05	ND	ND	2.8E-02	ND	ND	ND	1.5E-04	NA	2.8E-02
Ethylbenzene	1.9E-07	0.0E+00	ND	ND	8.6E-04	ND	ND	ND	1.9E-07	NA	8.6E-04
Fluoranthene	8.1E-04	2.1E-04	ND	ND	2.1E-01	ND	ND	ND	1.0E-03	NA	2.1E-01

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caddo_riskscals_child_Set1_rme_XLS Future Child (Caddo)

Table C-212
Set 1 - RME
Summary of Hazard Quotients and Indices
Future Off-Site Child Resident - Exposure To Caddo Lake Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Sediment	Swimming Scenario		Caddo Lake - Potable Water Source				Total Hazard Index	
		Dermal Contact Sediment	Dermal Contact Surface Water	Ingestion Surface Water	Ingestion Fish	Ingestion Surface Water	Inhalation of Volatiles While Showering Surface Water	Hazard Index Sediment	Hazard Index Surface Water
Fluorene	6.2E-05	1.6E-05	ND	ND	1.6E-02	ND	ND	7.8E-05	NA
Phenanthrene	8.5E-04	2.2E-04	ND	ND	2.2E-01	ND	ND	1.1E-03	NA
Phenol	6.1E-07	1.2E-07	ND	ND	1.1E-04	ND	ND	7.3E-07	NA
<i>Volatiles Organics</i>									
Acetone	6.8E-05	0.0E+00	ND	ND	5.6E-04	ND	ND	6.8E-05	NA
Carbon disulfide	9.7E-06	0.0E+00	ND	ND	6.7E-03	ND	ND	9.7E-06	NA
Trichlorofluoromethane	2.0E-07	0.0E+00	ND	ND	2.7E-04	ND	ND	2.0E-07	NA
Totals	4.9E-01	9.7E-02	0.0E+00	0.0E+00	8.5E+02	0.0E+00	0.0E+00	5.9E-01	0.0E+00
									8.5E+02

NA = Not applicable.

ND = Not determined in associated media or not determined as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

NTV = No toxicity value available.

Table C-213
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Off-Site Child Resident - Exposure To Caddo Lake Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Caddo Lake - Potable Water Source											Total	
	Incidental Ingestion Sediment	Swimming Scenario		Ingestion Surface Water	Ingestion Fish	Ingestion Surface Water	Dermal Contact		While Showering Surface Water	Inhalation of Volatiles Surface Water	Total Sediment		Total Surface Water
		Sediment	Dermal Contact				Surface Water	Surface Water					
<i>Dioxin/Furan</i>	NTV	NTV	ND	ND	NTV	ND	ND	ND	ND	ND	0.00	NA	
2,3,7,8-TCDD													
<i>Metals</i>													
Aluminum	18.28	3.29	ND	ND	1.86	ND	ND	ND	ND	21.58	0.00	1.87	
Arsenic	23.38	1.33	ND	ND	2.38	ND	ND	ND	ND	24.71	0.00	2.39	
Barium	3.52	0.90	ND	ND	0.36	ND	ND	ND	ND	4.42	0.00	0.36	
Beryllium	0.81	2.09	ND	ND	0.08	ND	ND	ND	ND	2.90	0.00	0.08	
Cadmium	0.68	0.05	ND	ND	0.26	ND	ND	ND	ND	0.72	0.00	0.26	
Chromium	0.02	0.03	ND	ND	0.00	ND	ND	ND	ND	0.05	0.00	0.00	
Cobalt	0.80	0.02	ND	ND	0.08	ND	ND	ND	ND	0.82	0.00	0.08	
Copper	0.48	0.02	ND	ND	0.02	ND	ND	ND	ND	0.49	0.00	0.02	
Lead	NTV	NTV	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00	NA	
Manganese	9.69	2.91	ND	ND	92.54	ND	ND	ND	ND	12.59	0.00	92.48	
Mercury	4.51	1.16	ND	ND	0.24	ND	ND	ND	ND	5.67	0.00	0.25	
Nickel	1.08	0.48	ND	ND	0.11	ND	ND	ND	ND	1.56	0.00	0.11	
Selenium	0.40	0.01	ND	ND	0.04	ND	ND	ND	ND	0.41	0.00	0.04	
Silver	2.00	0.90	ND	ND	0.20	ND	ND	ND	ND	2.89	0.00	0.20	
Strontium	0.07	0.01	ND	ND	0.01	ND	ND	ND	ND	0.07	0.00	0.01	
Thallium	12.71	0.23	ND	ND	1.29	ND	ND	ND	ND	12.94	0.00	1.30	
Vanadium	4.29	2.97	ND	ND	0.44	ND	ND	ND	ND	7.26	0.00	0.44	
Zinc	0.33	0.03	ND	ND	0.02	ND	ND	ND	ND	0.36	0.00	0.02	
<i>Semi-Volatile Organics</i>													
3-Methylphenol	0.00	0.00	ND	ND	0.00	ND	ND	ND	ND	0.00	0.00	0.00	
4-Methylphenol	0.02	0.00	ND	ND	0.00	ND	ND	ND	ND	0.02	0.00	0.00	
Acenaphthylene	0.00	0.00	ND	ND	0.00	ND	ND	ND	ND	0.00	0.00	0.00	
Anthracene	0.00	0.00	ND	ND	0.00	ND	ND	ND	ND	0.01	0.00	0.00	
Benzo(a)anthracene	NTV	NTV	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00	NA	
Benzo(a)pyrene	NTV	NTV	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00	NA	
Benzo(b)fluoranthene	NTV	NTV	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00	NA	
Benzo(g,h,i)perylene	0.08	0.02	ND	ND	0.02	ND	ND	ND	ND	0.11	0.00	0.02	
Benzo(k)fluoranthene	NTV	NTV	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00	NA	
Chrysene	NTV	NTV	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00	NA	
Dibenzo(a,h)anthracene	NTV	NTV	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00	NA	
Dibenzofuran	0.02	0.01	ND	ND	0.00	ND	ND	ND	ND	0.02	0.00	0.00	
Ethylbenzene	0.00	0.00	ND	ND	0.00	ND	ND	ND	ND	0.00	0.00	0.00	
Fluoranthene	0.14	0.04	ND	ND	0.02	ND	ND	ND	ND	0.17	0.00	0.02	

Table C-213
Set 1 - RME

0.00 = Contribution to risk was less than 0.01 percent.

NA = Not applicable.

ND = Not determined in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

NO BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

NTV = No toxicity value available.

Table C-214
Set 1 - RME
Summary of Exposure Doses (Cancer Effects)
Future Off-Site Child Resident - Exposure To Caddo Lake Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Sediment (mg/kg-day)	Swimming Scenario			Caddo Lake - Potable Water Source			
		Dermal Contact Sediment (mg/kg-day)	Dermal Contact Surface Water (mg/kg-day)	Ingestion Surface Water (mg/kg-day)	Ingestion Fish (mg/kg-day)	Ingestion Surface Water (mg/kg-day)	Dermal Contact While Showering Surface Water (mg/kg-day)	Inhalation of Volatiles While Showering Surface Water (mg/m ³)
Dioxin/Furan								
2,3,7,8-TCDD	3.75E-12	2.03E-13	ND	ND	1.29E-10	ND	ND	ND
Metals								
Aluminum	9.21E-03	1.66E-04	ND	ND	1.36E+00	ND	ND	ND
Arsenic	3.53E-06	1.91E-07	ND	ND	5.22E-04	ND	ND	ND
Barium	NC	NC	ND	ND	NC	ND	ND	ND
Beryllium	8.17E-07	1.47E-08	ND	ND	1.21E-04	ND	ND	ND
Cadmium	3.40E-07	6.12E-10	ND	ND	1.90E-04	ND	ND	ND
Chromium	NC	NC	ND	ND	NC	ND	ND	ND
Cobalt	8.03E-06	1.45E-07	ND	ND	1.19E-03	ND	ND	ND
Copper	NC	NC	ND	ND	NC	ND	ND	ND
Lead	1.74E-04	3.14E-06	ND	ND	1.80E-02	ND	ND	ND
Manganese	NC	NC	ND	ND	NC	ND	ND	ND
Mercury	1.08E-05	1.95E-07	ND	ND	1.60E-03	ND	ND	ND
Nickel	NC	NC	ND	ND	NC	ND	ND	ND
Selenium	NC	NC	ND	ND	NC	ND	ND	ND
Silver	NC	NC	ND	ND	NC	ND	ND	ND
Strontium	2.00E-05	3.59E-07	ND	ND	2.95E-03	ND	ND	ND
Thallium	NC	NC	ND	ND	NC	ND	ND	ND
Vanadium	1.51E-05	2.72E-07	ND	ND	2.24E-03	ND	ND	ND
Zinc	NC	NC	ND	ND	NC	ND	ND	ND
Semi-Volatile Organics								
3-Methylphenol	3.91E-08	7.03E-09	ND	ND	2.86E-06	ND	ND	ND
4-Methylphenol	3.91E-08	7.03E-09	ND	ND	1.78E-05	ND	ND	ND
Acenaphthylene	NC	NC	ND	ND	NC	ND	ND	ND
Anthracene	NC	NC	ND	ND	NC	ND	ND	ND
Benzo(a)anthracene	1.40E-06	3.28E-07	ND	ND	3.33E-04	ND	ND	ND
Benzo(a)pyrene	1.22E-06	2.85E-07	ND	ND	3.18E-04	ND	ND	ND
Benzo(b)fluoranthene	1.42E-06	3.32E-07	ND	ND	3.70E-04	ND	ND	ND
Benzo(g,h,i)perylene	1.28E-06	2.99E-07	ND	ND	3.34E-04	ND	ND	ND
Benzo(k)fluoranthene	5.12E-07	1.20E-07	ND	ND	1.34E-04	ND	ND	ND
Chrysene	1.35E-06	3.15E-07	ND	ND	3.06E-04	ND	ND	ND
Dibenzo(a,h)anthracene	4.16E-07	9.73E-08	ND	ND	1.09E-04	ND	ND	ND
Dibenzofuran	NC	NC	ND	ND	NC	ND	ND	ND
Ethylbenzene	NC	NC	ND	ND	NC	ND	ND	ND
Fluoranthene	NC	NC	ND	ND	NC	ND	ND	ND

Table C-214
Set 1 - RME
Summary of Exposure Doses (Cancer Effects)
Future Off-Site Child Resident - Exposure To Caddo Lake Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion			Swimming Scenario			Caddo Lake - Potable Water Source		
	Sediment	Dermal Contact	Sediment	Dermal Contact	Surface Water	Ingestion	Ingestion	Surface Water	Inhalation of Volatiles
	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)	(mg/kg-day)	(mg/m ³)
Fluorene	NC	NC	NC	NC	ND	NC	ND	ND	ND
Phenanthrene	NC	NC	NC	NC	ND	NC	ND	ND	ND
Phenol	NC	NC	NC	NC	ND	NC	ND	ND	ND
<i>Volatile Organics</i>									
Acetone	NC	NC	NC	NC	ND	NC	ND	ND	ND
Carbon disulfide	8.31E-08	0.00E+00	0.00E+00	ND	ND	5.73E-05	ND	ND	ND
Trichlorofluoromethane	5.03E-09	0.00E+00	0.00E+00	ND	ND	6.96E-06	ND	ND	ND

NC = Not classified as a carcinogen.

ND = Not deteRMed in associated media or not seLeRMed as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

Table C-215
Set 1 - RME
Summary of Potential Cancer Risks
Future Off-Site Child Resident - Exposure To Caddo Lake Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Sediment	Swimming Scenario		Caddo Lake - Potable Water Source				Cancer Risk Sediment	Cancer Risk Surface Water	Total Potential Cancer Risk
		Dermal Contact Sediment	Dermal Contact Surface Water	Ingestion Surface Water	Ingestion Fish	Ingestion Surface Water	While Showering Surface Water	Inhalation of Volatiles While Showering Surface Water		
Dioxin/Furan										
2,3,7,8-TCDD	5.6E-07	6.1E-08	ND	ND	1.9E-05	ND	ND	ND	NA	2.0E-05
Metals										
Aluminum	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA
Arsenic	5.3E-06	3.0E-07	ND	ND	7.8E-04	ND	ND	ND	NA	7.9E-04
Barium	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Beryllium	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA
Cadmium	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA
Chromium	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Cobalt	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA
Copper	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Lead	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA
Manganese	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Mercury	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Nickel	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA
Selenium	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Silver	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Strontium	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA
Thallium	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Vanadium	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA
Zinc	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Semi-Volatile Organics										
3-Methylphenol	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA
4-Methylphenol	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA
Acenaphthylene	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Anthracene	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Benzo(a)anthracene	1.0E-06	2.7E-07	ND	ND	2.4E-04	ND	ND	ND	NA	2.4E-04
Benzo(a)pyrene	8.9E-06	2.3E-06	ND	ND	2.3E-03	ND	ND	ND	NA	2.3E-03
Benzo(b)fluoranthene	1.0E-06	2.7E-07	ND	ND	2.7E-04	ND	ND	ND	NA	2.7E-04
Benzo(g,h,i)perylene	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA
Benzo(k)fluoranthene	3.7E-08	9.8E-09	ND	ND	9.8E-06	ND	ND	ND	NA	9.8E-06
Chrysene	9.8E-09	2.6E-09	ND	ND	2.2E-06	ND	ND	ND	NA	2.2E-06
Dibenzol(a,h)anthracene	3.0E-06	8.0E-07	ND	ND	7.9E-04	ND	ND	ND	NA	8.0E-04
Dibenzofuran	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Ethylbenzene	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Fluoranthene	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA

Table C-215
Set 1 - RME

Summary of Potential Cancer Risks
Future Off-Site Child Resident - Exposure To Caddo Lake Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Swimming Scenario			Caddo Lake - Potable Water Source						Total Potential Cancer Risk	
	Incidental Ingestion	Dermal Contact	Dermal Contact	Ingestion	Ingestion	Surface Water	While Showering	Surface Water	Inhalation of Volatiles	Cancer Risk Sediment	Cancer Risk Surface Water
Fluorene	Sediment	NC	ND	ND	NC	ND	ND	ND	ND	NA	NA
Phenanthrene	NC	NC	ND	ND	NC	ND	ND	ND	ND	NA	NA
Phenol	NC	NC	ND	ND	NC	ND	ND	ND	ND	NA	NA
<i>Volatile Organics</i>											
Acetone	NC	NC	ND	ND	NC	ND	ND	ND	ND	NA	NA
Carbon disulfide	NTV	NTV	ND	ND	NTV	ND	ND	ND	ND	NA	NA
Trichlorofluoromethane	NTV	NTV	ND	ND	NTV	ND	ND	ND	ND	NA	NA
Totals	2.0E-05	4.0E-06	0.0E+00	0.0E+00	4.4E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-05	0.0E+00
											4.5E-03

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not determined in associated media or not determined as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

Table C-216
Set 1 - RME
Percent Contribution to the Total Potential Cancer Risk
Future Off-Site Child Resident - Exposure To Caddo Lake Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Caddo Lake - Potable Water Source										Total
	Swimming Scenario			Dermal Contact		Ingestion		Inhalation of Volatiles		Total	
	Incidental Ingestion Sediment	Dermal Contact Sediment	Dermal Contact Surface Water	Ingestion Surface Water	Ingestion Fish	Ingestion Surface Water	While Showering Surface Water	While Showering Surface Water			
Dioxin/Furan											
2,3,7,8-TCDD	2.35	0.25	ND	ND	0.44	ND	ND	ND	ND	2.61	0.45
Metals											
Aluminum	NTV	NTV	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00
Arsenic	22.14	1.26	ND	ND	17.64	ND	ND	ND	ND	23.40	17.67
Barium	NC	NC	ND	ND	NC	ND	ND	ND	ND	0.00	0.00
Beryllium	NTV	NTV	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00
Cadmium	NTV	NTV	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00
Chromium	NC	NC	ND	ND	NC	ND	ND	ND	ND	0.00	0.00
Chromium	NC	NC	ND	ND	NC	ND	ND	ND	ND	0.00	0.00
Cobalt	NTV	NTV	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00
Copper	NC	NC	ND	ND	NC	ND	ND	ND	ND	0.00	0.00
Lead	NTV	NTV	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00
Manganese	NC	NC	ND	ND	NC	ND	ND	ND	ND	0.00	0.00
Mercury	NC	NC	ND	ND	NC	ND	ND	ND	ND	0.00	0.00
Nickel	NTV	NTV	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00
Selenium	NC	NC	ND	ND	NC	ND	ND	ND	ND	0.00	0.00
Silver	NC	NC	ND	ND	NC	ND	ND	ND	ND	0.00	0.00
Strontium	NTV	NTV	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00
Thallium	NC	NC	ND	ND	NC	ND	ND	ND	ND	0.00	0.00
Vanadium	NTV	NTV	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00
Zinc	NC	NC	ND	ND	NC	ND	ND	ND	ND	0.00	0.00
Semi-Volatile Organics											
3-Methylphenol	NTV	NTV	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00
4-Methylphenol	NTV	NTV	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00
Acenaphthylene	NC	NC	ND	ND	NC	ND	ND	ND	ND	0.00	0.00
Anthracene	NC	NC	ND	ND	NC	ND	ND	ND	ND	0.00	0.00
Benzo(a)anthracene	4.27	1.12	ND	ND	5.48	ND	ND	ND	ND	5.39	5.48
Benzo(a)pyrene	37.11	9.76	ND	ND	52.23	ND	ND	ND	ND	46.87	52.20
Benzo(b)fluoranthene	4.33	1.14	ND	ND	6.09	ND	ND	ND	ND	5.47	6.09
Benzo(g,h,i)perylene	NTV	NTV	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00
Benzo(k)fluoranthene	0.16	0.04	ND	ND	0.22	ND	ND	ND	ND	0.20	0.22
Chrysene	0.04	0.01	ND	ND	0.05	ND	ND	ND	ND	0.05	0.05
Dibenzo(a,h)anthracene	12.68	3.33	ND	ND	17.85	ND	ND	ND	ND	16.02	17.84
Dibenzofuran	NC	NC	ND	ND	NC	ND	ND	ND	ND	0.00	0.00
Ethylbenzene	NC	NC	ND	ND	NC	ND	ND	ND	ND	0.00	0.00
Fluoranthene	NC	NC	ND	ND	NC	ND	ND	ND	ND	0.00	0.00

Table C-217
Set 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Off-Site Adult Resident - Exposure To Caddo Lake Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Sediment (mg/kg-day)	Swimming Scenario		Ingestion Surface Water (mg/kg-day)	Ingestion Fish (mg/kg-day)	Caddo Lake - Potable Water Source		Inhalation of Volatiles While Showering Surface Water (mg/m ³)
		Dermal Contact Sediment (mg/kg-day)	Dermal Contact Surface Water (mg/kg-day)			Ingestion Surface Water (mg/kg-day)	Dermal Contact While Showering Surface Water (mg/kg-day)	
Dioxin/Furan								
2,3,7,8-TCDD	4.69E-12	1.63E-12	ND	ND	6.47E-10	ND	ND	ND
Metals								
Aluminum	1.15E-02	1.33E-03	ND	ND	6.80E+00	ND	ND	ND
Arsenic	4.41E-06	1.54E-06	ND	ND	2.61E-03	ND	ND	ND
Barium	1.55E-04	1.80E-05	ND	ND	9.16E-02	ND	ND	ND
Beryllium	1.02E-06	1.18E-07	ND	ND	6.04E-04	ND	ND	ND
Cadmium	4.25E-07	4.93E-09	ND	ND	9.49E-04	ND	ND	ND
Chromium	1.84E-05	2.13E-06	ND	ND	4.71E-03	ND	ND	ND
Cobalt	1.00E-05	1.16E-06	ND	ND	5.94E-03	ND	ND	ND
Copper	1.20E-05	1.40E-06	ND	ND	2.37E-03	ND	ND	ND
Lead	2.18E-04	2.53E-05	ND	ND	9.02E-02	ND	ND	ND
Manganese	2.86E-04	3.32E-05	ND	ND	1.69E-01	ND	ND	ND
Mercury	8.51E-07	9.87E-08	ND	ND	2.68E-04	ND	ND	ND
Nickel	1.36E-05	1.57E-06	ND	ND	8.02E-03	ND	ND	ND
Selenium	1.26E-06	1.46E-07	ND	ND	7.43E-04	ND	ND	ND
Silver	6.28E-06	7.29E-07	ND	ND	3.71E-03	ND	ND	ND
Strontium	2.50E-05	2.89E-06	ND	ND	1.48E-02	ND	ND	ND
Thallium	6.40E-07	7.42E-08	ND	ND	3.78E-04	ND	ND	ND
Vanadium	1.89E-05	2.19E-06	ND	ND	1.12E-02	ND	ND	ND
Zinc	6.22E-05	7.22E-06	ND	ND	2.33E-02	ND	ND	ND
Semi-Volatile Organics								
3-Methylphenol	4.88E-08	5.67E-08	ND	ND	1.43E-05	ND	ND	ND
4-Methylphenol	4.88E-08	5.67E-08	ND	ND	8.90E-05	ND	ND	ND
Acenaphthylene	5.54E-08	8.35E-08	ND	ND	5.78E-05	ND	ND	ND
Anthracene	8.45E-07	1.27E-06	ND	ND	8.83E-04	ND	ND	ND
Benzo(a)anthracene	1.75E-06	2.64E-06	ND	ND	1.67E-03	ND	ND	ND
Benzo(a)pyrene	1.52E-06	2.29E-06	ND	ND	1.59E-03	ND	ND	ND
Benzo(b)fluoranthene	1.77E-06	2.67E-06	ND	ND	1.85E-03	ND	ND	ND
Benzo(g,h,i)perylene	1.60E-06	2.41E-06	ND	ND	1.67E-03	ND	ND	ND
Benzo(k)fluoranthene	6.40E-07	9.65E-07	ND	ND	6.68E-04	ND	ND	ND
Chrysene	1.68E-06	2.54E-06	ND	ND	1.53E-03	ND	ND	ND
Dibenz(a,h)anthracene	5.20E-07	7.84E-07	ND	ND	5.43E-04	ND	ND	ND
Dibenzofuran	4.59E-08	5.32E-08	ND	ND	4.79E-05	ND	ND	ND
Ethylbenzene	2.07E-09	0.00E+00	ND	ND	3.70E-05	ND	ND	ND
Fluoranthene	3.48E-06	5.25E-06	ND	ND	3.64E-03	ND	ND	ND

Table C-217
Set 1 - RME
Summary of Exposure Doses (Noncancer Effects)
Future Off-Site Adult Resident - Exposure To Caddo Lake Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Swimming Scenario			Caddo Lake - Potable Water Source		
	Incidental Ingestion Sediment (mg/kg-day)	Dermal Contact Sediment (mg/kg-day)	Dermal Contact Surface Water (mg/kg-day)	Ingestion Surface Water (mg/kg-day)	Dermal Contact While Showering Surface Water (mg/kg-day)	Inhalation of Volatiles While Showering Surface Water (mg/m ³)
Fluorene	2.66E-07	4.01E-07	ND	ND	ND	ND
Phenanthrene	2.74E-06	4.13E-06	ND	ND	ND	ND
Phenol	3.92E-08	4.55E-08	ND	ND	ND	ND
<i>Volatile Organics</i>						
Acetone	7.28E-07	0.00E+00	ND	ND	ND	ND
Carbon disulfide	1.04E-07	0.00E+00	ND	ND	ND	ND
Trichlorofluoromethane	6.28E-09	0.00E+00	ND	ND	ND	ND

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

Table C-218
Set 1 - RME
Summary of Hazard Quotients and Indices
Future Off-Site Adult Resident - Exposure To Caddo Lake Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Caddo Lake - Potable Water Source										Total Hazard Index
	Swimming Scenario			Dermal Contact				Inhalation of Volatiles			
	Incidental Ingestion Sediment	Dermal Contact Sediment	Dermal Contact Surface Water	Ingestion Surface Water	Ingestion Fish	Ingestion Surface Water	While Showering Surface Water	While Showering Surface Water	Hazard Index Sediment	Hazard Index Surface Water	
Dioxin/Furan											
2,3,7,8-TCDD	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA	NA
Metals											
Aluminum	1.2E-02	1.3E-02	ND	ND	6.8E+00	ND	ND	ND	2.5E-02	NA	6.8E+00
Arsenic	1.5E-02	5.4E-03	ND	ND	8.7E+00	ND	ND	ND	2.0E-02	NA	8.7E+00
Barium	2.2E-03	3.7E-03	ND	ND	1.3E+00	ND	ND	ND	5.9E-03	NA	1.3E+00
Beryllium	5.1E-04	8.5E-03	ND	ND	3.0E-01	ND	ND	ND	9.0E-03	NA	3.1E-01
Cadmium	4.3E-04	2.0E-04	ND	ND	9.5E-01	ND	ND	ND	6.2E-04	NA	9.5E-01
Chromium	1.2E-05	1.1E-04	ND	ND	3.1E-03	ND	ND	ND	1.2E-04	NA	3.3E-03
Cobalt	5.0E-04	7.3E-05	ND	ND	3.0E-01	ND	ND	ND	5.7E-04	NA	3.0E-01
Copper	3.0E-04	6.1E-05	ND	ND	5.9E-02	ND	ND	ND	3.6E-04	NA	6.0E-02
Lead	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA	NA
Manganese	6.1E-03	1.2E-02	ND	ND	3.4E+02	ND	ND	ND	1.8E-02	NA	3.4E+02
Mercury	2.8E-03	4.7E-03	ND	ND	8.9E-01	ND	ND	ND	7.5E-03	NA	9.0E-01
Nickel	6.8E-04	2.0E-03	ND	ND	4.0E-01	ND	ND	ND	2.6E-03	NA	4.0E-01
Selenium	2.5E-04	5.8E-05	ND	ND	1.5E-01	ND	ND	ND	3.1E-04	NA	1.5E-01
Silver	1.3E-03	3.6E-03	ND	ND	7.4E-01	ND	ND	ND	4.9E-03	NA	7.5E-01
Strontium	4.2E-05	2.4E-05	ND	ND	2.5E-02	ND	ND	ND	6.6E-05	NA	2.5E-02
Thallium	8.0E-03	9.3E-04	ND	ND	4.7E+00	ND	ND	ND	8.9E-03	NA	4.7E+00
Vanadium	2.7E-03	1.2E-02	ND	ND	1.6E+00	ND	ND	ND	1.5E-02	NA	1.6E+00
Zinc	2.1E-04	1.2E-04	ND	ND	7.8E-02	ND	ND	ND	3.3E-04	NA	7.8E-02
Semi-Volatile Organics											
3-Methylphenol	9.8E-07	2.3E-06	ND	ND	2.9E-04	ND	ND	ND	3.2E-06	NA	2.9E-04
4-Methylphenol	9.8E-06	1.7E-05	ND	ND	1.8E-02	ND	ND	ND	2.7E-05	NA	1.8E-02
Acenaphthylene	9.2E-07	1.6E-06	ND	ND	9.6E-04	ND	ND	ND	2.5E-06	NA	9.7E-04
Anthracene	2.8E-06	4.8E-06	ND	ND	2.9E-03	ND	ND	ND	7.6E-06	NA	3.0E-03
Benzo(a)anthracene	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA	NA
Benzo(a)pyrene	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA	NA
Benzo(b)fluoranthene	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA	NA
Benzo(g,h,i)perylene	5.3E-05	9.0E-05	ND	ND	5.6E-02	ND	ND	ND	1.4E-04	NA	5.6E-02
Benzo(k)fluoranthene	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA	NA
Chrysene	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA	NA
Dibenzo(a,h)anthracene	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA	NA
Dibenzofuran	1.1E-05	2.7E-05	ND	ND	1.2E-02	ND	ND	ND	3.8E-05	NA	1.2E-02
Ethylbenzene	2.1E-08	0.0E+00	ND	ND	3.7E-04	ND	ND	ND	2.1E-08	NA	3.7E-04
Fluoranthene	8.7E-05	1.5E-04	ND	ND	9.1E-02	ND	ND	ND	2.3E-04	NA	9.1E-02

Table C-218
Set 1 - RME
Summary of Hazard Quotients and Indices
Future Off-Site Adult Resident - Exposure To Caddo Lake Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion			Swimming Scenario			Caddo Lake - Potable Water Source						Total Hazard Index
	Sediment	Dermal Contact	Ingestion	Sediment	Dermal Contact	Ingestion	Surface Water	Fish	Ingestion	Surface Water	While Showering	Inhalation of Volatiles	
Fluorene	6.6E-06	1.1E-05	ND	1.1E-05	ND	ND	ND	6.9E-03	ND	ND	ND	ND	7.0E-03
Phenanthrene	9.1E-05	1.5E-04	ND	1.5E-04	ND	ND	ND	9.5E-02	ND	ND	ND	ND	9.6E-02
Phenol	6.5E-08	8.4E-08	ND	8.4E-08	ND	ND	ND	4.8E-05	ND	ND	ND	ND	4.8E-05
<i>Volatile Organics</i>													
Acetone	7.3E-06	0.0E+00	ND	0.0E+00	ND	ND	ND	2.4E-04	ND	ND	ND	ND	2.5E-04
Carbon disulfide	1.0E-06	0.0E+00	ND	0.0E+00	ND	ND	ND	2.9E-03	ND	ND	ND	ND	2.9E-03
Trichlorofluoromethane	2.1E-08	0.0E+00	ND	0.0E+00	ND	ND	ND	1.2E-04	ND	ND	ND	ND	1.2E-04
Totals	5.3E-02	6.7E-02	0.0E+00	6.7E-02	0.0E+00	0.0E+00	0.0E+00	3.7E+02	0.0E+00	0.0E+00	0.0E+00	1.2E-01	3.7E+02

NA = Not applicable.
 ND = Not detected in associated media or not selected as a chemical of potential concern.
 NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.
 No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.
 NTV = No toxicity value available.

Table C-219
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Off-Site Adult Resident - Exposure To Caddo Lake Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Caddo Lake - Potable Water Source										Total Sediment	Total Surface Water	Total	
	Incidental Ingestion		Swimming Scenario		Dermal Contact		Inhalation of Volatiles							
	Sediment		Sediment	Dermal Contact Surface Water	Ingestion Surface Water	Ingestion Fish	Surface Water	Surface Water	Surface Water	Surface Water				
Dioxin/Furan														
2,3,7,8-TCDD	NTV	NTV	ND	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00	NA	
Metals														
Aluminum	9.62	11.16	ND	ND	ND	1.86	ND	ND	ND	ND	20.79	0.00	1.86	
Arsenic	12.31	4.51	ND	ND	ND	2.38	ND	ND	ND	ND	16.82	0.00	2.38	
Barium	1.85	3.07	ND	ND	ND	0.36	ND	ND	ND	ND	4.92	0.00	0.36	
Beryllium	0.43	7.08	ND	ND	ND	0.08	ND	ND	ND	ND	7.51	0.00	0.08	
Cadmium	0.36	0.16	ND	ND	ND	0.26	ND	ND	ND	ND	0.52	0.00	0.26	
Chromium	0.01	0.09	ND	ND	ND	0.00	ND	ND	ND	ND	0.10	0.00	0.00	
Cobalt	0.42	0.06	ND	ND	ND	0.08	ND	ND	ND	ND	0.48	0.00	0.08	
Copper	0.25	0.05	ND	ND	ND	0.02	ND	ND	ND	ND	0.30	0.00	0.02	
Lead	NTV	NTV	ND	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00	NA	
Manganese	5.10	9.86	ND	ND	ND	92.54	ND	ND	ND	ND	14.95	0.00	92.51	
Mercury	2.37	3.93	ND	ND	ND	0.24	ND	ND	ND	ND	6.31	0.00	0.25	
Nickel	0.57	1.64	ND	ND	ND	0.11	ND	ND	ND	ND	2.21	0.00	0.11	
Selenium	0.21	0.05	ND	ND	ND	0.04	ND	ND	ND	ND	0.26	0.00	0.04	
Silver	1.05	3.05	ND	ND	ND	0.20	ND	ND	ND	ND	4.10	0.00	0.20	
Strontium	0.03	0.02	ND	ND	ND	0.01	ND	ND	ND	ND	0.05	0.00	0.01	
Thallium	6.69	0.78	ND	ND	ND	1.29	ND	ND	ND	ND	7.47	0.00	1.29	
Vanadium	2.26	10.08	ND	ND	ND	0.44	ND	ND	ND	ND	12.33	0.00	0.44	
Zinc	0.17	0.10	ND	ND	ND	0.02	ND	ND	ND	ND	0.27	0.00	0.02	
Semi-Volatile Organics														
3-Methylphenol	0.00	0.00	ND	ND	ND	0.00	ND	ND	ND	ND	0.00	0.00	0.00	
4-Methylphenol	0.01	0.01	ND	ND	ND	0.00	ND	ND	ND	ND	0.02	0.00	0.00	
Acenaphthylene	0.00	0.00	ND	ND	ND	0.00	ND	ND	ND	ND	0.01	0.00	0.00	
Anthracene	0.00	0.00	ND	ND	ND	0.00	ND	ND	ND	ND	0.00	0.00	0.00	
Benzo(a)anthracene	NTV	NTV	ND	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00	NA	
Benzo(a)pyrene	NTV	NTV	ND	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00	NA	
Benzo(b)fluoranthene	NTV	NTV	ND	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00	NA	
Benzo(g,h,i)perylene	0.04	0.08	ND	ND	ND	0.02	ND	ND	ND	ND	0.12	0.00	0.02	
Benzo(k)fluoranthene	NTV	NTV	ND	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00	NA	
Chrysene	NTV	NTV	ND	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00	NA	
Dibenzo(a,h)anthracene	NTV	NTV	ND	ND	ND	NTV	ND	ND	ND	ND	0.00	0.00	NA	
Dibenzofuran	0.01	0.02	ND	ND	ND	0.00	ND	ND	ND	ND	0.03	0.00	0.00	
Ethylbenzene	0.00	0.00	ND	ND	ND	0.00	ND	ND	ND	ND	0.00	0.00	0.00	
Fluoranthene	0.07	0.12	ND	ND	ND	0.02	ND	ND	ND	ND	0.20	0.00	0.02	

Table C-219
Set 1 - RME
Percent Contribution to the Total Hazard Index
Future Off-Site Adult Resident - Exposure To Caddo Lake Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion			Swimming Scenario			Caddo Lake - Potable Water Source					
	Sediment	Dermal Contact	Sediment	Surface Water	Dermal Contact	Surface Water	Ingestion	Surface Water	While Showering	Surface Water	Inhalation of Volatiles	Total
Fluorene	0.01		0.01	ND	ND	ND	ND	ND	ND	ND	0.01	0.00
Phenanthrene	0.08		0.13	ND	ND	ND	ND	ND	ND	ND	0.21	0.03
Phenol	0.00		0.00	ND	ND	ND	ND	ND	ND	ND	0.00	0.00
<i>Volatile Organics</i>												
Acetone	0.01		0.00	ND	ND	ND	ND	ND	ND	ND	0.01	0.00
Carbon disulfide	0.00		0.00	ND	ND	ND	ND	ND	ND	ND	0.00	0.00
Trichlorofluoromethane	0.00		0.00	ND	ND	ND	ND	ND	ND	ND	0.00	0.00
Totals	43.9		56.1	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.03	100.0

0.00 = Contribution to risk was less than 0.01 percent.

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

NTV = No toxicity value available.

Table C-220
Set 1 - RME
Summary of Exposure Doses (Cancer Effects)
Future Off-Site Adult Resident - Exposure To Caddo Lake Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Swimming Scenario			Caddo Lake - Potable Water Source		
	Incidental Ingestion Sediment (mg/kg-day)	Dermal Contact Sediment (mg/kg-day)	Dermal Contact Surface Water (mg/kg-day)	Ingestion Surface Water (mg/kg-day)	Dermal Contact While Showering Surface Water (mg/kg-day)	Inhalation of Volatiles While Showering Surface Water (mg/m ³)
Dioxin/Furan						
2,3,7,8-TCDD	1.61E-12	5.60E-13	ND	ND	ND	ND
Metals						
Aluminum	3.95E-03	4.58E-04	ND	ND	ND	ND
Arsenic	1.51E-06	5.27E-07	ND	ND	ND	ND
Barium	NC	NC	ND	ND	ND	ND
Beryllium	3.50E-07	4.06E-08	ND	ND	ND	ND
Cadmium	1.46E-07	1.69E-09	ND	ND	ND	ND
Chromium	NC	NC	ND	ND	ND	ND
Cobalt	3.44E-06	3.99E-07	ND	ND	ND	ND
Copper	NC	NC	ND	ND	ND	ND
Lead	7.47E-05	8.66E-06	ND	ND	ND	ND
Manganese	NC	NC	ND	ND	ND	ND
Mercury	NC	NC	ND	ND	ND	ND
Nickel	4.65E-06	5.39E-07	ND	ND	ND	ND
Selenium	NC	NC	ND	ND	ND	ND
Silver	NC	NC	ND	ND	ND	ND
Strontium	8.55E-06	9.92E-07	ND	ND	ND	ND
Thallium	NC	NC	ND	ND	ND	ND
Vanadium	6.48E-06	7.52E-07	ND	ND	ND	ND
Zinc	NC	NC	ND	ND	ND	ND
Semi-Volatile Organics						
3-Methylphenol	1.67E-08	1.94E-08	ND	ND	ND	ND
4-Methylphenol	1.67E-08	1.94E-08	ND	ND	ND	ND
Acenaphthylene	NC	NC	ND	ND	ND	ND
Anthracene	NC	NC	ND	ND	ND	ND
Benzo(a)anthracene	6.00E-07	9.05E-07	ND	ND	ND	ND
Benzo(a)pyrene	5.21E-07	7.86E-07	ND	ND	ND	ND
Benzo(b)fluoranthene	6.08E-07	9.17E-07	ND	ND	ND	ND
Benzo(g,h,i)perylene	5.47E-07	8.26E-07	ND	ND	ND	ND
Benzo(k)fluoranthene	2.19E-07	3.31E-07	ND	ND	ND	ND
Chrysene	5.78E-07	8.71E-07	ND	ND	ND	ND
Dibenzo(a,h)anthracene	1.78E-07	2.69E-07	ND	ND	ND	ND
Dibenzofuran	NC	NC	ND	ND	ND	ND
Ethylbenzene	NC	NC	ND	ND	ND	ND
Fluoranthene	NC	NC	ND	ND	ND	ND

Table C-220
Set 1 - RME
Summary of Exposure Doses (Cancer Effects)
Future Off-Site Adult Resident - Exposure To Caddo Lake Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Swimming Scenario			Caddo Lake - Potable Water Source			
	Incidental Ingestion Sediment (mg/kg-day)	Dermal Contact Sediment (mg/kg-day)	Dermal Contact Surface Water (mg/kg-day)	Ingestion Surface Water (mg/kg-day)	While Showering Surface Water (mg/kg-day)	While Showering Surface Water (mg/m ³)	Inhalation of Volatiles Surface Water
Fluorene	NC	NC	ND	ND	ND	ND	ND
Phenanthrene	NC	NC	ND	ND	ND	ND	ND
Phenol	NC	NC	ND	ND	ND	ND	ND
<i>Volatile Organics</i>							
Acetone	NC	NC	ND	ND	ND	ND	ND
Carbon disulfide	3.56E-08	0.00E+00	ND	9.83E-05	ND	ND	ND
Trichlorofluoromethane	2.15E-09	0.00E+00	ND	1.19E-05	ND	ND	ND

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

Table C-221
Set 1 - RME
Summary of Potential Cancer Risks
Future Off-Site Adult Resident - Exposure To Caddo Lake Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

Chemical	Incidental Ingestion Sediment	Swimming Scenario		Caddo Lake - Potable Water Source				Cancer Risk Sediment	Cancer Risk Surface Water	Total Potential Cancer Risk
		Dermal Contact Sediment	Dermal Contact Surface Water	Ingestion Surface Water	Ingestion Fish	Ingestion Surface Water	White Showering Surface Water	White Showering Surface Water		
Dioxin/Furan										
2,3,7,8-TCDD	2.4E-07	1.7E-07	ND	ND	3.3E-05	ND	ND	ND	NA	3.4E-05
Metals										
Aluminum	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA
Arsenic	2.3E-06	8.3E-07	ND	ND	1.3E-03	ND	ND	ND	NA	1.3E-03
Barium	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Beryllium	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA
Cadmium	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA
Chromium	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Cobalt	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA
Copper	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Lead	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA
Manganese	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Mercury	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Nickel	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA
Selenium	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Silver	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Strontium	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA
Thallium	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Vanadium	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA
Zinc	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Semi-Volatile Organics										
3-Methylphenol	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA
4-Methylphenol	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA
Acenaphthylene	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Anthracene	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Benzo(a)anthracene	4.4E-07	7.4E-07	ND	ND	4.2E-04	ND	ND	ND	NA	4.2E-04
Benzo(a)pyrene	3.8E-06	6.4E-06	ND	ND	4.0E-03	ND	ND	ND	NA	4.0E-03
Benzo(b)fluoranthene	4.4E-07	7.5E-07	ND	ND	4.6E-04	ND	ND	ND	NA	4.6E-04
Benzo(g,h,i)perylene	NTV	NTV	ND	ND	NTV	ND	ND	ND	NA	NA
Benzo(k)fluoranthene	1.6E-08	2.7E-08	ND	ND	1.7E-05	ND	ND	ND	NA	1.7E-05
Chrysene	4.2E-09	7.1E-09	ND	ND	3.8E-06	ND	ND	ND	NA	3.8E-06
Dibenz(a,h)anthracene	1.3E-06	2.2E-06	ND	ND	1.4E-03	ND	ND	ND	NA	1.4E-03
Dibenzofuran	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Ethylbenzene	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Fluoranthene	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA

Table C-221
Set 1 - RME
Summary of Potential Cancer Risks
Future Off-Site Adult Resident - Exposure To Caddo Lake Sediment, Surface Water, and Fish
Group 4 Sites - Longhorn Army Ammunition Plant
Karnack, Texas

	Caddo Lake - Potable Water Source										Total Potential Cancer Risk
	Swimming Scenario			Dermal Contact				Inhalation of Volatiles			
Chemical	Incidental Ingestion	Dermal Contact	Dermal Contact	Ingestion	Ingestion	Ingestion	Surface Water	While Showering	Surface Water	Cancer Risk	Surface Water
	Sediment	Sediment	Surface Water	Surface Water	Fish	Surface Water	ND	Surface Water	ND	NA	NA
	Fluorene	NC	NC	ND	NC	NC	ND	ND	ND	NA	NA
	Phenanthrene	NC	NC	ND	ND	NC	ND	ND	ND	NA	NA
Volatile Organics	Phenol	NC	ND	ND	NC	ND	ND	ND	ND	NA	NA
	Acetone	NC	NC	ND	NC	ND	ND	ND	ND	NA	NA
	Carbon disulfide	NTV	NTV	ND	NTV	ND	ND	ND	ND	NA	NA
Trichlorofluoromethane	NTV	NTV	ND	ND	NTV	ND	ND	ND	ND	NA	NA
	Totals	8.5E-06	1.1E-05	0.0E+00	0.0E+00	7.6E-03	0.0E+00	0.0E+00	0.0E+00	2.0E-05	0.0E+00	7.6E-03

NA = Not applicable.

NC = Not classified as a carcinogen.

ND = Not detected in associated media or not selected as a chemical of potential concern.

NE = Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue from either surface water or sediment.

NTV = No toxicity value available.

Table C-222
Set 1 - RMEcaddo riskcalcs adult Setl rme.XLS Future Adult (Caddo)

Table C-222
Set 1 - RMECaddo Lake - Potable Water Source

NA = Not applicable.

ND = Not detected in associated media or not selected as a chemical of potential concern.

No BCF = BCF value was not available or not appropriate to predict a concentration in fish tissue. Not evaluated through this exposure pathway. Chemical is not identified as a volatile.

*** = NO TOXICITY VALUE AVAILABLE.

Appendix D

Terrestrial Indicator Species Food Web Model

APPENDIX D
TABLE D1
AMERICAN WOODCOCK-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 4
KARNACK, TEXAS

Constituent	Max. Conc. Soil (mg/kg)	Max. Conc. Sediment (mg/kg)	Max. Conc. Surface Water (mg/L)	Max. Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
	<i>(0-5 ft)</i>														
Aluminum	17800			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.41E+03	----	----	0.00E+00	1.41E+03
Arsenic	10.9			1.3	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	8.61E-01	----	----	9.91E-01	1.85E+00
Barium	426			38.8	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.37E+01	----	----	2.95E+01	6.31E+01
Beryllium	1.06			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	8.37E-02	----	----	0.00E+00	8.37E-02
Cadmium	0.763			6.7	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	6.33E-02	----	----	5.08E+00	5.14E+00
Calcium	1520			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.20E+02	----	----	0.00E+00	1.20E+02
Chromium	27.3			8.4	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.16E+00	----	----	6.35E+00	8.51E+00
Cobalt	27.4			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.16E+00	----	----	0.00E+00	2.16E+00
Copper	20.6			11.9	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.63E+00	----	----	9.02E+00	1.06E+01
Iron	27000			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.13E+03	----	----	0.00E+00	2.13E+03
Lead	56.7			15.1	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	4.48E+00	----	----	1.15E+01	1.59E+01
Magnesium	1290			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.02E+02	----	----	0.00E+00	1.02E+02
Manganese	2430			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.92E+02	----	----	0.00E+00	1.92E+02
Mercury	0.067			0.4	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	5.29E-03	----	----	3.30E-01	3.36E-01
Nickel	13			13.8	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E+00	----	----	1.05E+01	1.15E+01
Potassium	1910			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.51E+02	----	----	0.00E+00	1.51E+02
Selenium	0.761			0.7	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	6.01E-02	----	----	5.70E-01	6.30E-01
Silver	0.501			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.96E-02	----	----	0.00E+00	3.96E-02
Sodium	1050			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	8.30E+01	----	----	0.00E+00	8.30E+01
Strontium	54.8			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	4.33E+00	----	----	0.00E+00	4.33E+00
Vanadium	40.5			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.20E+00	----	----	0.00E+00	3.20E+00
Zinc	93.1			378.4	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	7.15E+00	----	----	2.88E+02	2.95E+02
Perchlorate	76.4			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	6.04E+00	----	----	0.00E+00	6.04E+00
Di-n-butyl phthalate	0.347			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.74E-02	----	----	0.00E+00	2.74E-02
4,4-DDT	0.0074			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	5.85E-04	----	----	0.00E+00	5.85E-04
alpha-Chlordane	0.0449			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.55E-03	----	----	0.00E+00	3.55E-03
gamma-Chlordane	0.04			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.16E-03	----	----	0.00E+00	3.16E-03

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/ sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D1 (continued)
AMERICAN WOODCOCK-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 4
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0	12.8	---	12.82	Aluminum 10.6
2.5	0.40	0.3	---	0.7	Arsenic 0.6
20.8	1.4	1.6	---	3.0	Barium 2.5
NA	---	---	---	---	Beryllium ---
1.45	3.5	0.0	---	3.5	Cadmium 2.9
NA	---	---	---	---	Calcium ---
1	6.3	2.16	---	8.5	Chromium 7.0
NA	---	---	---	---	Cobalt ---
47	0.2	0.0	---	0.2	Copper 0.2
NA	---	---	---	---	Iron ---
1.13	10.1	3.96	---	14.1	Lead 11.6
NA	---	---	---	---	Magnesium ---
997	0.0	0.2	---	0.2	Manganese 0.2
0.006	55.071	0.9	---	56.0	Mercury 46.1
77.4	0.1	0.0	---	0.1	Nickel 0.1
NA	---	---	---	---	Potassium ---
0.4	1.4	0.2	---	1.6	Selenium 1.3
NA	---	---	---	---	Silver ---
NA	---	---	---	---	Sodium ---
NA	---	---	---	---	Strontium ---
11.4	0.0	0.3	---	0.3	Vanadium 0.2
14.5	19.84	0.5	---	20.3	Zinc 16.7
NA	---	---	---	---	Perchlorate ---
NA	---	---	---	---	Di-n-butyl phthalate ---
1.6	0.00	0.0	---	0.0	4,4-DDT 0.0
2.1	0.00	0.0	---	0.0	alpha-Chlordane 0.0
2.1	0.00	0.0	---	0.0	gamma-Chlordane 0.0
HI(sum) =					0 121
					98 23

APPENDIX D
TABLE D1 (continued)
AMERICAN WOODCOCK-UP TAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 4
KARNACK, TEXAS

Max. Conc. Plant UF Soil (mg/kg)	% Diet	Est. Plant Conc (mg/kg)	Worm UF (or Intercept & slope)	% Diet	Est. Worm Conc (mg/kg)	Invert UF	% Diet	Est. Invert Conc (mg/kg)	Bird UF	% Diet	Est. Bird Conc (mg/kg)	Mammal UF	% Diet	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg)	
0-5 ft	NA	(A)		100%	(B)		NA			NA			NA	(E)	(A+B+C+D+E)	
17800															0.0	Aluminum
10.9			-1.421	0.706											1.3	Arsenic
426			0.091												38.8	Barium
1.06															0.0	Beryllium
0.763			2.114	0.795											6.7	Cadmium
1520															0.0	Calcium
27.3			0.306												8.4	Chromium
27.4															0.0	Cobalt
20.6			1.675	0.264											11.9	Copper
27000															0.0	Iron
56.7			0.266												15.1	Lead
1290															0.0	Magnesium
2430															0.0	Manganese
0.067			0.078	0.337											0.4	Mercury
13			1.059												13.8	Nickel
1910															0.0	Potassium
0.761															0.7	Selenium
0.501			0.985												0.0	Silver
1050															0.0	Sodium
54.8															0.0	Strontium
40.5															0.0	Vanadium
93.1			4.449	0.328											378.4	Zinc
76.4															0.0	Perchlorate
0.347															0.0	Di-n-butyl phthalate
0.0074															0.0	4,4-DDT
0.0449															0.0	alpha-Chlordane
0.04															0.0	gamma-Chlordane

Bioa Conc= (soil conc)(UF) or
 $\ln(\text{Bioa conc}) = \text{Intercept} + \text{Slope}(\ln(\text{soil conc}))$ except Se, where Food Conc. = $\text{Intercept} + \text{Slope}(\text{soil conc})$ OR (Food Conc. - $\ln$)/d = soil conc

APPENDIX D
TABLE D2
SHORT-TAILED SHREW-HQS
LONGHORN ARMY AMMUNITION PLANT - SITE 4
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg) 0-5 ft	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum	17800			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.39E+03	----	----	0.00E+00	1.39E+03
Arsenic	10.9			1.3	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	8.50E-01	----	----	7.82E-01	1.63E+00
Barium	426			38.8	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.33E+01	----	----	2.33E+01	5.65E+01
Beryllium	1.06			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	8.27E-02	----	----	0.00E+00	8.27E-02
Cadmium	0.763			6.7	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	5.93E-02	----	----	4.01E+00	4.07E+00
Calcium	1520			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.19E+02	----	----	0.00E+00	1.19E+02
Chromium	27.3			8.4	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.13E+00	----	----	5.01E+00	7.14E+00
Cobalt	27.4			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.14E+00	----	----	0.00E+00	2.14E+00
Copper	20.6			11.9	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.61E+00	----	----	7.12E+00	8.73E+00
Iron	27000			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.11E+03	----	----	0.00E+00	2.11E+03
Lead	56.7			15.1	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	4.42E+00	----	----	9.05E+00	1.35E+01
Magnesium	1290			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.01E+02	----	----	0.00E+00	1.01E+02
Manganese	2430			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.90E+02	----	----	0.00E+00	1.90E+02
Mercury	0.067			0.4	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	5.23E-03	----	----	2.66E-01	2.66E-01
Nickel	13			13.8	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.01E+00	----	----	8.26E+00	9.27E+00
Potassium	1910			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.49E+02	----	----	0.00E+00	1.49E+02
Selenium	0.761			0.7	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	5.94E-02	----	----	4.50E-01	5.09E-01
Silver	0.501			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.91E-02	----	----	0.00E+00	3.91E-02
Sodium	1050			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	8.19E+01	----	----	0.00E+00	8.19E+01
Strontium	54.8			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	4.27E+00	----	----	0.00E+00	4.27E+00
Vanadium	40.5			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.16E+00	----	----	0.00E+00	3.16E+00
Zinc	91.1			378.4	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	7.26E+00	----	----	2.27E+02	2.34E+02
Perchlorate	76.4			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	5.96E+00	----	----	0.00E+00	5.96E+00
Di-n-butyl phthalate	0.347			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.71E-02	----	----	0.00E+00	2.71E-02
4,4'-DDT	0.0074			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	5.77E-04	----	----	0.00E+00	5.77E-04
alpha-Chlordane	0.0449			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.50E-03	----	----	0.00E+00	3.50E-03
gamma-Chlordane	0.04			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.12E-03	----	----	0.00E+00	3.12E-03

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/ sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D2 (continued)
SHORT-TAILED SHREW-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 4
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
2,295	0.0	6.0E+02	---	605.0	Aluminum 9.5E+01
0.15	---	5.7E+00	---	11	Arsenic 1.7E+00
11.8	---	2.8E+00	---	4.8	Barium 7.5E+01
1.45	6.0E+00	5.7E+02	---	0.1	Beryllium 8.9E+03
2.12	1.9E+00	2.8E+02	---	1.9	Cadmium 3.0E+01
NA	---	---	---	---	Calcium ---
7.21	7.0E+01	3.0E+01	---	1.0	Chromium 1.6E+01
NA	---	---	---	---	Cobalt ---
33.4	2.1E+01	4.8E+02	---	0.3	Copper 4.1E+02
NA	---	---	---	---	Iron ---
17.58	5.1E+01	2.5E+01	---	0.8	Lead 1.2E+01
NA	---	---	---	---	Magnesium ---
193	0.0E+00	9.8E+01	---	1.0	Manganese 1.5E+01
0.07	---	7.5E+02	---	3.8	Mercury 6.0E+01
87.91	9.4E+02	1.2E+02	---	0.1	Nickel 1.7E+02
NA	---	---	---	---	Potassium ---
0.44	1.0E+00	1.3E+01	---	1.2	Selenium 1.8E+01
NA	---	---	---	---	Silver ---
NA	---	---	---	---	Sodium ---
578	---	7.4E+03	---	7.4E-03	Strontium 1.2E+03
0.428	---	7.4E+00	---	7.4	Vanadium 1.2E+00
351.7	---	2.1E+02	---	0.7	Zinc 1.0E+01
NA	---	---	---	---	Perchlorate ---
NA	---	---	---	---	Di-n-butyl phthalate ---
1.76	---	3.3E+04	---	0.0	4,4-DDT 5.1E+05
5.5	---	6.4E+04	---	0.0	alpha-Chlordane 1.0E+04
5.5	---	5.7E+04	---	0.0	gamma-Chlordane 8.9E+05

HI(sum) = 4 623 0 **639**

APPENDIX D
TABLE D2 (continued)
SHORT-TAILED SHREW—UPTAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 4
KARNACK, TEXAS

Max Conc. Plant UF Soil (mg/kg) 0-5 ft	% Diet	Est. Plant Conc. (mg/kg)	Worm UF (Intercept & slope)	% Diet	Est. Worm Conc. (mg/kg)	Invert UF	% Diet	Est. Invert Conc. (mg/kg)	Bird UF	% Diet	Est. Bird Conc. (mg/kg)	Mammal UF	% Diet	Est. Mammal Conc. (mg/kg)	Total Food Conc. (mg/kg) (A+B+C+D+E)	
	NA	(A)		100%	(B)		NA	(C)		NA	(D)		NA	(E)		
17800			-1.421	0.706	1	1.3									0.0	Aluminum
10.9			0.091		1	38.8									1.3	Arsenic
426					1										38.8	Barium
1.06					1	6.7									0.0	Beryllium
0.763			2.114	0.795	1										6.7	Cadmium
1520					1	8.4									0.0	Calcium
27.3			0.306		1										8.4	Chromium
27.4					1										0.0	Cobalt
20.6			1.675	0.264	1	11.9									11.9	Copper
27000					1										0.0	Iron
56.7			0.266		1	15.1									15.1	Lead
1290					1										0.0	Magnesium
2430					1										0.0	Manganese
0.067			0.078	0.337	1	0.4									0.4	Mercury
13			1.059		1	13.8									13.8	Nickel
1910					1	0.7									0.0	Potassium
0.761					1										0.7	Selenium
0.501			0.985		1										0.0	Silver
1050					1										0.0	Sodium
54.8					1										0.0	Strontium
40.5			4.449	0.328	1	378.4									0.0	Vanadium
93.1					1										378.4	Zinc
76.4					1										0.0	Perchlorate
0.347					1										0.0	Di-n-butyl phthalate
0.0074					1										0.0	4,4-DDT
0.0449					1										0.0	alpha-Chlordane
0.04					1										0.0	gamma-Chlordane

APPENDIX D
TABLE D3
WHITE-FOOTED MOUSE - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 4
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg) 0-3 ft	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - Food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum	17800			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	5.52E+01	----	----	0.00E+00	5.52E+01
Arsenic	10.9			1.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	3.38E-02	----	----	1.62E-01	1.96E-01
Barium	426			52.6	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.32E-00	----	----	8.42E+00	9.74E+00
Beryllium	1.06			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	3.29E-03	----	----	0.00E+00	3.29E-03
Cadmium	0.763			3.7	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.37E-03	----	----	5.88E-01	5.90E-01
Calcium	1520			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	4.71E-00	----	----	0.00E+00	4.71E+00
Chromium	27.3			4.7	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	8.46E-02	----	----	7.38E-01	8.42E-01
Cobalt	27.4			7.8	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	8.49E-02	----	----	0.00E+00	8.49E-02
Copper	20.6			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	6.39E-02	----	----	1.24E+00	1.30E+00
Iron	27000			85.1	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	8.37E-01	----	----	0.00E+00	8.37E-01
Lead	56.7			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.76E-01	----	----	1.36E-01	1.36E-01
Magnesium	1290			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	4.00E-00	----	----	0.00E+00	4.00E+00
Manganese	2430			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	7.53E+00	----	----	0.00E+00	7.53E+00
Mercury	0.067			0.2	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.08E-04	----	----	3.61E-02	3.61E-02
Nickel	13			7.4	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	4.03E-02	----	----	1.19E+00	1.23E+00
Potassium	1910			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	5.92E+00	----	----	0.00E+00	5.92E+00
Selenium	0.761			0.4	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.38E-03	----	----	6.00E-02	6.23E-02
Silver	0.501			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.55E-03	----	----	0.00E+00	1.55E-03
Sodium	1050			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	3.26E+00	----	----	0.00E+00	3.26E+00
Strontium	54.8			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.70E-01	----	----	0.00E+00	1.70E-01
Vanadium	40.5			0.1	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.29E-01	----	----	1.95E-02	1.41E-01
Zinc	93.1			203.6	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.89E-01	----	----	3.25E-01	3.29E+01
Perchlorate	76.4			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.37E-01	----	----	0.00E+00	2.37E-01
Di-n-butyl phthalate	0.347			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.08E-03	----	----	0.00E+00	1.08E-03
4,4'-DDT	0.0074			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.29E-05	----	----	0.00E+00	2.29E-05
Alpha-Chlordane	0.0449			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.39E-04	----	----	0.00E+00	1.39E-04
gamma-Chlordane	0.04			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.24E-04	----	----	0.00E+00	1.24E-04

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D3 (continued)
WHITE-FOOTED MOUSE - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 4
KARNACK, TEXAS

RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
2.086	0.0E+00	2.6E+01	---	26.5	8.4E+01
0.136	1.2E+00	2.5E-01	---	1.4	4.6
10.8	7.8E-01	1.2E-01	---	0.90	2.874
1.32	6.0E+00	2.5E-03	---	0.00	0.0
1.926	3.1E-01	1.2E-03	---	0.31	1.0
NA	---	---	---	---	---
6.55	1.2E-01	1.3E-02	---	0.13	0.41
NA	---	---	---	---	---
30.4	4.1E-02	2.1E-03	---	0.04	0.14
NA	---	---	---	---	---
15.98	8.5E-01	1.1E-02	---	0.86	2.75
NA	---	---	---	---	---
176	0.0E+00	4.3E-02	---	0.04	0.14
0.064	5.6E-01	3.2E-03	---	0.57	1.81
79.89	1.5E-02	5.0E-04	---	0.02	0.05
NA	---	---	---	---	---
0.399	1.5E-01	5.9E-03	---	0.2	0.50
NA	---	---	---	---	---
NA	---	---	---	---	---
525	0.0E+00	3.2E-04	---	3.2E-04	0.00
0.389	4.1E-02	3.2E-01	---	0.4	1.16
319.5	1.0E-01	9.0E-04	---	1.0E-01	0.328
NA	---	---	---	---	---
NA	---	---	---	---	---
1.6	0.0E+00	1.4E-05	---	0.00	0.00
5	0.0E+00	2.8E-05	---	0.00	0.00
5	0.0E+00	2.5E-05	---	0.00	0.00

HI(sum) = 4 27 0 31

APPENDIX D
TABLE D3 (continued)
WHITE-FOOTED MOUSE - Uptake Factors and Food Concentrations
LONGHORN ARMY AMMUNITION PLANT - SITE 4
KARNACK, TEXAS

Max Conc. (mg/kg)	Plant UF (Intercept & slope)	% Diet	Est. Plant Conc. (mg/kg)	Worm UF (Intercept & slope)	% Diet	Est. Worm Conc. (mg/kg)	Invert UF	% Diet	Est. Invert Conc. (mg/kg)	Bird UF	% Diet	Est. Bird Conc. (mg/kg)	Mammal UF	% Diet	Est. Mammal Conc. (mg/kg)	Total Food Conc. (mg/kg)	
					50%			NA	(C)		NA	(D)		NA	(E)	(A+B+C+D+E)	
17800			0.5			0.5										0.0	Aluminum
10.9	-1.744	0.594	0.5	-1.421	0.706	0.5										1.0	Arsenic
426	0.1561		0.5	0.091		0.5										52.6	Barium
1.06			0.5			0.5										0.0	Beryllium
0.763	-0.18	0.819	0.5	2.114	0.795	0.5										3.7	Cadmium
1520			0.5			0.5										0.0	Calcium
27.3	0.041		0.5	0.306		0.5										4.7	Chromium
20.6	0.014	0.423	0.5	1.675	0.264	0.5										0.0	Cobalt
27000			0.5			0.5										7.8	Copper
56.7	1.866	0.787	0.5	0.266		0.5										0.0	Iron
1290			0.5			0.5										85.1	Lead
2430			0.5			0.5										0.0	Magnesium
0.067	0.25		0.5	0.078	0.337	0.5										0.0	Manganese
13	-1.927	0.791	0.5	1.059		0.5										0.2	Mercury
1910			0.5			0.5										7.4	Nickel
0.761			0.5			0.5										0.0	Potassium
0.501			0.5	0.985		0.5										0.4	Selenium
1090			0.5			0.5										0.0	Silver
54.8			0.5			0.5										0.0	Sodium
40.5	0.0049		0.5			0.5										0.0	Sroutium
93.1	-0.452	0.841	0.5	4.449	0.328	0.5										0.1	Vanadium
76.4			0.5			0.5										203.6	Zinc
0.347			0.5			0.5										0.0	Perchlorate
0.0074			0.5			0.5										0.0	Di-n-butyl phthalate
0.0449			0.5			0.5										0.0	4,4-DDT
0.04			0.5			0.5										0.0	alpha-Chlordane
			0.5			0.5										0.0	gamma-Chlordane

APPENDIX D
TABLE D4
RED-TAILED HAWK - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 4
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
	0-.5 ft														
Aluminum	17800			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Arsenic	10.9			0.048	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	4.69E-03	4.69E-03
Barium	426			17.764	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	1.72E+00	1.72E+00
Beryllium	1.06			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Cadmium	0.763			0.336	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	3.26E-02	3.26E-02
Calcium	1520			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Chromium	27.3			1.634	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	1.59E-01	1.59E-01
Cobalt	27.4			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Copper	20.6			9.401	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	9.20E-01	9.20E-01
Iron	27000			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Lead	56.7			3.688	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	3.58E-01	3.58E-01
Magnesium	1290			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Manganese	2430			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Mercury	0.067			0.004	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	3.51E-04	3.51E-04
Nickel	13			1.891	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	1.83E-01	1.83E-01
Potassium	1910			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Selenium	0.761			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Silver	0.501			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Sodium	1050			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Strontium	54.8			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Vanadium	40.5			0.498	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	4.83E-02	4.83E-02
Zinc	93.1			64.721	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	6.28E+00	6.28E+00
Perchlorate	76.4			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Di-n-butyl phthalate	0.347			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
4,4'-DDT	0.0074			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
alpha-Chlordane	0.0449			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
gamma-Chlordane	0.04			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source
 Total EDI = EDI soil/sediment + EDI water + EDI food
 Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D4 (continued)
RED-TAILED HAWK - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 4
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0E+00	NA	0.0E+00	0.0E+00	Aluminum
2.5	NA	NA	NA	---	Arsenic
20.8	8.3E-02	NA	0.0E+00	8.3E-02	Barium
NA	---	NA	---	---	Beryllium
1.45	2.2E-02	NA	0.0E+00	2.2E-02	Cadmium
NA	---	NA	---	---	Calcium
1	1.6E-01	NA	0.0E+00	1.6E-01	Chromium
NA	---	NA	---	---	Cobalt
47	2.0E-02	NA	0.0E+00	2.0E-02	Copper
NA	---	NA	---	---	Iron
1.13	3.2E-01	NA	0.0E+00	3.2E-01	Lead
NA	---	NA	---	---	Magnesium
997	0.0E+00	NA	0.0E+00	0.0E+00	Manganese
0.006	5.8E-02	NA	0.0E+00	---	Mercury
77.4	2.4E-03	NA	0.0E+00	2.4E-03	Nickel
NA	---	NA	---	---	Potassium
0.4	0.0E+00	NA	0.0E+00	0.0E+00	Selenium
NA	---	NA	---	---	Silver
NA	---	NA	---	---	Sodium
NA	---	NA	---	---	Strontium
11.4	4.2E-03	NA	0.0E+00	4.2E-03	Vanadium
14.5	4.3E-01	NA	0.0E+00	4.3E-01	Zinc
NA	---	NA	---	---	Perchlorate
NA	---	NA	---	---	Di-n-butyl phthalate
0.003	0.0E+00	NA	0.0E+00	0.0E+00	4,4-DDT
2.1	0.0E+00	NA	0.0E+00	0.0E+00	alpha-Chlordane
2.1	0.0E+00	NA	0.0E+00	0.0E+00	gamma-Chlordane

HI(sum) = **1.1** **0.000** **0.000** **1.0**

APPENDIX D
TABLE D4 (continued)
RED-TAILED HAWK - Uptake Factors and Food Concentrations
LONGHORN ARMY AMMUNITION PLANT - SITE 4
KARNACK, TEXAS

Max. Conc. Plant UF	% Diet	Est. Plant Conc (mg/kg)	Worm UF (or Intercept & slope)	% Diet	Est. Worm Conc (mg/kg)	Invert UF % Diet	Est. Invert Conc (mg/kg)	Bird UF % Diet	Est. Bird Conc (mg/kg)	Mammal UF (or Intercept & slope)	% Diet	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg)	
Soil (mg/kg)	NA	(A)	NA	NA	(B)	NA	(C)	NA	(D)	NA	100	(E)	(A+B+C+D+E)	
17800										-5.0249	0.8354	0.05	0.00	Aluminum
10.9										0.0417		17.8	0.05	Arsenic
426													17.76	Barium
1.06													0.00	Beryllium
0.763										-0.8408	0.92	0.3	0.34	Cadmium
1520										-0.5506	0.315	1.6	0.00	Calcium
27.3													1.63	Chromium
27.4										1.8533	0.1309	9.5	0.00	Cobalt
20.6										-0.7216	0.5019	3.7	9.48	Copper
27000													0.00	Iron
56.7													3.69	Lead
1290													0.00	Magnesium
2430										0.054		0.0	0.00	Manganese
0.067										0.1356	0.1956	1.9	0.00	Mercury
13													1.8914	Nickel
1910													0.00	Potassium
0.761													0.00	Selenium
0.501													0.00	Silver
1050													0.00	Sodium
54.8													0.00	Strontium
40.5										0.0123		0.5	0.50	Vanadium
93.1										4.1204	0.01096	64.7	64.72	Zinc
76.4													0.00	Perchlorate
0.347													0.00	Di-n-butyl phthalate
0.0074													0.00	4,4'-DDT
0.0449													0.00	alpha-Chlordane
0.04													0.00	gamma-Chlordane

APPENDIX D
TABLE D5
NORTHERN BOBWHITE-HQ:
LONGHORN ARMY AMMUNITION PLANT - SITE 4
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
	<i>n=3 fl</i>														
Aluminum	17800			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.42E+03	----	----	0.00E+00	1.42E+03
Arsenic	10.9			0.7	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	8.72E-01	----	----	5.64E-02	9.28E-01
Barium	426			66.5	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	3.41E+01	----	----	5.19E+00	3.91E+01
Beryllium	1.06			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	8.48E-02	----	----	0.00E+00	8.48E-02
Cadmium	0.763			0.7	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	6.10E-02	----	----	5.22E-02	1.13E-01
Calcium	1520			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.22E+02	----	----	0.00E+00	1.22E+02
Chromium	27.3			1.1	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.18E+00	----	----	8.73E-02	2.27E+00
Cobalt	27.4			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.19E+00	----	----	0.00E+00	2.19E+00
Copper	20.6			3.6	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.65E+00	----	----	2.84E-01	1.93E+00
Iron	27000			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.16E+03	----	----	0.00E+00	2.16E+03
Lead	56.7			155.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	4.56E+00	----	----	1.21E+01	1.66E+01
Magnesium	1290			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.03E+02	----	----	0.00E+00	1.03E+02
Manganese	2430			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.94E+02	----	----	0.00E+00	1.94E+02
Mercury	0.067			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	5.36E-03	----	----	1.31E-03	6.67E-03
Nickel	13			1.1	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.04E+00	----	----	8.44E-02	1.13E+00
Potassium	1910			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.53E+02	----	----	0.00E+00	1.53E+02
Selenium	0.761			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	6.09E-02	----	----	0.00E+00	6.09E-02
Silver	0.501			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	4.01E-02	----	----	0.00E+00	4.01E-02
Sodium	1050			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	8.40E+01	----	----	0.00E+00	8.40E+01
Strontium	54.8			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	4.38E+00	----	----	0.00E+00	4.38E+00
Vanadium	40.5			0.2	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	3.24E+00	----	----	1.55E-02	3.26E+00
Zinc	93.1			28.8	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	7.45E+00	----	----	2.23E+00	9.70E+00
Perchlorate	76.4			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	6.11E+00	----	----	0.00E+00	6.11E+00
Di-n-butyl phthalate	0.347			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.78E-02	----	----	0.00E+00	2.78E-02
4,4-DDT	0.0074			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	5.92E-04	----	----	0.00E+00	5.92E-04
alpha-Chlordane	0.0449			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	3.59E-03	----	----	0.00E+00	3.59E-03
gamma-Chlordane	0.04			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	3.20E-03	----	----	0.00E+00	3.20E-03

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/ sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D5 (continued)
NORTHERN BOBWHITE-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 4
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0	13.0	---	12.98	Aluminum
2.5	0.02	0.3	---	0.4	Arsenic
20.8	0.2	1.6	---	1.9	Barium
NA	---	---	---	---	Beryllium
1.45	0.0	0.0	---	0.1	Cadmium
NA	---	---	---	---	Calcium
1	0.1	2.18	---	2.3	Chromium
NA	---	---	---	---	Cobalt
47	0.0	0.0	---	0.0	Copper
NA	---	---	---	---	Iron
1.13	10.7	4.01	---	14.7	Lead
NA	---	---	---	---	Magnesium
997	0.0	0.2	---	0.2	Manganese
0.006	0.218	0.9	---	1.1	Mercury
77.4	0.0	0.0	---	0.0	Nickel
NA	---	---	---	---	Potassium
0.4	0.0	0.2	---	0.2	Selenium
NA	---	---	---	---	Silver
NA	---	---	---	---	Sodium
NA	---	---	---	---	Strontium
11.4	0.0	0.3	---	0.3	Vanadium
14.5	0.15	0.5	---	0.7	Zinc
NA	---	---	---	---	Pentachloro
NA	---	---	---	---	Di-n-butyl phthalate
0.003	0.00	0.2	---	0.2	4,4-DDT
2.1	0.00	0.0	---	0.0	alpha-Chlordane
2.1	0.00	0.0	---	0.0	gamma-Chlordane

HI(sum) = 11 23 0 35

APPENDIX D
TABLE D5 (continued)
NORTHERN BOBWHITE-UP TAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 4
KARNACK, TEXAS

Max. Conc. Plant (mg/kg)	Soil 0-5 ft	% Diet	Est. Plant Conc (mg/kg)	Worm UF (or Intercept & slope)	% Diet	Est. Worm Conc (mg/kg)	Invert UF	% Diet	Est. Invert Conc (mg/kg)	Bird UF	% Diet	Est. Bird Conc (mg/kg)	Mammal UF	% Diet	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg)	
		100%	(A)		NA	(B)		NA			NA				(E)	(A+B+C+D+E)	
17800																0.0	Aluminum
10.9	-1.744	0.594														0.7	Arsenic
426	0.1561															66.5	Barium
1.06																0.0	Beryllium
0.763	-0.18	0.819														0.7	Cadmium
1320																0.0	Calcium
27.3	0.041															1.1	Chromium
27.4																0.0	Cobalt
20.6	0.014	0.423														3.6	Copper
27000																0.0	Iron
56.7	1.866	0.787														155.0	Lead
1290																0.0	Magnesium
2430																0.0	Manganese
0.067	0.25															0.0	Mercury
13	-1.927	0.791														1.1	Nickel
1910																0.0	Potassium
0.501																0.0	Selenium
1050																0.0	Silver
54.8																0.0	Sodium
40.5	0.0049															0.0	Strontium
93.1	-0.452	0.841														0.2	Vanadium
76.4																28.8	Zinc
0.347																0.0	Perchlorate
0.0074																0.0	Di-n-butyl phthalate
0.0449																0.0	4,4-DDT
0.04																0.0	alpha-Chlordane
																0.0	gamma-Chlordane

Bioa Conc= (soil conc)(UF) or
 $\ln(\text{Bioa conc}) = -\text{Intercept} + \text{Slope}(\ln(\text{soil conc}))$ except Se, where Food Conc = Intercept + Slope(soil conc) OR (Food Conc - ln)/sl = soil conc

APPENDIX D
TABLE D6
AMERICAN WOODCOCK—HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 8
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
	<i>0.1-3 fl</i>														
Aluminum	17900				7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.41E+03	----	----	0.00E+00	1.41E+03
Arsenic	4.56				7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.00E-01	----	----	5.36E-01	8.96E-01
Barium	228				7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.80E+01	----	----	1.38E+01	3.38E+01
Beryllium	1.63				7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.29E-01	----	----	0.00E+00	1.29E-01
Cadmium	0.146				7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.15E-02	----	----	1.36E+00	1.37E+00
Calcium	1650				7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.30E+02	----	----	0.00E+00	1.30E+02
Chromium	68.7				7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	5.43E+00	----	----	1.60E+01	2.14E+01
Cobalt	17.9				7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.41E+00	----	----	0.00E+00	1.41E+00
Copper	11.1				7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	8.77E-01	----	----	7.66E+00	8.54E+00
Iron	20200				7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.60E+03	----	----	0.00E+00	1.60E+03
Lead	20.1				7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.59E+00	----	----	4.06E+00	5.65E+00
Magnesium	2440				7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.93E+02	----	----	0.00E+00	1.93E+02
Manganese	531				7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	4.19E+01	----	----	0.00E+00	4.19E+01
Mercury	5.21				7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	4.12E-01	----	----	1.43E+00	1.84E+00
Nickel	19.5				7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.54E+00	----	----	1.57E+01	1.72E+01
Potassium	758				7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	5.99E+01	----	----	0.00E+00	5.99E+01
Selenium	0.89				7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	7.03E-02	----	----	6.66E-01	7.37E-01
Silver	31.3				7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.47E+00	----	----	0.00E+00	2.47E+00
Sodium	433				7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.42E+01	----	----	0.00E+00	3.42E+01
Strontium	28.2				7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.23E+00	----	----	0.00E+00	2.23E+00
Vanadium	31.6				7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.50E+00	----	----	0.00E+00	2.50E+00
Zinc	67.1			339.9	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	5.30E+00	----	----	2.38E+02	2.64E+02
Methylene Chloride	0.0068			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	5.37E-04	----	----	0.00E+00	5.37E-04

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D6 (continued)
AMERICAN WOODCOCK-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 8
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0	12.9	---	12.89	Aluminum 3.5
2.5	0.21	0.1	---	0.4	Arsenic 0.1
20.8	0.8	0.9	---	1.6	Barium 0.4
NA	---	---	---	---	Beryllium ---
1.45	0.9	0.0	---	0.9	Cadmium 0.3
NA	---	---	---	---	Calcium ---
1	16.0	5.43	---	21.4	Chromium 5.8
NA	---	---	---	---	Cobalt ---
47	0.2	0.0	---	0.2	Copper 0.0
NA	---	---	---	---	Iron ---
1.13	3.6	1.41	---	5.0	Lead 1.4
NA	---	---	---	---	Magnesium ---
997	0.0	0.0	---	0.0	Manganese 0.0
0.006	238.843	68.6	---	307.4	Mercury 83.0
77.4	0.2	0.0	---	0.2	Nickel 0.1
NA	---	---	---	---	Potassium ---
0.4	1.7	0.2	---	1.8	Selenium 0.5
NA	---	---	---	---	Silver ---
NA	---	---	---	---	Sodium ---
NA	---	---	---	---	Strontium ---
11.4	0.0	0.2	---	0.2	Vanadium 0.1
14.5	17.82	0.4	---	18.2	Zinc 4.9
NA	---	---	---	---	Methylene Chloride ---

HI(sum) = 280 90 0 370

APPENDIX D
TABLE D6 (continued)
AMERICAN WOODCOCK-UP TAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 8
KARNACK, TEXAS

Max Conc. Plant UF Soil (mg/kg) 0-5 ft	% Diet	Est. Plant Conc (mg/kg)	Worm UF (or Intercept & slope)	% Diet	Est. Worm Conc (mg/kg)	Invert UF	% Diet	Est. Invert Conc (mg/kg)	Bird UF	% Diet	Est. Bird Conc (mg/kg)	Mammal UF	% Diet	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg) (A+B+C+D+E)	
	NA	(A)		100%	(B)		NA			NA			NA	(E)		
17900			-1.421	0.706	1	0.7									0.0	Aluminum
4.56			0.091		1	20.7									0.7	Arsenic
228					1										20.7	Barium
1.63					1										0.0	Beryllium
0.146			2.114	0.795	1	1.8									1.8	Cadmium
1650					1										0.0	Calcium
68.7			0.306		1	21.0									21.0	Chromium
17.9					1										0.0	Cobalt
11.1			1.675	0.264	1	10.1									10.1	Copper
20200					1										0.0	Iron
20.1			0.266		1	5.3									5.3	Lead
2440					1										0.0	Magnesium
531					1										0.0	Manganese
5.21					1	1.9									1.9	Mercury
19.5			0.078	0.337	1	20.7									20.7	Nickel
758			1.059		1										0.0	Potassium
0.89			0.985		1	0.9									0.9	Selenium
31.3					1										0.0	Silver
433					1										0.0	Sodium
28.2					1										0.0	Strontium
31.6					1										0.0	Vanadium
67.1			4.449	0.328	1	339.9									339.9	Zinc
0.0068					1										0.0	Methylene Chloride

BioIn Conc = (soil conc)(UF) or
 $\ln(\text{BioIn conc.}) = \text{Intercept} + \text{Slope}(\ln(\text{soil conc}))$ except Se, where Food Conc. = Intercept + Slope(soil conc) OR (Food Conc. - Int)/a = soil conc

APPENDIX D
TABLE D7
SHORT-TAILED SHREW-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 8
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum	17900			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.40E+03	----	----	0.00E+00	1.40E+03
Arsenic	4.56			0.7	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.56E-01	----	----	4.23E-01	7.79E-01
Barium	228			20.7	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.78E+01	----	----	1.24E+01	3.02E+01
Beryllium	1.63			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.27E-01	----	----	0.00E+00	1.27E-01
Cadmium	0.146			1.8	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.14E-02	----	----	1.08E+00	1.09E+00
Calcium	1650			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.29E+02	----	----	0.00E+00	1.29E+02
Chromium	68.7			21.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	5.36E+00	----	----	1.26E+01	1.80E+01
Cobalt	17.9			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.40E+00	----	----	0.00E+00	1.40E+00
Copper	11.1			10.1	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	8.66E-01	----	----	6.05E+00	6.91E+00
Iron	20200			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.58E+03	----	----	0.00E+00	1.58E+03
Lead	20.1			5.3	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.57E+00	----	----	3.21E+00	4.78E+00
Magnesium	2440			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.90E+02	----	----	0.00E+00	1.90E+02
Manganese	531			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	4.14E+01	----	----	0.00E+00	4.14E+01
Mercury	5.21			1.9	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	4.06E-01	----	----	1.13E+00	1.54E+00
Nickel	19.5			20.7	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.52E+00	----	----	1.24E+01	1.39E+01
Potassium	758			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	5.91E+01	----	----	0.00E+00	5.91E+01
Selenium	0.89			0.9	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	6.94E-02	----	----	5.56E-01	5.95E-01
Silver	31.3			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.44E+00	----	----	0.00E+00	2.44E+00
Sodium	433			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.38E+01	----	----	0.00E+00	3.38E+01
Strontium	28.2			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.20E+00	----	----	0.00E+00	2.20E+00
Vanadium	31.6			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.46E+00	----	----	0.00E+00	2.46E+00
Zinc	67.1			339.9	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	5.23E+00	----	----	2.04E+02	2.09E+02
Methylene Chloride	0.0068			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	5.30E-04	----	----	0.00E+00	5.30E-04

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D7 (continued)
SHORT-TAILED SHREW-HQS
LONGHORN ARMY AMMUNITION PLANT - SITE 8
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
2,295	0.0	4.1E+02	---	608.4	9.4E-01
0.15	---	2.4E+00	---	5	8.0E-01
11.8	---	1.5E+00	---	2.6	3.9E-01
1.45	0.0E+00	4.8E-02	---	0.1	1.3E-02
2.12	5.1E-01	5.4E-03	---	0.5	7.9E-02
NA	---	---	---	---	---
7.21	1.7E+00	7.4E-01	---	2.5	3.8E-01
NA	---	---	---	---	---
33.4	1.8E-01	2.6E-02	---	0.2	3.2E-02
NA	---	---	---	---	---
17.58	1.8E-01	8.9E-02	---	0.3	4.2E-02
NA	---	---	---	---	---
193	0.0E+00	2.1E-01	---	0.2	3.3E-02
0.07	---	5.8E+00	---	22.0	3.4E+00
87.91	1.4E-01	1.7E-02	---	0.2	2.4E-02
NA	---	---	---	---	---
0.44	1.2E+00	1.6E-01	---	1.4	2.1E-01
NA	---	---	---	---	---
NA	---	---	---	---	---
578	---	3.8E-03	---	3.8E-03	5.9E-04
0.428	---	5.8E+00	---	5.8	8.9E-01
351.7	---	1.5E-02	---	0.6	9.2E-02
12.9	---	4.1E-05	---	0.0	6.3E-06
					Methylene Chloride

HI(sum) = 4 625 0 **650**

APPENDIX D
TABLE D7 (continued)
SHORT-TAILED SHREW-UP TAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 8
KARNACK, TEXAS

Max Conc. Plant UF Soil (mg/kg) 0-5 ft	% Diet NA	Est. Plant Conc (mg/kg) (A)	Worm UF (Intercept & slope)	% Diet 100%	Est. Worm Conc (mg/kg) (B)	Invert UF % Diet NA	Est. Invert Conc (mg/kg) (C)	Bird UF % Diet NA	Est. Bird Conc (mg/kg) (D)	Mammal UF	% Diet NA	Est. Mammal Conc (mg/kg) (E)	Total Food Conc. (mg/kg) (A+B+C+D+E)	
17900													0.0	Aluminum
4.56			-1.421	0.706									0.7	Arsenic
228			0.091										20.7	Barium
1.63													0.0	Beryllium
0.146			2.114	0.795									1.8	Cadmium
1650													0.0	Calcium
68.7			0.306										21.0	Chromium
17.9													0.0	Cobalt
11.1			1.675	0.264									10.1	Copper
20200													0.0	Iron
20.1			0.266										5.3	Lead
2440													0.0	Magnesium
531													0.0	Manganese
5.21			0.078	0.337									1.9	Mercury
19.5			1.059										20.7	Nickel
758													0.0	Potassium
0.89			0.985										0.9	Selenium
31.3													0.0	Silver
433													0.0	Sodium
28.2													0.0	Sroutium
31.6													0.0	Vanadium
67.1			4.449	0.328									339.9	Zinc
0.0068													0.0	Methylene Chloride

**APPENDIX D
TABLE D8
WHITE-FOOTED MOUSE - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 8
KARNACK, TEXAS**

Constituent	Max Conc. Soil (mg/kg) <i>0-5 ft</i>	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - Food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum	17900				3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	5.55E+01			0.00E+00	5.55E+01
Antic	4.56				3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.41E+02			9.08E-02	1.05E+01
Barium	228				3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	7.07E+01			4.51E+00	5.21E+00
Beryllium	1.63				3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	5.05E-03			0.00E+00	5.05E-03
Cadmium	0.146				3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	4.53E-04			1.57E-01	1.58E-01
Calcium	1650				3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	5.12E+00			0.00E+00	5.12E+00
Chromium	68.7				3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.13E+01			1.91E+00	2.12E+00
Cobalt	17.9				3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	5.55E-02			0.00E+00	5.55E-02
Copper	11.1				3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	3.44E-02			1.07E+00	1.07E+00
Iron	20200				3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	6.26E+01			0.00E+00	6.26E+01
Lead	20.4				3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	7.56E+00			5.91E+00	5.97E+00
Magnesium	2440				3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.65E+00			0.00E+00	1.65E+00
Manganese	531				3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.62E-02			0.00E+00	1.65E+00
Mercury	5.21				3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	6.05E-02			2.55E-01	2.71E-01
Nickel	19.5				3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.35E+00			1.77E+00	1.83E+00
Potassium	758				3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.35E+00			0.00E+00	2.35E+00
Selenium	0.89				3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	9.70E-03			7.01E-02	7.29E-02
Silver	31.3				3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.34E+00			0.00E+00	9.70E-02
Sodium	433				3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	8.74E-02			0.00E+00	1.34E+00
Strontium	28.2				3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	9.80E-02			0.00E+00	8.74E-02
Vanadium	31.6				3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.08E-01			1.24E-02	1.10E-01
Zinc	67.1				3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.89E+01			0.00E+00	2.91E+01
Methylene Chloride	0.068				3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.11E-05			0.00E+00	2.11E-05

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value. Hazard Index = Sum of HQs. boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D8 (continued)
WHITE-FOOTED MOUSE - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 8
KARNACK, TEXAS

RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total III (%)
2.086	0.0E+00	2.7E+01	---	26.6	79E+01
0.136	6.7E-01	1.0E-01	---	0.8	2.3
10.8	4.2E-01	6.5E-02	---	0.48	1.441
1.32	0.0E+00	3.8E-03	---	0.00	0.0
1.926	8.2E-02	2.3E-04	---	0.08	0.2
NA	---	---	---	---	---
6.55	2.9E-01	3.3E-02	---	0.32	0.97
NA	---	---	---	---	---
30.4	3.4E-02	1.1E-03	---	0.04	0.10
NA	---	---	---	---	---
15.98	3.7E-01	3.9E-03	---	0.37	1.12
NA	---	---	---	---	---
176	0.0E+00	9.4E-03	---	0.01	0.03
0.064	4.0E+00	2.5E-01	---	4.24	12.65
79.89	2.2E-02	7.6E-04	---	0.02	0.07
NA	---	---	---	---	---
0.399	1.8E-01	6.9E-03	---	0.2	0.55
NA	---	---	---	---	---
NA	---	---	---	---	---
525	0.0E+00	1.7E-04	---	1.7E-04	0.00
0.389	3.2E-02	2.5E-01	---	0.3	0.85
319.5	9.1E-02	6.5E-04	---	9.1E-02	0.272
11.7	0.0E+00	1.8E-06	---	0.00	0.00
					Methylene Chloride

HI(sum) = 6 27 0 34

APPENDIX D
TABLE D8 (continued)
WHITE-FOOTED MOUSE - Uptake Factors and Food Concentrations
LONGHORN ARMY AMMUNITION PLANT - SITE 8
KARNACK, TEXAS

Max Conc Soil (mg/kg) 0-5 ft	PlantUF (or Intercept & slope)	% Diet 50%	Est. Plant Conc (mg/kg)	Worm UF (or Intercept & slope)	% Diet 50%	Est. Worm Conc (mg/kg)	Invert UF (or Intercept & slope)	% Diet 50%	Est. Invert Conc (mg/kg)	Bird UF (or Intercept & slope)	% Diet 50%	Est. Bird Conc (mg/kg)	Mammal UF (or Intercept & slope)	% Diet 50%	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg) (A+B+C+D+E)	
17900	-1.744	0.594	0.5	-1.421	0.706	0.5										0.0	Aluminum
4.56	0.1561	0.5	0.2	0.091		0.5										0.6	Arsenic
228		0.5	17.8			0.5										28.2	Barium
1.63		0.5				0.5										0.0	Beryllium
0.146	-0.18	0.819	0.5	2.114	0.795	0.5										1.0	Cadmium
1650		0.5				0.5										0.0	Calcium
68.7	0.041		0.5	0.306		0.5										11.9	Chromium
17.9		0.5	1.4			0.5										0.0	Cobalt
11.1	0.014	0.423	0.5	1.675	0.264	0.5										6.4	Copper
20200		0.5	1.4			0.5										0.0	Iron
20.1	1.866	0.787	0.5	0.266		0.5										36.9	Lead
2440		0.5	34.3			0.5										0.0	Magnesium
531		0.5				0.5										0.0	Manganese
5.21	0.25		0.5	0.078	0.337	0.5										1.6	Mercury
19.5	-1.927	0.791	0.5	1.059		0.5										11.1	Nickel
758		0.5	0.8			0.5										0.0	Potassium
0.89		0.5		0.985		0.5										0.4	Selenium
31.3		0.5				0.5										0.0	Silver
433		0.5				0.5										0.0	Sodium
28.2		0.5				0.5										0.0	Strontium
31.6	0.0049		0.5			0.5										0.1	Vanadium
67.1	-0.452	0.841	0.5	4.449	0.328	0.5										180.9	Zinc
0.0068		0.5	10.9			0.5										0.0	Methylene Chloride

APPENDIX D
TABLE D9
RED-TAILED HAWK - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 8
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
	<i>0.5-5 ft</i>														
Aluminum	17900			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Arsenic	4.56			0.023	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	2.26E-03	2.26E-03
Barium	228			9.508	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	9.22E-01	9.22E-01
Beryllium	1.63			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Cadmium	0.146			0.073	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	7.13E-03	7.13E-03
Calcium	1650			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Chromium	68.7			2.185	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	2.12E-01	2.12E-01
Cobalt	17.9			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Copper	11.1			8.744	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	8.48E-01	8.48E-01
Iron	20200			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Lead	20.1			2.191	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	2.13E-01	2.13E-01
Magnesium	2440			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Manganese	531			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Mercury	5.21			0.281	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	2.73E-02	2.73E-02
Nickel	19.5			2.047	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	1.99E-01	1.99E-01
Potassium	758			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Selenium	0.89			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Silver	31.3			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Sodium	433			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Strontium	28.2			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Vanadium	31.6			0.389	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	3.77E-02	3.77E-02
Zinc	67.1			64.489	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	6.26E+00	6.26E+00
Methylene Chloride	0.0068			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D9 (continued)
RED-TAILED HAWK - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 8
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0E+00	NA	0.0E+00	0.0E+00	Aluminum
2.5	NA	NA	NA	---	Arsenic
20.8	4.4E-02	NA	0.0E+00	4.4E-02	Barium
NA	---	NA	---	---	Beryllium
1.45	4.9E-03	NA	0.0E+00	4.9E-03	Cadmium
NA	---	NA	---	---	Calcium
1	2.1E-01	NA	0.0E+00	2.1E-01	Chromium
NA	---	NA	---	---	Cobalt
47	1.8E-02	NA	0.0E+00	1.8E-02	Copper
NA	---	NA	---	---	Iron
1.13	1.9E-01	NA	0.0E+00	1.9E-01	Lead
997	0.0E+00	NA	---	---	Magnesium
0.006	4.5E+00	NA	0.0E+00	0.0E+00	Manganese
77.4	2.6E-03	NA	0.0E+00	2.6E-03	Mercury
NA	---	NA	---	---	Nickel
0.4	0.0E+00	NA	0.0E+00	0.0E+00	Potassium
NA	---	NA	---	---	Selenium
NA	---	NA	---	---	Silver
NA	---	NA	---	---	Sodium
11.4	3.3E-03	NA	---	---	Strontium
14.5	4.3E-01	NA	0.0E+00	3.3E-03	Vanadium
NA	---	NA	0.0E+00	4.3E-01	Zinc
					Methylene Chloride

HI(sum) = **5.5** **0.000** **0.000** **0.9**

APPENDIX D
TABLE D9 (continued)
RED-TAILED HAWK - Uptake Factors and Food Concentrations
LONGHORN ARMY AMMUNITION PLANT - SITE 8
KARNACK, TEXAS

Max Conc. Plant UF (mg/kg)	% Diet	Est. Plant Conc (mg/kg)	Worm UF (or Intercept & slope)	% Diet	Est. Worm Conc (mg/kg)	Invert UF % Diet	Est. Invert Conc (mg/kg)	Est. Bird Conc (mg/kg)	Mammal UF Intercept (mg/kg)	(or & slope)	% Diet	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg)	
0-5 ft	NA	(A)		NA	(B)	NA	(C)	(D)			100	(E)	(A+B+C+D+E)	
17900													0.00	Aluminum
4.56									-5.0249	0.8354		0.02	0.02	Arsenic
228									0.0417			9.51	9.51	Barium
1.63													0.00	Beryllium
0.146									-0.8408	0.92		0.1	0.07	Cadmium
1650													0.00	Calcium
68.7									-0.5506	0.315		2.2	2.19	Chromium
17.9													0.00	Cobalt
11.1									1.8533	0.1309		8.7	8.74	Copper
20200													0.00	Iron
20.1									-0.7216	0.5019		2.2	2.19	Lead
2440													0.00	Magnesium
531													0.00	Manganese
5.21									0.054			0.3	0.28	Mercury
19.5									0.1356	0.1956		2.0	2.0475	Nickel
758													0.00	Potassium
0.89													0.00	Selenium
31.3													0.00	Silver
433													0.00	Sodium
28.2													0.00	Strontium
31.6									0.0123			0.4	0.39	Vanadium
67.1									4.1204	0.01096		64.5	64.49	Zinc
0.0068													0.00	Methylene Chloride

APPENDIX D
TABLE D10
NORTHERN BOBWHITE-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 8
KARNACK, TEXAS

Constituent	Max. Conc. Soil (mg/kg)	Max. Conc. Sediment (mg/kg)	Max. Conc. Surface Water (mg/L)	Max. Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
	<i>0-5 ft</i>														
Aluminum	17900			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.43E+03	-----	-----	0.00E+00	1.43E+03
Arsenic	4.56			0.4	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	3.65E-01	-----	-----	3.36E-02	3.98E-01
Barium	228			35.6	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.82E+01	-----	-----	2.78E+00	2.10E+01
Beryllium	1.63			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.30E-01	-----	-----	0.00E+00	1.30E-01
Cadmium	0.146			0.2	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.17E-02	-----	-----	1.35E-02	2.52E-02
Calcium	1650			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.32E+02	-----	-----	0.00E+00	1.32E+02
Chromium	68.7			2.8	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	5.50E+00	-----	-----	2.20E-01	5.72E+00
Cobalt	17.9			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.43E+00	-----	-----	0.00E+00	1.43E+00
Copper	11.1			2.8	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	8.88E-01	-----	-----	2.19E-01	1.11E+00
Iron	20200			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.62E+03	-----	-----	0.00E+00	1.62E+03
Lead	20.1			68.6	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.61E+00	-----	-----	5.35E+00	6.95E+00
Magnesium	2440			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.95E+02	-----	-----	0.00E+00	1.95E+02
Manganese	531			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	4.25E+01	-----	-----	0.00E+00	4.25E+01
Mercury	5.21			1.3	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	4.17E-01	-----	-----	1.02E-01	5.18E-01
Nickel	19.5			1.5	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.56E+00	-----	-----	1.19E-01	1.68E+00
Potassium	758			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	6.06E+01	-----	-----	0.00E+00	6.06E+01
Selenium	0.89			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	7.12E-02	-----	-----	0.00E+00	7.12E-02
Silver	31.3			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.50E+00	-----	-----	0.00E+00	2.50E+00
Sodium	433			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	3.46E+01	-----	-----	0.00E+00	3.46E+01
Strontium	28.2			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.26E+00	-----	-----	0.00E+00	2.26E+00
Vanadium	31.6			0.2	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.53E+00	-----	-----	1.21E-02	2.54E+00
Zinc	67.1			21.9	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	5.37E+00	-----	-----	1.71E+00	7.07E+00
Methylene Chloride	0.0068			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	5.44E-04	-----	-----	0.00E+00	5.44E-04

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil + sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D10 (continued)
NORTHERN BOBWHITE-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 8
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total III (%)
109.7	0.0	13.1	---	13.05	3.5
2.5	0.01	0.7	---	0.2	0.0
20.8	0.1	0.9	---	1.0	0.3
NA	---	---	---	---	---
1.45	0.0	0.0	---	0.0	0.0
NA	---	---	---	---	---
1	0.2	5.50	---	5.7	1.5
NA	---	---	---	---	---
47	0.0	0.0	---	0.0	0.0
NA	---	---	---	---	---
1.13	4.7	1.42	---	6.2	1.7
NA	---	---	---	---	---
997	0.0	0.0	---	0.0	0.0
0.006	16.933	69.5	---	86.4	23.3
77.4	0.0	0.0	---	0.0	0.0
NA	---	---	---	---	---
0.4	0.0	0.2	---	0.2	0.0
NA	---	---	---	---	---
NA	---	---	---	---	---
11.4	0.0	0.2	---	0.2	0.1
14.5	0.12	0.4	---	0.5	0.1
NA	---	---	---	---	---

HI(sum) = 22 91 0 **113**

APPENDIX D
TABLE D10 (continued)
NORTHERN BOBWHITE-UP TAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 8
KARNACK, TEXAS

Max Conc. Plant Uf (mg/kg)	% Diet	Est. Plant Conc (mg/kg)	Worm Uf (or Intercept & slope)	% Diet	Est. Worm Conc (mg/kg)	Invert Uf % Diet NA	Est. Invert Conc (mg/kg)	Bird Uf % Diet NA	Est. Bird Conc (mg/kg)	Mammal Uf	% Diet	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg)	
0--5 ft	100%	(A)		NA	(B)						NA	(E)	(A+B+C+D+E)	
17900		1											0.0	Aluminum
4.56	-1.744	0.594											0.4	Arsenic
228	0.1561	1	35.6										35.6	Barium
1.63		1											0.0	Beryllium
0.146	-0.18	0.819											0.2	Cadmium
1650		1											0.0	Calcium
68.7	0.041	1	2.8										2.8	Chromium
17.9		1											0.0	Cobalt
11.1	0.014	0.423											2.8	Copper
20200		1	68.6										0.0	Iron
20.1	1.866	0.787											68.6	Lead
2440		1											0.0	Magnesium
531		1											0.0	Manganese
5.21	0.25	1	1.3										1.3	Mercury
19.5	-1.927	0.791	1.5										1.5	Nickel
758		1											0.0	Potassium
8.89		1											0.0	Selenium
31.3		1											0.0	Silver
433		1											0.0	Sodium
28.2		1											0.0	Strontium
31.6	0.0049	1	0.2										0.2	Vanadium
67.1	-0.452	0.841	21.9										21.9	Zinc
0.0068		1											0.0	Methylene Chloride

Biota Conc = (soil conc)/(UF) or
 $\ln(\text{Biota conc.}) = \text{Intercept} + \text{Slope} \ln(\text{soil conc})$ except Se, where Food Conc. = Intercept + Slope(soil conc) OR (Food Conc. - Int)/sl = soil conc

APPENDIX D
TABLE D11
AMERICAN WOODCOCK-HQ
LONGHORN ARMY AMMUNITION PLANT - SITE 35A
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum	22200	12000	4.6	0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.75E+03	0.00E+00	4.60E-01	0.00E+00	1.75E+03
Antimony	8.5			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	6.72E-01	0.00E+00	0.00E+00	0.00E+00	6.72E-01
Arsenic	11.5	7.62		1.4	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	9.00E-01	0.00E+00	0.00E+00	1.00E+00	1.94E+00
Barium	215	100		23.2	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.01E+01	0.00E+00	0.00E+00	1.76E+01	3.78E+01
Bismuth	3.3			21.4	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.61E-01	0.00E+00	0.00E+00	1.63E+01	1.65E+01
Calcium	18000	1000		0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.42E+03	0.00E+00	0.00E+00	0.00E+00	1.42E+03
Chromium	47.6	18		14.6	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.76E+00	0.00E+00	0.00E+00	1.11E+01	1.48E+01
Cobalt	19			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.50E+00	0.00E+00	0.00E+00	0.00E+00	1.50E+00
Copper	829	10.6		31.5	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	6.55E-01	0.00E+00	0.00E+00	2.39E-01	8.94E-01
Iron	43000	20000	8.4	0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.40E+03	0.00E+00	8.40E-01	0.00E+00	3.40E+03
Lead	259	18.7	0.004	68.9	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.05E+01	0.00E+00	4.00E-04	5.24E-01	7.28E+01
Magnesium	3330	1000		0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.63E+02	0.00E+00	0.00E+00	0.00E+00	2.63E+02
Manganese	1050	180	0.252	0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	8.14E+01	0.00E+00	2.52E-02	0.00E+00	8.14E+01
Mercury	43.7			3.9	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.45E+00	0.00E+00	0.00E+00	2.93E+00	6.39E+00
Nickel	18			19.1	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.42E+00	0.00E+00	0.00E+00	1.45E-01	1.59E+00
Potassium	1400	1500		0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.11E+02	0.00E+00	0.00E+00	0.00E+00	1.11E+02
Selenium	427	3.37		4.2	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.37E-01	0.00E+00	0.00E+00	3.20E+00	3.53E+00
Silver	1.6			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.26E-01	0.00E+00	0.00E+00	1.20E-01	1.26E-01
Strontium	37			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.92E+00	0.00E+00	0.00E+00	0.00E+00	2.92E+00
Vanadium	66			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	5.21E+00	0.00E+00	0.00E+00	0.00E+00	5.21E+00
Zinc	2580	46	0.04	112.1	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.04E+02	0.00E+00	4.00E-03	8.53E+02	1.06E+03
4,4'-DDD	0.2			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.58E-02	0.00E+00	0.00E+00	0.00E+00	1.58E-02
4,4'-DDE	0.049			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.87E-03	0.00E+00	0.00E+00	0.00E+00	3.87E-03
4,4'-DDT	0.045			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.56E-03	0.00E+00	0.00E+00	0.00E+00	3.56E-03
Aroclor 1244	1.3	0.095		0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	1.03E-01	1.03E-01
Dieldrin	0.0086			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	6.79E-04	0.00E+00	0.00E+00	6.79E-04	6.79E-04
Acenaphthene	1.2			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	9.40E-02	0.00E+00	0.00E+00	0.00E+00	9.40E-02
Anthracene	0.27			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.13E-02	0.00E+00	0.00E+00	0.00E+00	2.13E-02
Benz[a]anthracene	1.6			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.26E-01	0.00E+00	0.00E+00	0.00E+00	1.26E-01
Benz[b]fluoranthene	3.1			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.58E-01	0.00E+00	0.00E+00	0.00E+00	1.58E-01
Benz[k]fluoranthene	1.7			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.45E-01	0.00E+00	0.00E+00	0.00E+00	2.45E-01
Benz[a]pyrene	2			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.34E-01	0.00E+00	0.00E+00	0.00E+00	1.34E-01
Benz[e]pyrene	1.3			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-01	0.00E+00	0.00E+00	0.00E+00	1.03E-01
Benzofluoranthene	1.0			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.						

APPENDIX D
TABLE D11 (continued)
AMERICAN WOODCOCK-HQ
LONGHORN ARMY AMMUNITION PLANT - SITE 15A
KARNACK, TEXAS

NOAEL RTV-Application (mg/kg-day)	Feed Hazard Quotient	Sol/Sol Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
100.7	0.8	16.0	4.2E-03	15.99	1.3
NA	---	---	---	---	---
2.5	0.4	0.4	---	0.8	0.1
20.8	0.8	1.0	---	1.8	0.1
1.45	11.2	0.2	---	11.4	0.9
NA	---	---	---	---	---
1	11.1	3.76	---	14.8	1.2
NA	---	---	---	---	---
47	0.5	1.4	---	1.9	0.1
NA	---	---	---	---	---
1.13	46.3	18.11	3.5E-04	64.4	5.1
NA	---	---	---	---	---
997	0.0	0.1	2.5E-06	0.1	0.0
0.006	489,080	575.4	---	1,064.5	83.9
71.4	0.2	0.0	---	0.2	0.0
NA	---	---	---	---	---
0.4	0.0	0.8	---	8.8	0.7
NA	---	---	---	---	---
11.4	0.0	0.5	---	0.5	0.0
14.5	58.97	14.1	2.8E-04	73.0	5.8
NA	---	---	---	---	---
NA	---	---	---	---	---
0.003	0.00	1.2	---	1.2	0.1
0.18	0.00	0.4	---	0.6	0.0
0.077	0.00	0.0	---	0.0	0.0
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
1.1	0.00	9.1	---	9.3	0.7
NA	---	---	---	---	---
NA	---	---	---	---	---
0.11	0.00	0.1	---	0.1	0.0
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
6.8	0.00	---	1.0E-03	0.0	0.0

HI(sum) = 627 643 0 1,269

APPENDIX D
TABLE D11 (continued)
AMERICAN WOODCOCK UPTAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 35A
KARNACK, TEXAS

Max Conc. Plant U/F Soil (mg/kg) 0-5 ft	% Diet	Est. Plant Conc (mg/kg)	Warm U/F (or Intercept & slope)	% Diet	Est. Worm Conc (mg/kg)	Invert U/F	% Diet	Est. Invert Conc (mg/kg)	Bud U/F	% Diet	Est. Bud Conc (mg/kg)	Mammal U/F	% Diet	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg)	
22200	NA	(A)		100%	(B)		NA	(C)		NA	(E)		NA	(E)	(A+B+C+D+E)	Aluminum
8.5															0.0	Aluminum
11.5			-1.421 0.706												0.0	Antimony
255			0.091												1.4	Arsenic
3.3			2.114 0.795												23.2	Barium
18000															21.4	Cadmium
47.6			0.506												0.0	Calcium
19															14.6	Chromium
829			1.675 0.264												0.0	Cobalt
43000															31.5	Copper
259			0.246												0.0	Iron
3370															68.9	Lead
1070															0.0	Magnesium
43.7			0.078 0.337												0.0	Manganese
18			1.059												3.9	Mercury
1400															19.1	Nickel
42.7			0.985												0.0	Potassium
1.6															4.2	Selenium
37															0.0	Silver
66															0.0	Sodium
2580			4.449 0.328												0.0	Vanadium
0.2															1125.1	Zinc
0.049															0.0	4,4'-DDT
0.045															0.0	4,4'-DDE
1.3															0.0	4,4'-DDT
0.0086															0.0	Aroclor 1254
1.2															0.0	Dieldrin
0.27															0.0	Endrin
1.6															0.0	Heptachlor
2															0.0	Heptachlor epoxide
3.1															0.0	Heptachlor hydride
1.7															0.0	Heptachlor isocyanide
1.3															0.0	Heptachlor isocyanide
130															0.0	Heptachlor isocyanide
4.2															0.0	Heptachlor isocyanide
0.3															0.0	Heptachlor isocyanide
0.12															0.0	Heptachlor isocyanide
3.8															0.0	Heptachlor isocyanide
2.1															0.0	Heptachlor isocyanide
0.35															0.0	Heptachlor isocyanide
1.2															0.0	Heptachlor isocyanide
7.4															0.0	Heptachlor isocyanide
0.0054															0.0	Heptachlor isocyanide
0															0.0	Heptachlor isocyanide
0															0.0	Heptachlor isocyanide
0															0.0	Heptachlor isocyanide
0															0.0	Heptachlor isocyanide

Bioa Conc = (soil conc)(U/F) or
InBioa Conc = Intercept/(Slope)(Initial conc) except for Se, where Food Conc = Intercept/(Slope)(Initial conc) OR (Food Conc - Initial conc) = soil conc

APPENDIX D
TABLE D12
SHORT-TAILED SHREW-HQ
LONGHORN ARMY AMMUNITION PLANT - SITE 35A
KARNACK, TEXAS

Contaminant	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum	22200	12000	4.6	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.73E+03	0.00E+00	6.90E-01	0.00E+00	1.73E+03
Antimony	8.5			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	6.63E-01	0.00E+00	0.00E+00	0.00E+00	6.63E-01
Arsenic	11.5	7.62		1.4	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	8.97E-01	0.00E+00	0.00E+00	8.13E-01	1.71E+00
Barium	235	100		23.2	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.99E+01	0.00E+00	0.00E+00	1.39E-01	3.38E+01
Cadmium	3.3			21.4	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.57E-01	0.00E+00	0.00E+00	1.28E-01	1.31E+01
Calcium	18000	1000		0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.40E+03	0.00E+00	0.00E+00	0.00E+00	1.40E+03
Chlorium	47.6	18		14.6	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.71E+00	0.00E+00	0.00E+00	8.74E+00	1.23E+01
Cobalt	19			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.48E+00	0.00E+00	0.00E+00	0.00E+00	1.48E+00
Copper	829	10.6		31.5	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	6.47E+01	0.00E+00	0.00E+00	1.89E+01	8.35E+01
Iron	42000	20000	8.4	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.35E+03	0.00E+00	1.26E+00	0.00E+00	3.36E+03
Lead	259	18.7	0.004	68.9	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.02E+01	0.00E+00	6.00E-04	4.13E-01	6.15E-01
Magnesium	3330	1000		0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.60E+02	0.00E+00	0.00E+00	0.00E+00	2.60E+02
Manganese	1010	180	0.252	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	8.05E+01	0.00E+00	3.78E-02	0.00E+00	8.04E+01
Mercury	43.7			3.9	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.41E+00	0.00E+00	0.00E+00	2.32E+00	5.73E+00
Nickel	18			19.1	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.40E+00	0.00E+00	0.00E+00	1.14E-01	1.28E+01
Potassium	1400	1500		0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.09E+02	0.00E+00	0.00E+00	0.00E+00	1.09E+02
Selenium	427	3.37		4.2	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.33E-01	0.00E+00	0.00E+00	2.57E+00	2.86E+00
Silver	1.6			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.23E-01	0.00E+00	0.00E+00	0.00E+00	1.23E-01
Strontium	37			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.89E+00	0.00E+00	0.00E+00	0.00E+00	2.89E+00
Vanadium	66	36		0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	5.15E+00	0.00E+00	0.00E+00	0.00E+00	5.15E+00
Zinc	2580	46	0.04	1125.1	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.01E+02	0.00E+00	6.00E-03	6.75E+02	8.76E+02
4,4'-DDD	0.2			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.58E-02	0.00E+00	0.00E+00	0.00E+00	1.58E-02
4,4'-DDE	0.049			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.82E-03	0.00E+00	0.00E+00	0.00E+00	3.82E-03
4,4'-DDT	0.045			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.51E-03	0.00E+00	0.00E+00	0.00E+00	3.51E-03
Aroclor 1214	1.3	0.095		0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.01E-01	0.00E+00	0.00E+00	0.00E+00	1.01E-01
Dieldrin	0.0086			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	6.71E-04	0.00E+00	0.00E+00	0.00E+00	6.71E-04
Acamphiline	1.2			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	9.36E-02	0.00E+00	0.00E+00	0.00E+00	9.36E-02
Athabene	0.27			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.11E-02	0.00E+00	0.00E+00	0.00E+00	2.11E-02
Benzo(a)anthracene	1.6			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.23E-01	0.00E+00	0.00E+00	0.00E+00	1.23E-01
Benzo(a)pyrene	2			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.58E-01	0.00E+00	0.00E+00	0.00E+00	1.58E-01
Benzo(b)fluoranthene	3.1			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.43E-01	0.00E+00	0.00E+00	0.00E+00	2.43E-01
Benzo(k)fluoranthene	1.7			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.33E-01	0.00E+00	0.00E+00	0.00E+00	1.33E-01
Benzo(g)herylene	1.3			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.01E-01	0.00E+00	0.00E+00	0.00E+00	1.01E-01
Benzo(a)fluoranthene	1.3			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.58E-01	0.00E+00	0.00E+00	0.00E+00	1.58E-01
Benzo(a)fluoranthene	1.3			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.01E+01	0.00E+00	0.00E+00	0.00E+00	1.01E+01
Chrysene	4.2			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.28E-01	0.00E+00	0.00E+00	0.00E+00	3.28E-01
Dibenzofluoranthene	0.3			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.34E-02	0.00E+00	0.00E+00	0.00E+00	2.34E-02
Di-n-butyl phthalate	0.12			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	9.36E-03	0.00E+00	0.00E+00	0.00E+00	9.36E-03
Fluoranthene	3.8			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.86E-01	0.00E+00	0.00E+00	0.00E+00	2.86E-01
Indeno(1,2,3-cd)pyrene	2.1			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.64E-01	0.00E+00	0.00E+00	0.00E+00	1.64E-01
Naphthalene	0.35			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.73E-02	0.00E+00	0.00E+00	0.00E+00	2.73E-02
Phenanthrene	1.2			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	9.36E-02	0.00E+00	0.00E+00	0.00E+00	9.36E-02
Pyrene	7.4			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	5.77E-01	0.00E+00	0.00E+00	0.00E+00	5.77E-01
Toluene	0.0054			0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	4.21E-04	0.00E+00	0.00E+00	0.00E+00	4.21E-04
Sodium			5.2	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	0.00E+00	0.00E+00	7.80E-01	0.00E+00	7.80E-01
Thallium			0.0013	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	0.00E+00	0.00E+00	1.95E-04	0.00E+00	1.95E-04
Tin			0.11	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	0.00E+00	0.00E+00	1.65E-02	0.00E+00	1.65E-02

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil + sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D12 (continued)
SHORT-TAILED SHREW-HQ
LONGHORN ARMY AMMUNITION PLANT- SITE 35A
KARNACK, TEXAS

NOEL RTV-ignition (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
2.295	6.0	7.5E+02	3.0E-01	754.8	Aluminum
0.149	---	4.6E+00	---	4	Antimony
0.15	---	6.0E+00	---	11	Arsenic
11.6	---	1.7E+00	---	2.9	Barium
2.12	6.1E+00	1.2E-01	---	6.2	Cadmium
NA	---	---	---	---	Calcium
7.21	1.2E+00	5.1E-01	---	1.7	Chromium
NA	---	---	---	---	Cobalt
33.4	5.7E-01	1.9E+00	---	2.5	Copper
NA	---	---	---	---	Iron
17.58	2.4E+00	1.1E+00	3.4E-05	3.5	Lead
NA	---	---	---	---	Magnesium
193	0.0E+00	4.3E-01	2.0E-04	0.4	Manganese
0.07	---	4.9E+01	---	81.8	Mercury
87.61	1.1E-01	1.6E-02	---	0.1	Nickel
NA	---	---	---	---	Potassium
0.44	5.7E+00	7.6E-01	---	6.5	Selenium
NA	---	---	---	---	Silver
578	---	5.0E-03	---	5.0E-03	Strontium
0.428	---	1.2E+01	---	12.0	Vanadium
351.7	---	5.7E-01	1.7E-05	2.5	Zinc
NA	---	---	---	---	4,4'-DDD
NA	---	---	---	---	4,4'-DDE
1.76	---	2.0E-03	---	0.0	4,4'-DDT
0.067	---	1.5E+00	---	1.5	Aroclor 1254
0.044	---	1.5E-02	---	0.0	Dieldrin
NA	---	---	---	---	Acenaphthene
NA	---	---	---	---	Anthracene
NA	---	---	---	---	Benzo(a)anthracene
1.19	---	1.2E-01	---	0.1	Benzo(a)pyrene
NA	---	---	---	---	Benzo(b)fluoranthene
NA	---	---	---	---	Benzo(g,h,i)perylene
NA	---	---	---	---	Benzo(k)fluoranthene
21.8	---	4.7E-01	---	0.5	Bis(2-ethylhexyl)phthalate
NA	---	---	---	---	Chrysene
NA	---	---	---	---	Dibenz(a,h)anthracene
NA	---	---	---	---	Di-n-butyl phthalate
634	---	1.4E-01	---	0.0	Fluoranthene
NA	---	---	---	---	Indeno(1,2,3-cd)pyrene
NA	---	---	---	---	Naphthalene
NA	---	---	---	---	Phenanthrene
NA	---	---	---	---	Pyrene
30.9	---	1.4E-05	---	0.0	Toluene
NA	---	---	---	---	Sodium
0.016	---	---	1.2E-02	0.0	Thallium
27.8	---	---	5.9E-04	0.0	Tin

HI(sum) = 16 835 0 893

APPENDIX D
TABLE D12 (continued)
SHORT-TAILED SHREW—UPTAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 35A
KARNACK, TEXAS

Max Conc. Plant Uptake (mg/kg)	% Diet	Est. Plant Conc. (mg/kg)	Worm Uptake (or Intercept & slope)	% Diet	Est. Worm Conc. (mg/kg)	Insect Uptake % Diet	Est. Insect Conc. (mg/kg)	% Diet	Est. Bird Conc. (mg/kg)	Mammal Uptake	% Diet	Est. Mammal Conc. (mg/kg)	Total Food Conc. (mg/kg)	
0-5 ft	NA	(A)		100%	(B)	NA	(C)	NA	(D)		NA	(E)	(A+B+C+D+E)	
22200				1	1								0.0	Aluminum
8.5													0.0	Antimony
11.5			-1.421 0.706		1		1.4						1.4	Arsenic
35			0.091		1		23.2						23.2	Barium
3.3			2.114 0.795		1		21.4						21.4	Cadmium
18000					1								0.0	Calcium
47.6			0.306		1		14.6						14.6	Chromium
19					1								0.0	Cobalt
829			1.675 0.264		1		31.5						31.5	Copper
43000			0.264		1		68.9						68.9	Lead
259					1								0.0	Magnesium
3330					1								0.0	Manganese
1030					1								3.9	Mercury
43.7			0.078 0.337		1		3.9						19.1	Nickel
18			1.859		1		19.1						0.0	Potassium
1400					1								4.2	Selenium
4.27			0.985		1		4.2						0.0	Silver
1.6					1								0.0	Strontium
37					1								0.0	Vanadium
66					1								1125.1	Zinc
2580			4.449 0.328		1		1125.1						0.0	4,4'-DDD
0.2					1								0.0	4,4'-DDE
0.049					1								0.0	4,4'-DDT
0.045					1								0.0	Aroclor 1248
1.3					1								0.0	Dechlor
0.0066					1								0.0	Acenaphthene
1.2					1								0.0	Acenaphthene
0.27					1								0.0	Benzo(a)anthracene
1.6					1								0.0	Benzo(a)pyrene
2					1								0.0	Benzo(b)fluoranthene
3.1					1								0.0	Benzo(b)pyrene
1.7					1								0.0	Benzo(k)fluoranthene
1.3					1								0.0	Benzo(k)pyrene
130					1								0.0	Benzo(l)fluoranthene
4.2					1								0.0	Benzo(l)pyrene
0.3					1								0.0	Benzo(l)pyrene
0.12					1								0.0	Benzo(l)pyrene
3.8					1								0.0	Benzo(l)pyrene
2.1					1								0.0	Benzo(l)pyrene
0.35					1								0.0	Benzo(l)pyrene
1.2					1								0.0	Benzo(l)pyrene
7.4					1								0.0	Benzo(l)pyrene
0.0054					1								0.0	Benzo(l)pyrene
0					1								0.0	Benzo(l)pyrene
0					1								0.0	Benzo(l)pyrene
0					1								0.0	Benzo(l)pyrene

APPENDIX D
TABLE D13
WHITE-FOOTED MOUSE - HQ
LONGHORN ARMY AMMUNITION PLANT - SITE 35A
KARNACK, TEXAS

Concentration	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum	22200	12000	4.6	0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	6.88E+01	0.00E+00	6.90E+01	0.00E+00	6.91E+01
Antimony	8.5			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.64E-02	0.00E+00	2.64E-02	0.00E+00	2.64E-02
Arsenic	11.5	7.62		0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	3.57E-02	0.00E+00	3.57E-02	0.00E+00	3.57E-02
Barium	255	100		11.8	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	7.91E-01	0.00E+00	7.91E-01	0.00E+00	7.91E-01
Cadmium	3.3			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.02E-02	0.00E+00	1.02E-02	0.00E+00	1.02E-02
Calcium	18000	1000		0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	5.58E+01	0.00E+00	5.58E+01	0.00E+00	5.58E+01
Chromium	47.6	18		8.3	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.48E+01	0.00E+00	1.48E+01	0.00E+00	1.48E+01
Cobalt	19			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	8.89E-02	0.00E+00	8.89E-02	0.00E+00	8.89E-02
Copper	18.6			24.4	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.78E-02	0.00E+00	2.78E-02	0.00E+00	2.78E-02
Iron	20000	20000		0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	3.35E-02	0.00E+00	3.35E-02	0.00E+00	3.35E-02
Lead	259	18.7	0.004	200.7	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	8.03E-01	0.00E+00	8.03E-01	0.00E+00	8.03E-01
Magnesium	330	1000		0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.03E+01	0.00E+00	1.03E+01	0.00E+00	1.03E+01
Manganese	1010	180	0.252	0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	3.19E+00	0.00E+00	3.19E+00	0.00E+00	3.19E+00
Mercury	43.7			7.4	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.35E-01	0.00E+00	1.35E-01	0.00E+00	1.35E-01
Nickel	18			10.2	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	5.58E-02	0.00E+00	5.58E-02	0.00E+00	5.58E-02
Potassium	1400	1500		0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	4.34E+00	0.00E+00	4.34E+00	0.00E+00	4.34E+00
Selenium	4.27	3.37		2.1	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.32E-02	0.00E+00	1.32E-02	0.00E+00	1.32E-02
Silver	1.6			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	4.98E-03	0.00E+00	4.98E-03	0.00E+00	4.98E-03
Sodium	17			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.03E+01	0.00E+00	1.03E+01	0.00E+00	1.03E+01
Strontium	56	35		0.2	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.05E-01	0.00E+00	2.05E-01	0.00E+00	2.05E-01
Sulfur	2580	46	0.04	798.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	8.00E+00	0.00E+00	8.00E+00	0.00E+00	8.00E+00
4,4'-DDT	0.2			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	6.20E-04	0.00E+00	6.20E-04	0.00E+00	6.20E-04
4,4'-DDE	0.049			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.52E-04	0.00E+00	1.52E-04	0.00E+00	1.52E-04
4,4'-DDT	0.045			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.40E-04	0.00E+00	1.40E-04	0.00E+00	1.40E-04
Aroclor 1254	1.3	0.095		0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	4.03E-03	0.00E+00	4.03E-03	0.00E+00	4.03E-03
Dieldrin	0.0086			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.67E-05	0.00E+00	2.67E-05	0.00E+00	2.67E-05
Endrin	1.2			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.03E-03	0.00E+00	1.03E-03	0.00E+00	1.03E-03
Heptachlor Epoxide	0.7			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	8.13E-04	0.00E+00	8.13E-04	0.00E+00	8.13E-04
Heptachlor Epoxide	1.6			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	4.96E-03	0.00E+00	4.96E-03	0.00E+00	4.96E-03
Heptachlor Epoxide	2			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	6.20E-03	0.00E+00	6.20E-03	0.00E+00	6.20E-03
Benzo(b)fluoranthene	3.1			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	9.61E-03	0.00E+00	9.61E-03	0.00E+00	9.61E-03
Benzo(g,h,i)perylene	1.7			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	5.27E-03	0.00E+00	5.27E-03	0.00E+00	5.27E-03
Benzo(k)fluoranthene	1.3			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	4.03E-03	0.00E+00	4.03E-03	0.00E+00	4.03E-03
Benzo(a)anthracene	130			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.30E-02	0.00E+00	1.30E-02	0.00E+00	1.30E-02
Chrysene	4.2			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	3.72E-04	0.00E+00	3.72E-04	0.00E+00	3.72E-04
Dibenz(a,h)anthracene	0.3			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.18E-02	0.00E+00	1.18E-02	0.00E+00	1.18E-02
Dibenz(a,h)anthracene	0.2			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	6.51E-03	0.00E+00	6.51E-03	0.00E+00	6.51E-03
Fluorene	3.8			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.09E-03	0.00E+00	1.09E-03	0.00E+00	1.09E-03
Indeno(1,2,3-cd)pyrene	2.1			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	3.72E-03	0.00E+00	3.72E-03	0.00E+00	3.72E-03
Naphthalene	0.35			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.29E-02	0.00E+00	2.29E-02	0.00E+00	2.29E-02
Pyrene	7.4			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.67E-05	0.00E+00	1.67E-05	0.00E+00	1.67E-05
Toluene	0.0054		5.2	0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	7.80E-01	0.00E+00	7.80E-01	0.00E+00	7.80E-01
Xenobiotics	0.00013		0.0013	0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.84E-02	0.00E+00	1.84E-02	0.00E+00	1.84E-02
Thallium	0.11		0.11	0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.65E-02	0.00E+00	1.65E-02	0.00E+00	1.65E-02

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value. HQ > 1.0 indicates the HQ exceeds 1.0

APPENDIX D
TABLE D13 (continued)
WHITE-FOOTED MOUSE - HQ
LONGHORN ARMY AMMUNITION PLANT - SITE 35A
KARNACK, TEXAS

RTV ingestion (mg/kg-day)	Total Ingested Quantity	Soil Ingested Quantity	Water Ingested Quantity	Total Ingested Quantity	Chemical Percent of Total In (%)
2.086	0.0E+00	3.3E-01	1.1E-01	33.3	5.3E+01
2.135	0.0E+00	2.4E-01	---	0.2	0.3
0.136	1.3E+00	2.4E-01	---	1.5	2.4
10.8	4.7E+01	7.3E-02	---	0.54	0.603
1.926	9.4E-01	5.3E-03	---	0.99	1.6
NA	---	---	---	---	---
6.55	2.0E-01	2.3E-02	---	0.22	0.36
NA	---	---	---	---	---
30.4	1.1E-01	8.5E-02	---	0.21	0.34
NA	---	---	---	---	---
15.9	2.0E+00	5.0E-02	3.8E-05	3.08	4.75
NA	---	---	---	---	---
176	0.0E+00	1.8E-02	---	0.02	0.03
0.004	1.0E+01	2.1E+00	2.1E-04	20.60	32.92
79.89	2.1E-02	7.0E-04	---	0.02	0.03
NA	---	---	---	---	---
0.399	8.4E-01	3.3E-02	---	6.9	1.40
NA	---	---	---	---	---
523	0.0E+00	2.2E-04	---	2.1E-04	0.00
0.389	6.7E-02	2.2E-02	---	4.3E-01	0.679
31.95	4.0E+01	2.1E-02	1.9E-05	---	---
NA	---	---	---	---	---
1.6	0.0E+00	8.7E-05	---	0.00	0.00
0.061	0.0E+00	6.4E-02	---	0.07	0.11
0.04	0.0E+00	6.7E-04	---	0.00	0.00
NA	---	---	---	---	---
NA	---	---	---	---	---
1.08	0.0E+00	5.7E-03	---	0.01	0.01
NA	---	---	---	---	---
NA	---	---	---	---	---
19.8	0.0E+00	2.6E-02	---	0.02	0.03
NA	---	---	---	---	---
594	0.0E+00	6.3E-07	---	0.00	0.00
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
28.1	0.0E+00	6.6E-07	---	0.00	0.00
NA	---	---	---	---	---
0.015	0.0E+00	---	1.1E-02	0.01	0.02
23.3	0.0E+00	---	6.5E-04	0.00	0.00

HI(sum) = 26 36 0 63

APPENDIX D
TABLE D13 (continued)
WHITE-FOOTED MOUSE - Upsake Factors and Food Concentrations
LONGHORN ARMY AMMUNITION PLANT - SITE 35A
KARNACK, TEXAS

Max Conc (mg/kg)	Soil (mg/kg)	Plant U/F (or Intercept & slope)	% Diet	Est Plant Conc (mg/kg)	Worm U/F (or Intercept & slope)	% Diet	Est Worm Conc (mg/kg)	Insect U/F (or Intercept & slope)	% Diet	Est Insect Conc (mg/kg)	Bird U/F (or Intercept & slope)	% Diet	Est Bird Conc (mg/kg)	Mammal U/F (or Intercept & slope)	% Diet	Est Mammal Conc (mg/kg)	Total Food Conc. (mg/kg)	
			50%	(A)		50%	(B)		50%	(C)		50%	(D)		50%	(E)	(A)(B)(C)(D)(E)	
22200	8.5	-1.744	0.594	0.5	0.4	0.706	0.5	0.7	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Aluminum
11.5	255	0.1561	0.819	0.5	1.99	0.091	0.5	11.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Antimony
18000	47.6	0.041	0.423	0.5	1.1	2.114	0.5	16.7	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	31.5	Arsenic
19	829	0.014	0.423	0.5	1.0	0.306	0.5	7.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Barium
41	259	1.866	0.787	0.5	8.7	1.675	0.5	15.7	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Bismuth
3330	1030	0.25	0.791	0.5	5.5	0.078	0.5	1.9	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Cadmium
41.7	18	-1.927	0.791	0.5	0.7	1.059	0.5	9.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Calcium
1400	42.7	0.5	0.5	0.5	0.5	0.985	0.5	2.1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Chromium
1.6	66	0.0049	0.841	0.5	0.2	4.449	0.5	56.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Cobalt
2550	0.049	-0.452	0.841	0.5	235.4	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Copper
0.2	0.049	0.049	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Lead
0.045	0.045	0.045	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Magnesium
0.006	0.006	0.006	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Manganese
0.2	0.2	0.2	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Mercury
1.6	1.6	1.6	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Nickel
3.1	3.1	3.1	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Potassium
1.7	1.7	1.7	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Selenium
1.3	1.3	1.3	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Silver
130	130	130	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Sodium
4.2	4.2	4.2	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Strontium
0.12	0.12	0.12	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Vanadium
3.8	3.8	3.8	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Zinc
2.1	2.1	2.1	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	4,4'-DDD
0.15	0.15	0.15	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	4,4'-DDE
1.2	1.2	1.2	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	4,4'-DDT
7.4	7.4	7.4	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Aroclor 1254
0.0054	0.0054	0.0054	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Dieldrin
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Endrin
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Heptachlor
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Heptachlor epoxide
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorobenzene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	Hexachlorocyclopentadiene
0	0	0	0.841	0.5	0.2	0.328	0.5	0.5	0.5	0.5	0.5	0.						

APPENDIX D
TABLE D14
RED-TAILED HAWK - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 35A
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - Food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum	22200	12000	4.6	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	2.62E-01	0.00E+00	2.62E-01
Antimony	8.5			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Arsenic	11.5	7.62		0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Barium	255	100		16.634	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium	3.3			1.294	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Calcium	18000	1000		0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chromium	47.6	18		1.947	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cobalt	19			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Copper	829	10.6		15.379	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Iron	42000	20000		0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lead	259	18.7	0.004	7.934	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Magnesium	3330	1000		0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manganese	1010	180	0.252	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mercury	43.7			23.600	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel	18			2.016	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potassium	1400	1500		0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Selenium	4.27	3.37		0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Silver	1.6			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Strontium	37			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Vanadium	66	36		0.012	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Zinc	2580	46	0.04	67.121	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4,4'-DDD	0.2			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4,4'-DDE	0.049			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4,4'-DDT	0.045			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Aroclor 1254	1.3	0.095		0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Dieldrin	0.086			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acenaphthene	1.2			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Anthracene	0.27			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(a)anthracene	1.6			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(b)fluoranthene	2			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(k)fluoranthene	3.1			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(g,h,i)perylene	1.7			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(a)pyrene	1.3			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzo(e)pyrene	2			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Bis(2-ethylhexyl)phthalate	4.2			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chrysene	0.3			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Dibenz(a,h)anthracene	0.12			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Di-n-butyl phthalate	3.8			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fluoranthene	2.1			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	0.35			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Naphthalene	1.2			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Phenanthrene	7.4			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pyrene	0.0054			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Toluene			5.2	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sodium			0.0013	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Thallium			0.11	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tin				0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source
Total EDI = EDI soil/sediment + EDI water + EDI food
Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value. Hazard Index = Sum of HQs; boxed value indicates HQ exceeds 1.0

APPENDIX D
TABLE D14 (continued)
RED-TAILED HAWK - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 35A
KARNACK, TEXAS

NOEL RTV-Ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0E+00	NA	2.4E-03	2.4E-03	Aluminum
NA	NA	NA	NA	-----	Antimony
2.5	NA	NA	NA	-----	Arsenic
20.8	5.0E-02	NA	0.0E+00	5.0E-02	Barium
1.45	8.7E-02	NA	0.0E+00	8.7E-02	Bismuth
NA	---	NA	---	---	Cadmium
1	1.0E-01	NA	0.0E+00	1.0E-01	Calcium
NA	---	NA	---	---	Chromium
47	3.2E-02	NA	0.0E+00	3.2E-02	Cobalt
NA	---	NA	---	---	Copper
1.13	6.8E-01	NA	2.0E-04	6.8E-01	Iron
997	0.0E+00	NA	---	---	Lead
0.006	3.0E+01	NA	1.4E-05	1.4E-05	Magnesium
77.4	2.5E-01	NA	0.0E+00	2.5E-01	Manganese
NA	---	NA	---	---	Mercury
0.4	0.0E+00	NA	0.0E+00	0.0E+00	Nickel
NA	---	NA	---	---	Potassium
NA	---	NA	---	---	Selenium
11.4	6.9E-01	NA	0.0E+00	6.9E-01	Silver
14.5	4.5E-01	NA	1.6E-04	4.5E-01	Sodium
NA	---	NA	---	---	Strontium
NA	---	NA	---	---	Vanadium
0.003	0.0E+00	NA	0.0E+00	0.0E+00	Zinc
0.18	0.0E+00	NA	0.0E+00	0.0E+00	4,4'-DDD
0.077	0.0E+00	NA	0.0E+00	0.0E+00	4,4'-DDE
NA	---	NA	---	---	4,4'-DDT
NA	---	NA	---	---	Aroclor 1254
NA	---	NA	---	---	Dieldrin
NA	---	NA	---	---	Endrin
NA	---	NA	---	---	Heptachlor
NA	---	NA	---	---	Heptachlor epoxide
1.1	0.0E+00	NA	0.0E+00	0.0E+00	Hexachlorobenzene
NA	---	NA	---	---	Chrysene
NA	---	NA	---	---	Dibenz(a,h)anthracene
0.11	0.0E+00	NA	0.0E+00	0.0E+00	Dibenz(b)anthracene
NA	---	NA	---	---	Fluoranthene
NA	---	NA	---	---	Indeno(1,2,3-cd)pyrene
NA	---	NA	---	---	Naphthalene
NA	---	NA	---	---	Phenanthrene
NA	---	NA	---	---	Pyrene
NA	---	NA	---	---	Toluene
NA	---	NA	---	---	Sodium
NA	---	NA	---	---	Thallium
6.8	0.0E+00	NA	9.2E-04	9.2E-04	Tin

HI(sum) = 39.6 0.000 0.004 1.5

APPENDIX D
TABLE D14 (continued)
RED-TAILED HAWK - Upsake Factors and Food Concentrations
LONGHORN ARMY AMMUNITION PLANT - SITE 15A
KARNACK, TEXAS

Max Conc. Plant UF (mg/kg) 8-5/9	% Diet	Est. Plant Conc (mg/kg)	Worm UF (or Intercept & slope)	% Diet	Est. Worm Conc (mg/kg)	Invert UF % Diet	Est. Invert Conc (mg/kg)	Bird UF % Diet	Est. Bird Conc (mg/kg)	Mammal UF (or Intercept & slope)	% Diet	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg)	
	NA	(A)		NA	(B)		(C)	NA	(D)		100	(E)	(A)-(B)-(C)-(D)-(E)	
222000													0.00	Aluminum
8.5										-5.0249	0.8354	0.05	0.00	Antimony
11.5										0.0417		0.05	0.05	Arsenic
235										-8.4608	0.92	1.3	10.63	Boron
3.3												1.29	0.00	Cadmium
180000										-0.3506	0.313	1.9	0.00	Calcium
47.6										1.8533	0.1309	15.4	1.95	Chromium
19										-0.7216	0.5019	7.9	0.00	Cobalt
829												0.00	0.00	Copper
430000												0.00	0.00	Iron
259												7.9	7.90	Lead
3330										0.054	0.1956	2.4	0.00	Magnesium
1030										0.1356		2.0	0.00	Manganese
41.7												2.36	2.36	Mercury
18												2.0157	0.00	Nickel
1400												0.00	0.00	Potassium
4.27												0.00	0.00	Selenium
1.6												0.00	0.00	Silver
37												0.00	0.00	Sodium
66										0.0123		0.8	0.81	Strontium
2580										4.1204	0.01006	67.1	67.12	Vanadium
0.2												0.00	0.00	Zinc
0.049												0.00	0.00	4,4'-DDD
0.045												0.00	0.00	4,4'-DDE
1.3												0.00	0.00	4,4'-DDT
0.0086												0.00	0.00	Aroclor 1254
1.2												0.00	0.00	Dieldrin
0.27												0.00	0.00	Acampholene
1.6												0.00	0.00	Anthracene
2												0.00	0.00	Benzofluoranthene
3.1												0.00	0.00	Benzofluorene
1.7												0.00	0.00	Benzofluoranthene
1.3												0.00	0.00	Benzofluorene
130												0.00	0.00	Benzofluorene
4.2												0.00	0.00	Benzofluorene
0.3												0.00	0.00	Benzofluorene
0.12												0.00	0.00	Benzofluorene
3.8												0.00	0.00	Benzofluorene
2.1												0.00	0.00	Benzofluorene
0.35												0.00	0.00	Benzofluorene
1.2												0.00	0.00	Benzofluorene
7.4												0.00	0.00	Benzofluorene
0.0054												0.00	0.00	Benzofluorene
0												0.00	0.00	Benzofluorene
0												0.00	0.00	Benzofluorene
0												0.00	0.00	Benzofluorene
0												0.00	0.00	Benzofluorene

APPENDIX D
TABLE D15
NORTHERN BOBWHITE-HQ
LONGHORN ARMY AMMUNITION PLANT - SITE 35A
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum	22200	12000	4.6	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.78E+03	0.00E+00	5.90E-01	0.00E+00	1.78E+03
Antimony	8.5			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	6.80E-01	0.00E+00	0.00E+00	0.00E+00	6.80E-01
Arsenic	11.5	7.62		0.7	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	9.20E-01	0.00E+00	0.00E+00	5.82E-02	9.78E-01
Barium	255	100		39.8	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.04E+01	0.00E+00	0.00E+00	3.10E+00	2.35E+01
Cadmium	3.3			2.7	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.64E-01	0.00E+00	0.00E+00	4.37E-01	4.37E-01
Calcium	18000	1000		0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.44E+03	0.00E+00	0.00E+00	0.00E+00	1.44E+03
Chromium	47.6	18		2.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	3.81E+00	0.00E+00	0.00E+00	1.52E-01	3.81E+00
Cobalt	19			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.52E+00	0.00E+00	0.00E+00	0.00E+00	1.52E+00
Copper	829	106		17.4	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	6.63E+01	0.00E+00	0.00E+00	1.36E+00	6.77E+01
Iron	43000	20000	8.4	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	3.44E+03	0.00E+00	1.09E+00	0.00E+00	3.44E+03
Lead	259	18.7	0.004	512.5	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.07E+01	0.00E+00	5.30E-04	4.00E+01	6.07E+01
Magnesium	3330	1000		0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.65E+02	0.00E+00	0.00E+00	0.00E+00	2.65E+02
Manganese	1030	180	0.252	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	8.24E+01	0.00E+00	3.20E-02	0.00E+00	8.24E+01
Mercury	41.7			10.9	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	3.50E+00	0.00E+00	0.00E+00	8.52E-01	4.35E+00
Nickel	18			1.4	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.44E+00	0.00E+00	0.00E+00	1.12E-01	1.55E+00
Potassium	1400	1300		0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.12E+02	0.00E+00	0.00E+00	0.00E+00	1.12E+02
Selenium	4.27	3.37		0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	3.42E-01	0.00E+00	0.00E+00	0.00E+00	3.42E-01
Silver	1.6			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.28E-01	0.00E+00	0.00E+00	0.00E+00	1.28E-01
Strontium	37			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.96E+00	0.00E+00	0.00E+00	0.00E+00	2.96E+00
Vanadium	66	36		0.3	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	5.28E+00	0.00E+00	0.00E+00	2.52E-02	5.31E+00
Zinc	2380	46	0.04	470.8	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.00E+02	0.00E+00	5.20E-03	3.67E+01	2.43E+02
4,4'-DDD	0.2			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.60E-02	0.00E+00	0.00E+00	1.60E-02	1.60E-02
4,4'-DDE	0.049			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	3.92E-03	0.00E+00	0.00E+00	0.00E+00	3.92E-03
4,4'-DDT	0.045			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	3.60E-03	0.00E+00	0.00E+00	0.00E+00	3.60E-03
Aroclor 1254	1.3	0.095		0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.04E-01	0.00E+00	0.00E+00	0.00E+00	1.04E-01
Dieldrin	0.0086			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	6.88E-04	0.00E+00	0.00E+00	0.00E+00	6.88E-04
Acenaphthene	1.2			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	9.60E-02	0.00E+00	0.00E+00	0.00E+00	9.60E-02
Anthracene	0.27			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.16E-02	0.00E+00	0.00E+00	0.00E+00	2.16E-02
Benzo(a)anthracene	1.6			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.28E-01	0.00E+00	0.00E+00	0.00E+00	1.28E-01
Benzo(b)fluoranthene	2			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.60E-01	0.00E+00	0.00E+00	0.00E+00	1.60E-01
Benzo(k)fluoranthene	3.1			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.48E-01	0.00E+00	0.00E+00	0.00E+00	2.48E-01
Benzo(a)pyrene	1.7			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.36E-01	0.00E+00	0.00E+00	0.00E+00	1.36E-01
Benzo(g,h,i)perylene	1.7			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.04E-01	0.00E+00	0.00E+00	0.00E+00	1.04E-01
Benzo(e)pyrene	1.7			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.04E-01	0.00E+00	0.00E+00	0.00E+00	1.04E-01
Bis(2-ethylhexyl)phthalate	4.2			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	3.36E-01	0.00E+00	0.00E+00	0.00E+00	3.36E-01
Chrysene	0.3			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.40E-02	0.00E+00	0.00E+00	0.00E+00	2.40E-02
Dibenz(a,h)anthracene	0.12			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	9.60E-03	0.00E+00	0.00E+00	0.00E+00	9.60E-03
Di-n-butyl phthalate	3.8			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	3.04E-01	0.00E+00	0.00E+00	0.00E+00	3.04E-01
Fluoranthene	2.1			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01
Indeno(1,2,3-cd)pyrene	0.35			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.80E-02	0.00E+00	0.00E+00	0.00E+00	2.80E-02
Naphthalene	1.2			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	9.60E-02	0.00E+00	0.00E+00	0.00E+00	9.60E-02
Perfluorooctane sulfonic acid	7.4			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	5.92E-01	0.00E+00	0.00E+00	0.00E+00	5.92E-01
Pyrene	0.0054			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	4.32E-04	0.00E+00	0.00E+00	0.00E+00	4.32E-04
Toluene			5.2	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	0.00E+00	0.00E+00	6.76E-01	0.00E+00	6.76E-01
Sodium			0.0013	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	0.00E+00	0.00E+00	1.69E-04	0.00E+00	1.69E-04
Thallium			0.11	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	0.00E+00	0.00E+00	1.43E-02	0.00E+00	1.43E-02
Tin				0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Values. Hazard Index = Sum of HQs. boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D15 (continued)
NORTHERN BOBWHITE-HQ
LONGHORN ARMY AMMUNITION PLANT - SITE 35A
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Feed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
199.7	0.0	16.2	5.9E-03	16.20	1.3
NA	---	---	---	---	---
2.5	0.02	6.4	---	0.4	0.0
20.8	0.1	1.0	---	1.1	0.1
1.45	6.1	0.2	---	0.3	0.0
NA	---	---	---	---	---
1	6.2	3.81	---	4.0	0.3
NA	---	---	---	---	---
47	6.0	1.4	---	1.4	0.1
NA	---	---	---	---	---
1.13	35.4	18.34	4.4E-04	53.7	4.2
NA	---	---	---	---	---
997	0.0	0.1	3.3E-06	0.1	0.0
0.006	143.035	592.7	---	734.7	57.1
77.4	6.0	0.0	---	0.0	0.0
NA	---	---	---	---	---
0.4	6.0	8.9	---	0.9	0.1
NA	---	---	---	---	---
NA	---	---	---	---	---
11.4	0.0	0.5	---	0.5	0.0
14.5	2.53	14.2	3.6E-04	16.8	1.3
NA	---	---	---	---	---
NA	---	---	---	---	---
0.003	0.00	7.2	---	1.2	0.1
0.18	0.00	6.6	---	0.6	0.0
0.077	0.00	6.0	---	0.0	0.0
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
1.1	0.00	9.3	---	9.5	0.7
NA	---	---	---	---	---
NA	---	---	---	---	---
0.11	0.00	6.1	---	0.1	0.0
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
6.8	0.00	---	2.1E-03	0.0	0.0

HI(sum) = 180 651 0 831

APPENDIX D
TABLE D15 (continued)
NORTHERN BORWHE-UP TAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 35A
KARNACK, TEXAS

Max Conc Plant UF	% Diet	Est. Plant Conc (mg/kg)	Worm UF (or Intercept & slope)	% Diet	Est. Worm Conc (mg/kg)	Invert UF	% Diet	Est. Invert Conc (mg/kg)	Bird UF	% Diet	Est. Bird Conc (mg/kg)	Minimal UF	% Diet	Est. Minimal Conc (mg/kg)	Total Food Conc. (mg/kg) (A+B+C+D+E)
Soil															
0-2 ft	100%														
22200	1	1													Aluminum
8.5															0.0
11.5	-1.744	0.594													0.0
255	0.1561														0.7
3.3	-0.18	0.819													39.8
18000															2.2
47.6	0.041														0.0
19															2.0
829	0.014	0.423													0.0
43000															17.4
259	1.866	0.787													0.0
3330															512.5
1030															0.0
43.7	0.25														0.0
18	-1.927	0.791													10.9
1400															1.4
4.27															0.0
1.6															0.0
37															0.0
66	0.0049														0.3
2380	-0.452	0.841													470.8
0.2															0.0
0.049															0.0
0.045															0.0
1.3															0.0
0.0086															0.0
1.2															0.0
0.27															0.0
1.6															0.0
2															0.0
3.1															0.0
1.7															0.0
1.3															0.0
130															0.0
4.2															0.0
0.3															0.0
0.12															0.0
3.8															0.0
2.1															0.0
0.35															0.0
1.2															0.0
7.4															0.0
0.0054															0.0
0															0.0
0															0.0
0															0.0

Blank Conc = (soil conc/UF) or
In(Bla conc) = Intercept + Slope(In soil conc) except Sr, where Food Conc = Intercept + Slope(soil conc) OR (Food Conc - In soil conc)

APPENDIX D
TABLE D16
AMERICAN WOODCOCK-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 35B
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum	18600			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1.47E+03	-----	0.00E+00	1.47E+03
Arsenic	7.04			1.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	5.56E-01	-----	7.28E-01	1.28E+00
Barium	190			17.3	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1.31E+01	-----	1.31E+01	2.62E+01
Beryllium	0.63			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	4.98E-02	-----	0.00E+00	4.98E-02
Cadmium	4.56			27.7	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	3.60E-01	-----	2.10E+01	2.14E+01
Calcium	4900			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	3.87E+02	-----	0.00E+00	3.87E+02
Chromium	64			19.6	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	5.06E+00	-----	1.40E+01	1.90E+01
Cobalt	24.1			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1.90E+00	-----	0.00E+00	1.90E+00
Copper	7.99			9.2	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	6.31E-01	-----	7.02E+00	7.65E+00
Iron	39000			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	3.08E+03	-----	0.00E+00	3.08E+03
Lead	31.1			8.3	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	2.46E+03	-----	6.29E+00	8.74E+00
Magnesium	1100			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	8.69E+01	-----	0.00E+00	8.69E+01
Manganese	1860			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1.47E+02	-----	0.00E+00	1.47E+02
Mercury	0.11			0.5	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	8.69E-03	-----	3.91E-01	3.91E-01
Nickel	13			13.8	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1.03E+00	-----	1.03E+01	1.13E+01
Potassium	810			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	6.40E+01	-----	0.00E+00	6.40E+01
Selenium	4.12			4.1	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	3.25E-01	-----	3.08E+00	3.41E+00
Silver	0.09			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	7.11E-03	-----	0.00E+00	7.11E-03
Strontium	18			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1.42E+00	-----	0.00E+00	1.42E+00
Vanadium	48			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	3.79E+00	-----	0.00E+00	3.79E+00
Zinc	67			319.7	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	5.59E+00	-----	2.38E+02	2.63E+02
1,1,1-Trichloroethane	0.017			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1.34E-03	-----	0.00E+00	1.34E-03
4,4'-DDD	0.26			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	2.05E-02	-----	0.00E+00	2.05E-02
4,4'-DDE	0.13			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1.03E-02	-----	0.00E+00	1.03E-02
4,4'-DDT	0.072			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	5.69E-03	-----	0.00E+00	5.69E-03
Acetone	0.023			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1.82E-03	-----	0.00E+00	1.82E-03
Aldrin	0.17			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1.34E-02	-----	0.00E+00	1.34E-02
Benzo(a)anthracene	0.44			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	3.48E-02	-----	0.00E+00	3.48E-02
Benzo(b)pyrene	0.41			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	3.24E-02	-----	0.00E+00	3.24E-02
Benzo(g,h,i)perylene	0.38			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	4.58E-02	-----	0.00E+00	4.58E-02
Bis(2-ethylhexyl)phthalate	0.16			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	3.00E-02	-----	0.00E+00	3.00E-02
Carbon Disulfide	0.324			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1.26E-02	-----	0.00E+00	1.26E-02
Chrysene	0.46			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	2.56E-02	-----	0.00E+00	2.56E-02
Fluoranthene	0.8			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	3.63E-02	-----	0.00E+00	3.63E-02
Indeno(1,2,3-cd)pyrene	0.38			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	6.32E-02	-----	0.00E+00	6.32E-02
Phenanthrene	0.45			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	3.00E-02	-----	0.00E+00	3.00E-02
Pyrene	0.62			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	3.56E-02	-----	0.00E+00	3.56E-02
Trichloroethene	0.006			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	4.90E-02	-----	0.00E+00	4.90E-02
										4.74E-04	-----	0.00E+00	4.74E-04

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/ sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D16 (continued)
AMERICAN WOODCOCK-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 35B
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0	13.4	---	13.39	Aluminum
2.5	0.29	0.2	---	0.5	Arsenic
20.8	0.6	0.7	---	1.4	Barium
NA	---	---	---	---	Beryllium
145	14.5	0.2	---	14.8	Cadmium
NA	---	---	---	---	Calcium
1	14.9	5.06	---	19.9	Chromium
NA	---	---	---	---	Cobalt
47	0.1	0.0	---	0.2	Copper
NA	---	---	---	---	Iron
1.13	5.6	2.17	---	7.7	Lead
NA	---	---	---	---	Magnesium
997	0.0	0.1	---	0.1	Manganese
0.006	65.006	1.4	---	66.5	Mercury
77.4	0.1	0.0	---	0.1	Nickel
NA	---	---	---	---	Potassium
0.4	7.7	0.8	---	8.5	Selenium
NA	---	---	---	---	Silver
NA	---	---	---	---	Strontium
11.4	0.0	0.3	---	0.3	Vanadium
14.5	17.81	0.4	---	18.2	Zinc
NA	---	---	---	---	1,1,1-Trichloroethane
NA	---	---	---	---	4,4-DDD
NA	---	---	---	---	4,4'-DDE
0.003	0.06	1.9	---	1.9	4,4-DDT
NA	---	---	---	---	Acetone
NA	---	---	---	---	Aldrin
NA	---	---	---	---	Benzo(a)anthracene
NA	---	---	---	---	Benzo(a)pyrene
NA	---	---	---	---	Benzof(b)fluoranthene
NA	---	---	---	---	Benzof(k)fluoranthene
NA	---	---	---	---	Benzof(l)pyrene
1.1	0.00	0.0	---	0.0	Benzo(g,h,i)perylene
NA	---	---	---	---	Carbon Disulfide
NA	---	---	---	---	Chrysene
NA	---	---	---	---	Fluoranthene
NA	---	---	---	---	Indeno(1,2,3-cd)pyrene
NA	---	---	---	---	Phenanthrene
NA	---	---	---	---	Pyrene
NA	---	---	---	---	Trichloroethene

HI(sum) = 127 27 0 154

APPENDIX D
TABLE D16 (continued)
AMERICAN WOODCOCK-UP TAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 35B
KARNACK, TEXAS

Max Conc. Plan Uf (mg/kg) 0-5 ft	% Diet NA	Est. Plant Conc (mg/kg)	Worm Uf (or Intercept & slope)	% Diet 100%	Est. Worm Conc (mg/kg)	Invert Uf % Diet NA	Est. Invert Conc (mg/kg)	Bird Uf % Diet NA	Est. Bird Conc (mg/kg)	Mammal Uf	% Diet NA	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg) (A+B+C+D+E)	
18600					1								0.0	Aluminum
7.04			-1.421	0.706	1	1.0							1.0	Arsenic
190			0.091		1	17.3							17.3	Barium
0.63					1								0.0	Beryllium
4.56			2.114	0.795	1	27.7							27.7	Cadmium
4900					1								0.0	Calcium
64			0.306		1	19.6							19.6	Chromium
24.1					1								0.0	Cobalt
7.99			1.675	0.264	1	9.2							9.2	Copper
39000					1								0.0	Iron
31.1			0.266		1	8.3							8.3	Lead
1100					1								0.0	Magnesium
1860					1								0.0	Manganese
0.11			0.078	0.337	1	0.5							0.5	Mercury
13			1.859		1	13.8							13.8	Nickel
800					1								0.0	Potassium
4.12			0.985		1	4.1							4.1	Selenium
0.09					1								0.0	Silver
18					1								0.0	Strontium
48					1								0.0	Vanadium
67			4.440	0.328	1	339.7							339.7	Zinc
0.017					1								0.0	1,1,1-Trichloroethane
0.26					1								0.0	4,4'-DDD
0.13					1								0.0	4,4'-DDE
0.072					1								0.0	4,4'-DDT
0.023					1								0.0	Acetone
0.17					1								0.0	Aldrin
0.44					1								0.0	Benzo(a)anthracene
0.41					1								0.0	Benzo(b)fluoranthene
0.38					1								0.0	Benzo(g)herylene
0.16					1								0.0	Bis(2-ethylhexyl)phthalate
0.324					1								0.0	Carbon Disulfide
0.46					1								0.0	Chrysene
0.8					1								0.0	Fluoranthene
0.38					1								0.0	Indene(1,2,3-c)pyrene
0.45					1								0.0	Phenanthrene
0.62					1								0.0	Pyrene
0.006					1								0.0	Trichloroethene

Birds Conc = (soil conc)(UF) or
In(Birds conc) = Intercept + Slope(soil conc) except Se, where Food Conc = Intercept + Slope(soil conc) OR (Food Conc - In)/Sd = soil conc

APPENDIX D
TABLE D17
SHORT-TAILED SHREW—HQ
LONGHORN ARMY AMMUNITION PLANT - SITE 35B
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum	18600			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.45E+03	---	---	0.00E+00	1.45E+03
Arsenic	7.04			1.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	5.40E+01	---	---	5.75E+01	1.12E+00
Barium	190			17.3	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.48E+01	---	---	1.04E+01	2.52E+01
Beryllium	0.63			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	4.91E+02	---	---	0.00E+00	4.91E+02
Cadmium	4.56			27.7	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.56E+01	---	---	1.66E+01	1.70E+01
Calcium	4900			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.82E+02	---	---	0.00E+00	3.82E+02
Chromium	64			19.6	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	4.99E+00	---	---	1.18E+01	1.67E+01
Cobalt	24.1			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.88E+00	---	---	0.00E+00	1.88E+00
Copper	7.99			9.2	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	6.23E+01	---	---	5.54E+00	6.17E+00
Iron	39000			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.04E+03	---	---	0.00E+00	3.04E+03
Lead	31.1			8.3	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.43E+00	---	---	4.96E+00	7.39E+00
Magnesium	1100			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	8.38E+01	---	---	0.00E+00	8.38E+01
Manganese	1860			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.43E+02	---	---	0.00E+00	1.43E+02
Mercury	0.11			0.5	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	8.38E+03	---	---	3.08E+01	3.17E+01
Nickel	13			13.8	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.01E+00	---	---	8.26E+00	9.27E+00
Potassium	810			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	6.32E+01	---	---	0.00E+00	6.32E+01
Selenium	4.12			4.1	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.21E+01	---	---	2.43E+00	2.76E+00
Silver	0.09			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	7.02E+03	---	---	0.00E+00	7.02E+03
Strontium	18			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.40E+00	---	---	0.00E+00	1.40E+00
Vanadium	48			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.74E+00	---	---	0.00E+00	3.74E+00
Zinc	67			339.7	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	5.23E+00	---	---	2.04E+02	2.09E+02
1,1,1-Trichloroethane	0.017			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.33E+03	---	---	0.00E+00	1.33E+03
4,4'-DDD	0.26			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.03E+02	---	---	0.00E+00	2.03E+02
4,4'-DDE	0.13			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.01E+02	---	---	0.00E+00	1.01E+02
4,4'-DDT	0.072			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	5.62E+03	---	---	0.00E+00	5.62E+03
Acefen	0.023			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.79E+03	---	---	0.00E+00	1.79E+03
Alkyl	0.17			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.33E+02	---	---	0.00E+00	1.33E+02
Benzo(a)anthracene	0.44			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.43E+02	---	---	0.00E+00	3.43E+02
Benzo(b)pyrene	0.41			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.20E+02	---	---	0.00E+00	3.20E+02
Benzo(g,h,i)perylene	0.38			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	4.52E+02	---	---	0.00E+00	4.52E+02
Bis(2-ethylhexyl)phthalate	0.16			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.96E+02	---	---	0.00E+00	2.96E+02
Carbon Disulfide	0.324			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.25E+02	---	---	0.00E+00	1.25E+02
Chrysene	0.46			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.53E+02	---	---	0.00E+00	2.53E+02
Fluoranthene	0.8			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.96E+02	---	---	0.00E+00	3.96E+02
Indeno(1,2,3-cd)pyrene	0.38			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	6.24E+02	---	---	0.00E+00	6.24E+02
Phenanthrene	0.45			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.96E+02	---	---	0.00E+00	2.96E+02
Pyrene	0.62			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.51E+02	---	---	0.00E+00	3.51E+02
Trichloroethane	0.066			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	4.68E+04	---	---	0.00E+00	4.68E+04

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil + EDI sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D17 (continued)
SHORT-TAILED SHREW-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 35B
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total III (%)
2.295	0.0	6.1E+02	---	632.2	Aluminum
0.15	---	3.7E+00	---	7	Arsenic
11.8	---	1.3E+00	---	2.1	Barium
1.45	0.0E+00	3.4E+02	---	0.0	Beryllium
2.12	7.8E+00	1.7E+01	---	8.0	Cadmium
NA	---	---	---	---	Calcium
7.21	1.6E+00	6.9E+01	---	2.3	Chromium
NA	---	---	---	---	Cobalt
33.4	1.7E+01	1.9E+02	---	0.2	Copper
NA	---	---	---	---	Iron
17.38	2.8E+01	1.4E+01	---	0.4	Lead
NA	---	---	---	---	Magnesium
193	0.0E+00	7.5E+01	---	0.8	Manganese
0.07	---	1.2E+01	---	4.5	Mercury
87.91	9.4E+02	1.2E+02	---	0.1	Nickel
NA	---	---	---	---	Potassium
0.44	5.5E+00	7.3E+01	---	6.3	Selenium
NA	---	---	---	---	Silver
578	---	2.4E+03	---	2.4E-03	Strontium
0.428	---	8.7E+00	---	1.3E+00	Vanadium
351.7	---	1.5E+02	---	0.6	Zinc
1266	---	1.1E+06	---	0.0	1,1,1-Trichloroethane
NA	---	---	---	---	4,4-DDD
NA	---	---	---	---	4,4-DDT
1.76	---	3.2E+03	---	0.0	4,4-DDT
22	---	8.2E+03	---	0.0	Acetone
0.44	---	3.0E+02	---	0.0	Aldrin
NA	---	---	---	---	Benzo(a)anthracene
1.19	---	2.7E+02	---	0.0	Benzo(a)pyrene
NA	---	---	---	---	Benzo(b)fluoranthene
NA	---	---	---	---	Benzo(g,h,i)perylene
21.8	---	5.7E+04	---	0.0	Bis(2-ethylhexyl)phthalate
NA	---	---	---	---	Carbon Disulfide
NA	---	---	---	---	Chrysene
NA	---	---	---	---	Fluoranthene
NA	---	---	---	---	Indeno(1,2,3-cd)pyrene
NA	---	---	---	---	Phenanthrene
NA	---	---	---	---	Pyrene
0.832	---	5.6E+04	---	0.0	Trichloroethylene

HI(sum) = 16 649 0 674

APPENDIX D
TABLE D17 (continued)
SHORT-TAILED SHREW—UPTAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 35B
KARNACK, TEXAS

Max Conc. Plant UF (mg/kg)	Soil (mg/kg)	0-5 ft	% Diet	Est. Plant Conc (mg/kg)	Worm UF (or Intercept & slope)	% Diet	Est. Worm Conc (mg/kg)	Invert UF	% Diet	Est. Invert Conc (mg/kg)	Bird UF	% Diet	Est. Bird Conc (mg/kg)	Mammal UF	% Diet	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg)	
			NA	(A)		100%	(B)		NA	(C)		NA	(D)		NA	(E)	(A+B+C+D+E)	
18600							1										0.0	Aluminum
7.04					-1.421	0.706	1			1.0							1.0	Arsenic
190					0.091		1			17.3							17.3	Barium
0.63							1										0.0	Beryllium
4.56					2.114	0.795	1			27.7							27.7	Cadmium
4900							1										0.0	Calcium
64					0.306		1			19.6							19.6	Chromium
24.1							1										0.0	Cobalt
7.99					1.675	0.264	1			9.2							9.2	Copper
39000							1										0.0	Iron
31.1					0.266		1			8.3							8.3	Lead
1100							1										0.0	Magnesium
1860							1										0.0	Manganese
13					0.078	0.337	1			0.5							0.5	Mercury
810					1.659		1			13.8							13.8	Nickel
4.12							1										0.0	Potassium
0.09					0.585		1			4.1							4.1	Selenium
18							1										0.0	Silver
48							1										0.0	Strontium
67					4.449	0.328	1			339.7							339.7	Vanadium
0.017							1										0.0	Zinc
0.26							1										0.0	1,1,1-Trichloroethane
0.13							1										0.0	4,4'-DDD
0.072							1										0.0	4,4'-DDE
0.023							1										0.0	4,4'-DDT
0.17							1										0.0	Acetone
0.44							1										0.0	Aldrin
0.41							1										0.0	Benzo(a)anthracene
0.58							1										0.0	Benzo(a)pyrene
0.38							1										0.0	Benzo(b)fluoranthene
0.16							1										0.0	Benzo(g,h,i)perylene
0.324							1										0.0	Bis(2-ethylhexyl)phthalate
0.46							1										0.0	Carbon Disulfide
0.8							1										0.0	Chrysene
0.38							1										0.0	Fluoranthene
0.45							1										0.0	Indene(1,2,3-cd)pyrene
0.62							1										0.0	Phenanthrene
0.006							1										0.0	Pyrene
							1										0.0	Trichloroethene

APPENDIX D
TABLE D18
WHITE-FOOTED MOUSE - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 35B
KARNACK, TEXAS

Contaminant	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum	18600				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	5.77E+01	---	---	0.00E+00	5.77E+01
Arsenic	7.04				0.8	3.10E+03	0.00E+00	1.50E+05	0.022	1	2.18E-02	---	---	0.00E+00	2.18E-02
Berium	190				23.5	3.10E+03	0.00E+00	1.50E+05	0.022	1	5.89E-01	---	---	0.00E+00	5.89E-01
Beryllium	0.63				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	1.95E-03	---	---	0.00E+00	1.95E-03
Cadmium	4.56				15.3	3.10E+03	0.00E+00	1.50E+05	0.022	1	1.41E-02	---	---	0.00E+00	1.41E-02
Calcium	4900				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	1.52E-01	---	---	0.00E+00	1.52E-01
Chromium	64				11.1	3.10E+03	0.00E+00	1.50E+05	0.022	1	1.98E-01	---	---	0.00E+00	1.98E-01
Cobalt	24.1				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	7.47E-02	---	---	0.00E+00	7.47E-02
Copper	7.99				5.8	3.10E+03	0.00E+00	1.50E+05	0.022	1	2.48E-02	---	---	0.00E+00	2.48E-02
Iron	39000				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	1.43E-02	---	---	0.00E+00	1.43E-02
Lead	31.1				32.5	3.10E+03	0.00E+00	1.50E+05	0.022	1	9.44E-02	---	---	0.00E+00	9.44E-02
Magnesium	1100				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	3.41E+00	---	---	0.00E+00	3.41E+00
Manganese	1860				0.3	3.10E+03	0.00E+00	1.50E+05	0.022	1	3.41E+00	---	---	0.00E+00	3.41E+00
Mercury	0.11				7.4	3.10E+03	0.00E+00	1.50E+05	0.022	1	4.01E-02	---	---	0.00E+00	4.01E-02
Nickel	8.0				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	2.51E+00	---	---	0.00E+00	2.51E+00
Potassium	810				2.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	1.28E-02	---	---	0.00E+00	1.28E-02
Selenium	4.12				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	2.79E-04	---	---	0.00E+00	2.79E-04
Strontium	0.09				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	5.8E-02	---	---	0.00E+00	5.8E-02
Vanadium	18				0.1	3.10E+03	0.00E+00	1.50E+05	0.022	1	1.49E-01	---	---	0.00E+00	1.49E-01
Zinc	67				180.8	3.10E+03	0.00E+00	1.50E+05	0.022	1	2.08E-01	---	---	0.00E+00	2.08E-01
1,1,1-Trichloroethane	0.017				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	5.27E-05	---	---	0.00E+00	5.27E-05
4,4'-DDD	0.26				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	8.06E-04	---	---	0.00E+00	8.06E-04
4,4'-DDE	0.13				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	4.03E-04	---	---	0.00E+00	4.03E-04
4,4'-DDT	0.072				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	2.31E-04	---	---	0.00E+00	2.31E-04
Acetone	0.023				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	5.75E-04	---	---	0.00E+00	5.75E-04
Aldrin	0.17				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	1.36E-03	---	---	0.00E+00	1.36E-03
Benzo(a)anthracene	0.44				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	1.80E-03	---	---	0.00E+00	1.80E-03
Benzo(a)pyrene	0.41				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	1.18E-03	---	---	0.00E+00	1.18E-03
Benzo(b)fluoranthene	0.38				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	4.96E-04	---	---	0.00E+00	4.96E-04
Benzo(ghi)perylene	0.16				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	1.00E-03	---	---	0.00E+00	1.00E-03
Bis(2-ethylhexyl)phthalate	0.06				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	1.43E-03	---	---	0.00E+00	1.43E-03
Carbon Disulfide	0.46				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	2.48E-03	---	---	0.00E+00	2.48E-03
Chrysene	0.8				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	1.18E-03	---	---	0.00E+00	1.18E-03
Dibenz(a,h)anthracene	0.38				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	1.40E-03	---	---	0.00E+00	1.40E-03
Indeno(1,2,3-cd)pyrene	0.45				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	1.92E-03	---	---	0.00E+00	1.92E-03
Phenanthrene	0.62				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	1.86E-03	---	---	0.00E+00	1.86E-03
Pyrene	0.006				0.0	3.10E+03	0.00E+00	1.50E+05	0.022	1	1.86E-03	---	---	0.00E+00	1.86E-03
Trichloroethene															

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil + sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value. Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D18 (continued)
WHITE-FOOTED MOUSE - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 35B
KARNACK, TEXAS

RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
2.066	0.0E+00	2.8E+01	---	27.6	8.3E+01
0.136	8.9E-01	1.6E-01	---	1.1	3.2
10.8	3.5E-01	5.5E-02	---	0.40	1.207
1.32	6.0E+00	1.5E-03	---	0.80	0.6
1.926	1.3E+00	7.3E-03	---	1.28	3.6
NA	---	---	---	---	---
6.55	2.7E-01	3.0E-02	---	0.30	0.90
NA	---	---	---	---	---
30.4	1.1E-02	8.1E-04	---	0.03	0.09
NA	---	---	---	---	---
15.98	5.3E-01	6.0E-03	---	0.53	1.59
NA	---	---	---	---	---
176	0.0E+00	3.3E-02	---	0.03	0.10
0.064	6.8E-01	5.3E-03	---	0.68	2.05
79.89	1.5E-02	5.0E-04	---	0.02	0.05
NA	---	---	---	---	---
0.399	8.1E-01	3.2E-02	---	0.8	2.54
NA	---	---	---	---	---
525	0.0E+00	1.1E-04	---	1.1E-04	0.00
0.389	4.8E-02	3.8E-01	---	0.4	1.29
319.5	9.1E-02	6.3E-04	---	9.1E-02	0.00
123	0.0E+00	4.7E-08	---	0.00	0.00
NA	---	---	---	---	---
NA	---	---	---	---	---
1.6	0.0E+00	1.4E-04	---	0.00	0.00
20	0.0E+00	3.6E-06	---	0.00	0.00
0.399	0.0E+00	1.3E-03	---	0.00	0.00
NA	---	---	---	---	---
1.08	0.0E+00	1.2E-03	---	0.00	0.00
NA	---	---	---	---	---
NA	---	---	---	---	---
19.8	0.0E+00	2.5E-05	---	0.00	0.00
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
0.756	0.0E+00	2.5E-05	---	0.00	0.00

HI(sum) = 5 28 0 33

APPENDIX D
TABLE D18 (continued)
WHITE-FOOTED MOUSE - Uptake Factors and Food Concentrations
LONGHORN ARMY AMMUNITION PLANT - SITE 35B
KARNACK, TEXAS

Max Conc Soil (mg/kg) 0-2 ft	Plant Uf Intercept & slope	% Diet	Est. Plant Conc (mg/kg)	Worm Uf Intercept & slope	% Diet	Est. Worm Conc (mg/kg)	Invert Uf Intercept & slope	% Diet	Est. Invert Conc (mg/kg)	Bird Uf Intercept & slope	% Diet	Est. Bird Conc (mg/kg)	Mammal Uf Intercept & slope	% Diet	Est. Mammal Conc (mg/kg)	Total Food Conc (mg/kg) (A+B+C+D+E)	
18600		50%	0.5		50%	0.5		NA	(C)		NA	(D)		NA	(E)	0.0	Aluminum
7.04	-1.744	0.594	0.5	-1.421	0.706	0.5										0.8	Arsenic
190	0.1561		0.5	0.091		0.5										23.5	Barium
0.63			0.5			0.5										0.0	Beryllium
4.56	-0.18	0.819	0.5	2.114	0.795	0.5										15.3	Cadmium
4900			0.5			0.5										0.0	Calcium
64	0.041		0.5	0.306		0.5										11.1	Chromium
24.1	0.014	0.423	0.5	1.675	0.264	0.5										0.0	Cobalt
39000			0.5			0.5										5.0	Copper
31.1	1.866	0.787	0.5	0.266		0.5										5.0	Copper
1100			0.5			0.5										0.0	Lead
860	0.25		0.5	0.078	0.337	0.5										52.5	Lead
0.13	-1.927	0.791	0.5	1.059		0.5										0.0	Magnesium
4.12			0.5	0.985		0.5										0.0	Manganese
0.09			0.5			0.5										0.3	Mercury
18			0.5			0.5										7.4	Nickel
48	0.0049		0.5	0.1		0.5										0.0	Potassium
67	-0.452	0.841	0.5	4.449	0.328	0.5										2.0	Selenium
0.017			0.5			0.5										0.0	Silver
0.26			0.5			0.5										0.0	Sroutium
0.13			0.5			0.5										0.1	Vanadium
0.072			0.5			0.5										180.8	Zinc
0.023			0.5			0.5										0.0	1,1,1-Trichloroethane
0.17			0.5			0.5										0.0	1,1,1,2,2-Pentachloroethane
0.44			0.5			0.5										0.0	4,4'-DDT
0.41			0.5			0.5										0.0	4,4'-DDT
0.38			0.5			0.5										0.0	Acetone
0.16			0.5			0.5										0.0	Aldrin
0.16			0.5			0.5										0.0	Benzo(a)anthracene
0.324			0.5			0.5										0.0	Benzo(b)fluoranthene
0.8			0.5			0.5										0.0	Benzo(g)fluoranthene
0.38			0.5			0.5										0.0	Bis(2-ethylhexyl)phthalate
0.45			0.5			0.5										0.0	Carbon Disulfide
0.62			0.5			0.5										0.0	Chrysene
0.006			0.5			0.5										0.0	Fluoranthene
			0.5			0.5										0.0	Indeno(1,2,3-cd)pyrene
			0.5			0.5										0.0	Phenanthrene
			0.5			0.5										0.0	Pyrene
			0.5			0.5										0.0	Trichloroethylene

APPENDIX D
TABLE D19
RED-TAILED HAWK - HQ4
LONGHORN ARMY AMMUNITION PLANT - SITE 35B
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - Food (mg/kg-day)	EDI Total (mg/kg-day)
	<i>0.5-3 ft</i>														
Aluminum	18600			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Antimony	7.04			0.034	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	3.25E-03	3.25E-03
Barium	190			7.923	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	7.69E-01	7.69E-01
Beryllium	0.63			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Cadmium	4.56			1.742	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	1.69E-01	1.69E-01
Calcium	4990			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Chromium	64			2.137	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	2.07E-01	2.07E-01
Cobalt	24.1			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Copper	7.99			8.376	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	8.12E-01	8.12E-01
Iron	39000			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Lead	31.1			2.778	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	2.65E-01	2.65E-01
Magnesium	1100			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Manganese	1860			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Mercury	0.11			0.006	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	5.76E-04	5.76E-04
Nickel	1.3			1.891	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	1.83E-01	1.83E-01
Potassium	810			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Selenium	4.12			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Silver	0.09			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Strontium	18			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Vanadium	48			0.590	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Zinc	67			64.488	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	5.73E-02	5.73E-02
1,1,1-Trichloroethane	0.017			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	6.26E+00	6.26E+00
4,4'-DDD	0.26			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
4,4'-DDE	0.13			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
4,4'-DDT	0.072			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Acetone	0.023			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Aldrin	0.17			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Benzo(a)anthracene	0.44			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Benzo(b)pyrene	0.41			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Benzo(k)fluoranthene	0.38			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Benzo(ghi)perylene	0.38			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Bis(2-ethylhexyl)phthalate	0.16			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Carbon Disulfide	0.324			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Chrysene	0.46			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Fluorenone	0.8			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	0.38			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Phenanthrene	0.45			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Pyrene	0.62			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Trichloroethene	0.006			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil + EDI sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D19 (continued)
RED-TAILED HAWK - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 35B
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0E+00	NA	0.0E+00	0.0E+00	Aluminum
2.5	NA	NA	NA	---	Arsenic
20.8	3.7E-02	NA	0.0E+00	3.7E-02	Barium
1.45	0.0E+00	NA	0.0E+00	0.0E+00	Beryllium
1.45	1.2E-01	NA	0.0E+00	1.2E-01	Cadmium
NA	---	NA	---	---	Calcium
1	2.1E-01	NA	0.0E+00	2.1E-01	Chromium
NA	---	NA	---	---	Cobalt
47	1.7E-02	NA	0.0E+00	1.7E-02	Copper
NA	---	NA	---	---	Iron
1.13	2.3E-01	NA	0.0E+00	2.3E-01	Lead
NA	---	NA	---	---	Magnesium
997	0.0E+00	NA	0.0E+00	0.0E+00	Manganese
0.006	9.6E-02	NA	0.0E+00	---	Mercury
77.4	2.4E-03	NA	0.0E+00	2.4E-03	Nickel
NA	---	NA	---	---	Potassium
0.4	0.0E+00	NA	0.0E+00	0.0E+00	Selenium
NA	---	NA	---	---	Silver
NA	---	NA	---	---	Strontium
11.4	5.0E-03	NA	0.0E+00	5.0E-03	Vanadium
14.5	4.3E-01	NA	0.0E+00	4.3E-01	Zinc
NA	---	NA	---	---	1,1,1-Trichloroethane
NA	---	NA	---	---	4,4'-DDT
NA	---	NA	---	---	4,4'-DDE
0.003	0.0E+00	NA	0.0E+00	0.0E+00	4,4'-DDT
NA	---	NA	---	---	Acetone
NA	---	NA	---	---	Aldrin
NA	---	NA	---	---	Benzo(a)anthracene
NA	---	NA	---	---	Benzo(a)pyrene
NA	---	NA	---	---	Benzo(b)fluoranthene
NA	---	NA	---	---	Benzo(g,h,i)perylene
1.1	0.0E+00	NA	0.0E+00	0.0E+00	Bis(2-ethylhexyl)phthalate
NA	---	NA	---	---	Carbon Disulfide
NA	---	NA	---	---	Chrysene
NA	---	NA	---	---	Fluoranthene
NA	---	NA	---	---	Indeno(1,2,3-cd)pyrene
NA	---	NA	---	---	Phenanthrene
NA	---	NA	---	---	Pyrene
NA	---	NA	---	---	Trichloroethene

HI(sum) = 1.1 0.000 0.000 1.1

APPENDIX D
TABLE D19 (continued)
RED-TAILED HAWK - Uptake Factors and Food Concentrations
LONGHORN ARMY AMMUNITION PLANT - SITE 35B
KARNACK, TEXAS

Max Conc. Plant UF (mg/kg)	% Diet	Est. Plant Conc (mg/kg)	Worm UF (or slope)	% Diet	Est. Worm Conc (mg/kg)	Invert UF (or slope)	% Diet	Est. Invert Conc (mg/kg)	Bird UF (or slope)	% Diet	Est. Bird Conc (mg/kg)	Mammal UF (or slope)	% Diet	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg)	
0-5 ft	NA	(A)	Intercept	NA	(B)	Intercept	NA	(C)	Intercept	NA	(D)	Intercept	100	(E)	(A+B+C+D+E)	
18600															0.00	Aluminum
7.04									-5.0249	0.8354	0.03			0.03	0.03	Arsenic
190									0.0417		7.9			7.92	0.00	Barium
0.63														0.00	0.00	Beryllium
4.56									-0.8408	0.92	1.7			1.74	0.00	Cadmium
4900														0.00	0.00	Calcium
64									-0.5506	0.315	2.1			2.14	0.00	Chromium
24.1														0.00	0.00	Cobalt
7.99									1.8533	0.1309	8.4			8.38	0.00	Copper
39000														0.00	0.00	Iron
31.1									-0.7216	0.5019	2.7			2.73	0.00	Lead
1100														0.00	0.00	Magnesium
1860														0.00	0.00	Manganese
0.11									0.054		0.0			0.01	0.00	Mercury
13									0.1356	0.1956	1.9			1.8914	0.00	Nickel
810														0.00	0.00	Potassium
4.12														0.00	0.00	Selenium
0.09														0.00	0.00	Silver
18														0.00	0.00	Sodium
48									0.0123		0.6			0.59	0.00	Vanadium
67									4.1204	0.01096	64.5			64.49	0.00	Zinc
0.017														0.00	0.00	1,1,1-Trichloroethane
0.26														0.00	0.00	4,4'-DDD
0.13														0.00	0.00	4,4'-DDE
0.072														0.00	0.00	4,4'-DDT
0.023														0.00	0.00	Acetone
0.17														0.00	0.00	Aldrin
0.44														0.00	0.00	Benzo(a)anthracene
0.41														0.00	0.00	Benzo(a)pyrene
0.58														0.00	0.00	Benzo(b)fluoranthene
0.38														0.00	0.00	Benzo(g)herylene
0.16														0.00	0.00	Bis(2-ethylhexyl)phthalate
0.324														0.00	0.00	Carbon Disulfide
0.46														0.00	0.00	Chrysene
0.8														0.00	0.00	Fluoranthene
0.38														0.00	0.00	Indeno(1,2,3-cd)pyrene
0.45														0.00	0.00	Phenanthrene
0.62														0.00	0.00	Pyrene
0.006														0.00	0.00	Trichloroethane

APPENDIX D
TABLE D20
NORTHERN BOBWHITE-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 35B
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum	18600			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	1.49E+03	-----	0.00E+00	1.49E+03
Arsenic	7.04			0.6	8.00E+04	0.00E+00	7.80E+04	0.2	1	5.63E-01	-----	4.35E-02	6.07E-01
Barium	190			29.7	8.00E+04	0.00E+00	7.80E+04	0.2	1	1.52E+01	-----	2.31E+00	1.75E+01
Beryllium	0.63			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	5.04E-02	-----	0.00E+00	5.04E-02
Cadmium	4.56			2.9	8.00E+04	0.00E+00	7.80E+04	0.2	1	3.65E-01	-----	2.26E-01	5.91E-01
Calcium	4900			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	3.92E+02	-----	0.00E+00	3.92E+02
Chromium	64			2.6	8.00E+04	0.00E+00	7.80E+04	0.2	1	5.12E+00	-----	2.05E-01	5.32E+00
Cobalt	24.1			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	1.93E+00	-----	0.00E+00	1.93E+00
Copper	7.99			2.4	8.00E+04	0.00E+00	7.80E+04	0.2	1	6.39E-01	-----	1.91E-01	8.30E-01
Iron	39000			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	3.12E+03	-----	0.00E+00	3.12E+03
Lead	31.1			96.6	8.00E+04	0.00E+00	7.80E+04	0.2	1	2.49E+00	-----	7.54E+00	1.00E+01
Magnesium	1100			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	8.80E+01	-----	0.00E+00	8.80E+01
Manganese	1860			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	1.49E+02	-----	0.00E+00	1.49E+02
Mercury	0.11			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	8.80E-03	-----	2.15E-03	1.09E-02
Nickel	13			1.1	8.00E+04	0.00E+00	7.80E+04	0.2	1	1.04E+00	-----	8.64E-02	1.13E+00
Potassium	810			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	6.48E+01	-----	0.00E+00	6.48E+01
Selenium	4.12			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	3.30E-01	-----	0.00E+00	3.30E-01
Silver	0.09			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	7.20E-03	-----	0.00E+00	7.20E-03
Strontium	18			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	1.44E+00	-----	0.00E+00	1.44E+00
Vanadium	48			0.2	8.00E+04	0.00E+00	7.80E+04	0.2	1	3.84E+00	-----	1.83E-02	3.86E+00
Zinc	67			21.8	8.00E+04	0.00E+00	7.80E+04	0.2	1	5.36E+00	-----	1.70E+00	7.06E+00
1,1,1-Trichloroethane	0.017			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	1.36E-03	-----	0.00E+00	1.36E-03
4,4'-DDD	0.26			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	2.08E-02	-----	0.00E+00	2.08E-02
4,4'-DDE	0.13			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	1.04E-02	-----	0.00E+00	1.04E-02
4,4'-DDT	0.072			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	5.76E-03	-----	0.00E+00	5.76E-03
Acetone	0.023			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	1.84E-03	-----	0.00E+00	1.84E-03
Aldrin	0.17			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	1.36E-02	-----	0.00E+00	1.36E-02
Benz(a)anthracene	0.44			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	3.52E-02	-----	0.00E+00	3.52E-02
Benz(b)pyrene	0.41			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	3.28E-02	-----	0.00E+00	3.28E-02
Benz(g,h,i)perylene	0.58			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	4.64E-02	-----	0.00E+00	4.64E-02
Bis(2-ethylhexyl)phthalate	0.38			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	3.04E-02	-----	0.00E+00	3.04E-02
Bis(2-ethylhexyl)phthalate	0.16			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	1.28E-02	-----	0.00E+00	1.28E-02
Carbon Disulfide	0.324			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	2.59E-02	-----	0.00E+00	2.59E-02
Chrysene	0.46			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	6.40E-02	-----	0.00E+00	6.40E-02
Fluoranthene	0.8			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	3.04E-02	-----	0.00E+00	3.04E-02
Indeno(1,2,3-cd)pyrene	0.38			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	3.04E-02	-----	0.00E+00	3.04E-02
Phenanthrene	0.45			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	3.06E-02	-----	0.00E+00	3.06E-02
Pyrene	0.62			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	4.96E-02	-----	0.00E+00	4.96E-02
Trichloroethene	0.006			0.0	8.00E+04	0.00E+00	7.80E+04	0.2	1	4.80E-04	-----	0.00E+00	4.80E-04

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D20 (continued)
NORTHERN BOBWHITE-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 35B
KARNACK, TEXAS

NOAEL RTV Ingestion (mg/kg-day)	Food Hazard Quotient	Solid/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0	13.6	---	13.56	Aluminum 8.8
2.5	0.02	0.2	---	0.2	Arsenic 0.2
20.8	0.1	0.7	---	0.8	Barium 0.5
1.45	0.0	0.0	---	0.0	Beryllium 0.0
1.45	0.2	0.3	---	0.4	Cadmium 0.3
NA	---	---	---	---	Calcium
1	0.2	5.12	---	5.3	Chromium 3.5
NA	---	---	---	---	Cobalt
47	0.0	0.0	---	0.0	Copper 0.0
NA	---	---	---	---	Iron
1.13	6.7	2.10	---	8.9	Lead 5.8
NA	---	---	---	---	Magnesium
997	0.0	0.1	---	0.1	Manganese 0.1
0.006	0.358	1.5	---	1.8	Mercury 1.2
77.4	0.0	0.0	---	0.0	Nickel 0.0
NA	---	---	---	---	Potassium
0.4	0.0	0.8	---	0.8	Selenium 0.5
NA	---	---	---	---	Silver
NA	---	---	---	---	Strontium
11.4	0.0	0.3	---	0.3	Vanadium 0.2
14.5	0.12	0.4	---	0.5	Zinc 0.3
NA	---	---	---	---	1,1,1-Trichloroethane
NA	---	---	---	---	4,4'-DDD
NA	---	---	---	---	4,4'-DDE
0.003	0.00	1.9	---	1.9	4,4'-DDT 1.2
NA	---	---	---	---	Acetone
NA	---	---	---	---	Aldrin
NA	---	---	---	---	Benzo(a)anthracene
NA	---	---	---	---	Benzo(a)pyrene
NA	---	---	---	---	Benzo(b)fluoranthene
NA	---	---	---	---	Benzo(ghi)perylene
1.1	0.00	0.0	---	0.0	But(2-ethylhexyl)phthalate
NA	---	---	---	---	Carbon Disulfide
NA	---	---	---	---	Chrysene
NA	---	---	---	---	Fluoranthene
NA	---	---	---	---	Indeno(1,2,3-cd)pyrene
NA	---	---	---	---	Phenanthrene
NA	---	---	---	---	Pyrene
NA	---	---	---	---	Trichloroethylene

HI(sum) = 8 27 0 35

APPENDIX D
TABLE D20 (continued)
NORTHERN BOBWHITE-UP TAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 35B
KARNACK, TEXAS

Max. Conc. Plant U/F (mg/kg) 0-5 ft	% Diet 100%	Est. Plant Conc (mg/kg)	Worm U/F (or Intercept & slope)	% Diet NA	Est. Worm Conc (mg/kg)	Invert U/F % Diet NA	Est. Invert Conc (mg/kg)	Bird U/F % Diet NA	Est. Bird Conc (mg/kg)	Mammal U/F	% Diet NA	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg) (A+B+C+D+E)	
18600		7.04	-1.744	0.594	1	0.6							0.0	Aluminum
190		0.1561			1	29.7							0.6	Arsenic
0.63					1								29.7	Barium
4.56		-0.18	0.819		1	2.9							0.0	Beryllium
4990					1								2.9	Cadmium
64		0.041			1	2.6							0.0	Calcium
24.1					1								2.6	Chromium
39000		7.99	0.014	0.423	1	2.4							0.0	Cobalt
31.1		1.866	0.787		1	96.6							2.4	Copper
1860					1								0.0	Iron
0.11		0.25			1	0.0							96.6	Lead
13		-1.927	0.791		1	1.1							0.0	Magnesium
8.10					1								0.0	Manganese
4.12					1								0.0	Mercury
0.09					1								1.1	Nickel
18					1								0.0	Potassium
48		0.0049			1	0.2							0.0	Selenium
67		-0.452	0.841		1	21.8							0.0	Silver
0.017					1								0.2	Strontium
0.26					1								0.0	Vanadium
0.13					1								21.8	Zinc
0.072					1								0.0	1,1,1-Trichloroethane
0.023					1								0.0	4,4'-DDD
0.17					1								0.0	4,4'-DDE
0.44					1								0.0	4,4'-DDT
0.41					1								0.0	Acetone
0.58					1								0.0	Albin
0.38					1								0.0	Benzo(a)anthracene
0.16					1								0.0	Benzo(b)fluoranthene
0.46					1								0.0	Benzo(g)herylene
0.8					1								0.0	Bis(2-ethylhexyl)phthalate
0.38					1								0.0	Carbon Disulfide
0.45					1								0.0	Chrysene
0.62					1								0.0	Fluoranthene
0.006					1								0.0	Indeno(1,2,3-cd)pyrene
					1								0.0	Phenanthrene
					1								0.0	Pyrene
					1								0.0	Trichloroethene

Birds Conc= (soil conc)(U/F) or
ln(Birds conc)= Intercept+Slope(ln soil conc) except Se, where Food Conc=Intercept+Slope(ln soil conc) OR (Food Conc=ln)/d = soil conc

APPENDIX D
TABLE D21
AMERICAN WOODCOCK—HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 35C
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - Food (mg/kg-day)	EDI Total (mg/kg-day)
	<i>0.1-2 f</i>														
Aluminum	23800			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.88E+03	-----	-----	0.00E+00	1.88E+03
Arsenic	16.2			1.7	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.28E+00	-----	-----	1.31E+00	2.59E+00
Barium	179			16.3	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.41E+01	-----	-----	1.24E+01	2.65E+01
Beryllium	1.02			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	8.06E-02	-----	-----	0.00E+00	8.06E-02
Cadmium	1.6			12.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.26E-01	-----	-----	9.15E+00	9.27E+00
Calcium	53200			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	4.20E+03	-----	-----	0.00E+00	4.20E+03
Chromium	49.8			15.2	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.93E+00	-----	-----	1.16E+01	1.55E+01
Cobalt	29.8			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.33E+00	-----	-----	0.00E+00	2.33E+00
Copper	16.2			11.1	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.28E+00	-----	-----	8.46E+00	9.74E+00
Iron	50700			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	4.01E+03	-----	-----	0.00E+00	4.01E+03
Lead	29			7.7	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.29E+00	-----	-----	5.86E+00	8.15E+00
Magnesium	2380			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.88E+02	-----	-----	0.00E+00	1.88E+02
Manganese	513			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	4.05E+01	-----	-----	0.00E+00	4.05E+01
Mercury	0.24			0.7	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.90E-02	-----	-----	5.08E-01	5.27E-01
Nickel	17			18.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.34E+00	-----	-----	1.37E+01	1.50E+01
Potassium	1860			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.47E+02	-----	-----	0.00E+00	1.47E+02
Selenium	2.15			2.1	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.70E-01	-----	-----	1.61E+00	1.76E+00
Silver	6.4			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	5.06E-01	-----	-----	0.00E+00	5.06E-01
Strontium	82.5			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	6.52E+00	-----	-----	0.00E+00	6.52E+00
Vanadium	51			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	4.03E+00	-----	-----	0.00E+00	4.03E+00
Zinc	252			524.6	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.99E+01	-----	-----	3.99E+02	4.19E+02
4,4'-DDE	0.0044			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.48E-04	-----	-----	0.00E+00	3.48E-04
4,4'-DDT	0.013			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E-03	-----	-----	0.00E+00	1.03E-03
Acetone	0.005			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.93E-04	-----	-----	0.00E+00	3.93E-04
Benzo(a)anthracene	0.14			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.11E-02	-----	-----	0.00E+00	1.11E-02
Benzo(a)pyrene	0.11			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	8.69E-03	-----	-----	0.00E+00	8.69E-03
Benzo(b)fluoranthene	0.28			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.21E-02	-----	-----	0.00E+00	2.21E-02
Benzo(k)fluoranthene	0.11			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	8.69E-03	-----	-----	0.00E+00	8.69E-03
Benzoic acid	0.036			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.84E-03	-----	-----	0.00E+00	2.84E-03
Chrysene	0.29			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.29E-02	-----	-----	0.00E+00	2.29E-02
Di-n-butyl phthalate	0.081			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	6.40E-03	-----	-----	0.00E+00	6.40E-03
Fluoranthene	0.42			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.32E-02	-----	-----	0.00E+00	3.32E-02
Phenanthrene	0.049			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.87E-03	-----	-----	0.00E+00	3.87E-03
Pyrene	0.32			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.53E-02	-----	-----	0.00E+00	2.53E-02

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/ sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value. Hazard Index = Sum of HQs. boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D21 (continued)
AMERICAN WOODCOCK—HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 35C
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0	17.1	---	17.14	Aluminum 10.0
2.5	0.52	0.5	---	1.0	Arsenic 0.6
20.8	0.6	0.7	---	1.3	Barium 0.7
NA	---	---	---	---	Beryllium ---
1.45	6.3	0.1	---	6.4	Cadmium 3.7
NA	---	---	---	---	Calcium ---
1	11.6	3.93	---	15.5	Chromium 9.1
NA	---	---	---	---	Cobalt ---
47	0.2	0.0	---	0.2	Copper 0.1
NA	---	---	---	---	Iron ---
1.13	5.2	2.03	---	7.2	Lead 4.2
NA	---	---	---	---	Magnesium ---
997	0.0	0.0	---	0.0	Manganese 0.0
0.006	84,658	3.2	---	87.8	Mercury 51.4
77.4	0.2	0.0	---	0.2	Nickel 0.1
NA	---	---	---	---	Potassium ---
0.4	4.0	0.4	---	4.4	Selenium 2.6
NA	---	---	---	---	Silver ---
NA	---	---	---	---	Strontium ---
11.4	0.0	0.4	---	0.4	Vanadium 0.2
14.5	27.50	1.4	---	28.9	Zinc 16.9
NA	---	---	---	---	4,4'-DDE ---
0.003	0.00	0.3	---	0.3	4,4'-DDT 0.2
NA	---	---	---	---	Acetone ---
NA	---	---	---	---	Benzo(a)anthracene ---
NA	---	---	---	---	Benzo(a)pyrene ---
NA	---	---	---	---	Benzo(b)fluoranthene ---
NA	---	---	---	---	Benzo(k)fluoranthene ---
NA	---	---	---	---	Benzoic acid ---
NA	---	---	---	---	Chrysene ---
0.11	0.00	0.1	---	0.1	Di-n-butyl phthalate 0.0
NA	---	---	---	---	Fluoranthene ---
NA	---	---	---	---	Phenanthrene ---
NA	---	---	---	---	Pyrene ---

HI(sum) = 141 30 0 171

APPENDIX D
TABLE D21 (continued)
AMERICAN WOODCOCK-UP TAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 35C
KARNACK, TEXAS

Max Conc. Plant Uf (mg/kg)	% Diet	Est. Plant Conc (mg/kg)	Worm Uf (or Intercept & slope)	% Diet	Est. Worm Conc (mg/kg)	Invert Uf % Diet NA	Est. Invert Conc (mg/kg)	Bird Uf % Diet NA	Est. Bird Conc (mg/kg)	Mammal Uf	% Diet	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg)	
0-5 ft	NA	(A)		100%	(B)						NA	(E)	(A+B+C+D+E)	
23800													0.0	Aluminum
16.2			-1.421	0.706	1	1.7							1.7	Arsenic
179			0.091		1	16.3							16.3	Barium
1.02					1								0.0	Beryllium
1.6			2.114	0.795	1	12.0							12.0	Cadmium
53200					1								0.0	Calcium
49.8			0.306		1	15.2							15.2	Chromium
29.8					1								0.0	Cobalt
16.2			1.675	0.264	1	11.1							11.1	Copper
50700					1								0.0	Iron
29			0.266		1	7.7							7.7	Lead
2380					1								0.0	Magnesium
513					1								0.0	Manganese
0.24					1	0.7							0.7	Mercury
17			0.078	0.337	1	18.0							18.0	Nickel
1860			1.059		1								0.0	Potassium
2.15					1	2.1							2.1	Selenium
6.4			0.985		1								0.0	Silver
82.5					1								0.0	Sroutium
51					1								0.0	Vanadium
252			4.449	0.328	1	524.6							524.6	Zinc
0.0044					1								0.0	4,4-DDE
0.013					1								0.0	4,4-DDT
0.005					1								0.0	Acetone
0.14					1								0.0	Benzo(a)anthracene
0.11					1								0.0	Benzo(a)pyrene
0.28					1								0.0	Benzo(b)fluoranthene
0.11					1								0.0	Benzo(k)fluoranthene
0.036					1								0.0	Benzoic acid
0.29					1								0.0	Chrysene
0.081					1								0.0	Di-n-butyl phthalate
0.42					1								0.0	Fluoranthene
0.049					1								0.0	Phenanthrene
0.32					1								0.0	Pyrene

Biota Conc = (soil conc)(UF) or
 ln(Biota conc.) = Intercept + Slope(ln(soil conc)) except Se, where Food Conc. = Intercept + Slope(soil conc) OR (Food Conc. - Imp)/sl = soil conc

APPENDIX D
TABLE D22
SHORT-TAILED SHREW-HQ:
LONGHORN ARMY AMMUNITION PLANT - SITE 35C
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
	0.1-5 ft														
Aluminum	23800			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.86E+03	----	----	0.00E+00	1.86E+03
Arsenic	16.2			1.7	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.26E+00	----	----	1.03E+00	2.30E+00
Barium	179			16.3	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.40E+01	----	----	9.77E+00	2.37E+01
Beryllium	1.02			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	7.96E-02	----	----	0.00E+00	7.96E-02
Cadmium	1.6			12.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.23E-01	----	----	7.22E+00	7.34E+00
Calcium	53200			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	4.15E+03	----	----	0.00E+00	4.15E+03
Chromium	49.8			15.2	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.88E+00	----	----	9.14E+00	1.30E+01
Cobalt	29.8			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.32E+00	----	----	0.00E+00	2.32E+00
Copper	16.2			11.1	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.26E+00	----	----	6.88E+00	7.95E+00
Iron	50700			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.95E+03	----	----	0.00E+00	3.95E+03
Lead	29			7.7	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.26E+00	----	----	4.63E+00	6.89E+00
Magnesium	2380			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.86E+02	----	----	0.00E+00	1.86E+02
Manganese	513			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	4.00E+01	----	----	0.00E+00	4.00E+01
Mercury	0.24			0.7	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.87E-02	----	----	4.01E-01	4.20E-01
Nickel	17			18.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.33E+00	----	----	1.08E+01	1.21E+01
Potassium	1860			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.45E+02	----	----	0.00E+00	1.45E+02
Selenium	2.15			2.1	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.68E-01	----	----	1.27E+00	1.44E+00
Silver	6.4			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	4.99E-01	----	----	0.00E+00	4.99E-01
Strontium	82.5			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	6.44E+00	----	----	0.00E+00	6.44E+00
Vanadium	51			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.98E+00	----	----	0.00E+00	3.98E+00
Zinc	252			524.6	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.97E+01	----	----	3.15E+02	3.34E+02
4,4-DDE	0.0044			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.43E-04	----	----	0.00E+00	3.43E-04
4,4-DDT	0.013			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.01E-03	----	----	0.00E+00	1.01E-03
Acetone	0.005			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.90E-04	----	----	0.00E+00	3.90E-04
Benz(a)anthracene	0.14			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.09E-02	----	----	0.00E+00	1.09E-02
Benz(a)pyrene	0.11			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	8.58E-03	----	----	0.00E+00	8.58E-03
Benz(b)fluoranthene	0.28			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.18E-02	----	----	0.00E+00	2.18E-02
Benz(k)fluoranthene	0.11			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	8.58E-03	----	----	0.00E+00	8.58E-03
Benzoic acid	0.036			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.81E-03	----	----	0.00E+00	2.81E-03
Chrysene	0.29			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.26E-02	----	----	0.00E+00	2.26E-02
Di-n-butyl phthalate	0.081			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	6.32E-03	----	----	0.00E+00	6.32E-03
Fluoranthene	0.42			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.28E-02	----	----	0.00E+00	3.28E-02
Phenanthrene	0.049			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.82E-03	----	----	0.00E+00	3.82E-03
Pyrene	0.32			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.50E-02	----	----	0.00E+00	2.50E-02

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/ sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value: Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D22 (continued)
SHORT-TAILED SHREW-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 35C
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
2.295	0.0	8.1E-02	---	808.9	9.5E-01
0.15	---	8.4E+00	---	15	1.0E+00
11.8	---	1.1E+00	---	2.0	2.4E-01
1.45	0.0E+00	5.5E-02	---	0.1	6.4E-03
2.12	3.4E+00	5.9E-02	---	3.5	4.1E-01
NA	---	---	---	---	---
7.21	1.3E+00	5.4E-01	---	1.8	2.1E-01
NA	---	---	---	---	---
33.4	2.0E-01	3.8E-02	---	0.2	2.8E-02
NA	---	---	---	---	---
17.58	2.6E-01	1.3E-01	---	0.4	4.6E-02
NA	---	---	---	---	---
193	0.0E+00	2.1E-01	---	0.2	2.4E-02
0.07	---	2.7E-01	---	6.0	7.0E-01
87.91	1.2E-01	1.5E-02	---	0.1	1.6E-02
NA	---	---	---	---	---
0.44	2.9E+00	3.8E-01	---	3.3	3.8E-01
NA	---	---	---	---	---
578	---	1.1E-02	---	1.1E-02	1.3E-03
0.428	---	9.3E+00	---	9.3	1.1E+00
351.7	---	5.6E-02	---	1.0	1.1E-01
NA	---	---	---	---	---
1.76	---	5.8E-04	---	0.0	6.8E-05
22	---	1.8E-05	---	0.0	2.1E-06
NA	---	---	---	---	---
1.19	---	7.2E-03	---	0.0	8.5E-04
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
654	---	9.7E-06	---	0.0	1.1E-06
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---

HI(sum) = 8 830 0 852

APPENDIX D
TABLE D22 (continued)
SHORT-TAILED SHREW—UPTAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 35C
KARNACK, TEXAS

Max Conc. Plant Uf Soil (mg/kg) 0-5 ft	% Diet	Est. Plant Conc. (mg/kg)	Worm Uf (or Intercept & slope)	% Diet	Est. Worm Conc. (mg/kg)	Invert Uf	% Diet	Est. Invert Conc. (mg/kg)	Est. Bird Conc. (mg/kg)	Mammal Uf	% Diet	Est. Mammal Conc. (mg/kg)	Total Food Conc. (mg/kg)	
	NA	(A)		100%	(B)		NA	(C)	NA	(D)	NA	(E)	(A+B+C+D+E)	
23800													0.0	Aluminum
16.2			-1.421	0.706	1	1.7							1.7	Arsenic
179			0.091		1	16.3							16.3	Barium
1.02					1								0.0	Beryllium
1.6			2.114	0.795	1	12.0							12.0	Cadmium
53200					1								0.0	Calcium
49.8			0.306		1	15.2							15.2	Chromium
29.8					1								0.0	Cobalt
16.2			1.675	0.264	1	11.1							11.1	Copper
50700			0.266		1	7.7							0.0	Iron
29					1								7.7	Lead
2380					1								0.0	Magnesium
513					1								0.0	Manganese
0.24			0.078	0.337	1	0.7							0.7	Mercury
17			1.659		1	18.0							18.0	Nickel
2.15			0.985		1	2.1							2.1	Potassium
6.4					1								0.0	Selenium
82.5					1								0.0	Silver
51					1								0.0	Sroutium
252			4.449	0.328	1	524.6							524.6	Vanadium
0.0044					1								0.0	Zinc
0.013					1								0.0	4,4-DDD
0.005					1								0.0	4,4-DDT
0.14					1								0.0	Acetone
0.11					1								0.0	Benzo(a)anthracene
0.28					1								0.0	Benzo(a)pyrene
0.11					1								0.0	Benzo(b)fluoranthene
0.036					1								0.0	Benzo(k)fluoranthene
0.29					1								0.0	Benzoic acid
0.081					1								0.0	Chrysene
0.42					1								0.0	Di-n-butyl phthalate
0.049					1								0.0	Fluoranthene
0.32					1								0.0	Phenanthrene
					1								0.0	Pyrene

APPENDIX D
TABLE D23
WHITE-FOOTED MOUSE - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 35C
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg) 0-3 ft	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum	23800			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	7.38E+01	---	---	0.00E+00	7.38E+01
Arsenic	16.2			1.3	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	5.02E-02	---	---	2.11E-01	2.61E-01
Barium	179			22.1	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	5.52E-01	---	---	3.54E+00	4.09E+00
Beryllium	1.02			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	3.16E-03	---	---	0.00E+00	3.16E-03
Cadmium	1.6			6.6	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	4.96E-03	---	---	1.06E+00	1.07E+00
Celium	51200			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.65E+02	---	---	0.00E+00	1.65E+02
Chromium	49.8			8.6	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.54E-01	---	---	1.38E+00	1.54E+00
Cobalt	29.8			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	9.24E-02	---	---	0.00E+00	9.24E-02
Copper	16.2			7.2	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	5.02E-02	---	---	1.15E+00	1.20E+00
Iron	50700			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.57E+02	---	---	0.00E+00	1.57E+02
Lead	29			49.6	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	8.91E-02	---	---	7.94E+00	8.02E+00
Magnesium	2380			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	7.38E+00	---	---	0.00E+00	7.38E+00
Manganese	513			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.59E+00	---	---	0.00E+00	1.59E+00
Mercury	0.24			0.4	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	7.47E-04	---	---	5.83E-02	5.90E-02
Nickel	17			9.7	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	5.72E-02	---	---	1.55E+00	1.60E+00
Potassium	1860			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	5.77E+00	---	---	0.00E+00	5.77E+00
Selenium	2.15			1.1	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	6.67E-03	---	---	1.69E-01	1.78E-01
Silver	6.4			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.98E-02	---	---	0.00E+00	1.98E-02
Strontium	82.5			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.85E-01	---	---	0.00E+00	2.85E-01
Vanadium	51			0.1	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.38E-01	---	---	0.00E+00	1.38E-01
Zinc	252			295.6	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	7.81E-01	---	---	2.00E-02	1.78E-01
4,4'-DDE	0.0044			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.36E-05	---	---	4.73E+01	4.81E+01
4,4'-DDT	0.013			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	4.03E-05	---	---	0.00E+00	1.36E-05
Aroclor	0.005			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.53E-05	---	---	0.00E+00	1.53E-05
Benz(a)anthracene	0.14			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	4.34E-04	---	---	0.00E+00	4.34E-04
Benz(a)pyrene	0.28			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	8.68E-04	---	---	0.00E+00	8.68E-04
Benz(b)fluoranthene	0.11			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	3.41E-04	---	---	0.00E+00	3.41E-04
Benz(k)fluoranthene	0.28			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.12E-04	---	---	0.00E+00	1.12E-04
Benzoic acid	0.036			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	8.99E-04	---	---	0.00E+00	8.99E-04
Chrysene	0.29			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.31E-04	---	---	0.00E+00	2.31E-04
Di-n-butyl phthalate	0.081			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.30E-03	---	---	0.00E+00	1.30E-03
Fluoranthene	0.42			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.52E-04	---	---	0.00E+00	1.52E-04
Phenanthrene	0.049			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	9.92E-04	---	---	0.00E+00	9.92E-04
Pyrene	0.32			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	---	---	---	---

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/ sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D23 (continued)
WHITE-FOOTED MOUSE - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 35C
KARNACK, TEXAS

RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
2.086	0.0E+00	3.5E+01	---	35.4	8.6E+01
0.136	1.6E+00	3.7E-01	---	1.9	4.7
10.8	3.3E-01	5.1E-02	---	0.38	0.924
1.32	6.0E+00	2.4E-03	---	0.00	0.0
1.926	5.5E-01	2.6E-03	---	0.55	1.3
NA	---	---	---	---	---
6.55	2.1E-01	2.4E-02	---	0.23	0.57
NA	---	---	---	---	---
30.4	3.8E-02	1.7E-03	---	0.04	0.10
NA	---	---	---	---	---
15.98	5.0E-01	5.6E-03	---	0.50	1.22
NA	---	---	---	---	---
176	0.0E+00	9.0E-03	---	0.01	0.02
0.064	9.1E-01	1.2E-02	---	0.92	2.25
79.89	1.9E-02	6.6E-04	---	0.02	0.05
NA	---	---	---	---	---
0.399	4.2E-01	1.7E-02	---	0.4	1.08
NA	---	---	---	---	---
52.5	0.0E+00	4.9E-04	---	4.9E-04	0.00
0.389	5.1E-02	4.1E-01	---	0.5	1.12
319.5	1.5E-01	2.4E-03	---	1.5E-01	0.367
NA	---	---	---	---	---
1.6	0.0E+00	2.5E-05	---	---	0.00
20	0.0E+00	7.8E-07	---	---	0.00
NA	---	---	---	---	---
1.08	0.0E+00	3.2E-04	---	0.00	0.00
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
594	0.0E+00	4.2E-07	---	0.00	0.00
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---

HI(sum) = 5 36 0 41

APPENDIX D
TABLE D23 (continued)
WHITE-FOOTED MOUSE - Uptake Factors and Food Concentrations
LONGHORN ARMY AMMUNITION PLANT - SITE 35C
KARNACK, TEXAS

Max. Conc. (mg/kg)	Plant U/F (Intercept & slope)	% Diet 50%	Est. Plant Conc. (mg/kg)	Worm U/F (Intercept & slope)	% Diet 50%	Est. Worm Conc. (mg/kg)	Invert U/F NA	% Diet NA	Est. Invert Conc. (mg/kg)	Bird U/F NA	% Diet NA	Est. Bird Conc. (mg/kg)	Mammal U/F	% Diet NA	Est. Mammal Conc. (mg/kg)	Total Food Conc. (A+B+C+D+E)	
23800		0.5	0.5		0.5	0.5										0.0	Aluminum
16.2	-1.744	0.594	0.5	-1.421	0.706	0.5	0.9									1.3	Arsenic
179	0.1561		0.5	0.091		0.5	8.1									22.1	Barium
1.02			0.5			0.5										0.0	Beryllium
1.6	-0.18	0.819	0.5	2.114	0.795	0.5	6.0									6.6	Cadmium
53200			0.5			0.5										0.0	Calcium
49.8	0.041		0.5	0.306		0.5	7.6									8.6	Chromium
29.8			0.5			0.5										0.0	Cobalt
16.2	0.014	0.423	0.5	1.675	0.264	0.5	5.6									7.2	Copper
50700			0.5			0.5										0.0	Iron
29	1.866	0.787	0.5	0.266		0.5	3.9									49.6	Lead
23800			0.5			0.5										0.0	Magnesium
513			0.5			0.5										0.0	Manganese
0.24	0.25		0.5	0.078	0.337	0.5	0.3									0.4	Mercury
17	-1.927	0.791	0.5	1.059		0.5	9.0									9.7	Nickel
1860			0.5			0.5										0.0	Potassium
2.15			0.5	0.985		0.5	1.1									1.1	Selenium
82.5			0.5			0.5										0.0	Silver
51	0.0049		0.5			0.5										0.0	Sroutium
252	-0.452	0.841	0.5	4.449	0.328	0.5	262.3									0.1	Vanadium
0.0044			0.5			0.5										295.6	Zinc
0.005			0.5			0.5										0.0	4,4'-DDE
0.14			0.5			0.5										0.0	4,4'-DDT
0.013			0.5			0.5										0.0	Acetone
0.11			0.5			0.5										0.0	Benzo(a)anthracene
0.28			0.5			0.5										0.0	Benzo(a)pyrene
0.11			0.5			0.5										0.0	Benzo(b)fluoranthene
0.036			0.5			0.5										0.0	Benzo(k)fluoranthene
0.29			0.5			0.5										0.0	Benzoic acid
0.081			0.5			0.5										0.0	Chrysene
0.42			0.5			0.5										0.0	Dibutyl phthalate
0.049			0.5			0.5										0.0	Fluoranthene
0.32			0.5			0.5										0.0	Phenanthrene
			0.5			0.5										0.0	Pyrene

APPENDIX D
TABLE D24
RED-TAILED HAWK - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 35C
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
	0-3 ft														
Aluminum	23800			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Arsenic	16.2			0.067	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	6.53E-03	6.53E-03
Barium	179			7.464	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	7.24E-01	7.24E-01
Beryllium	1.02			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Cadmium	1.6			0.665	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	6.45E-02	6.45E-02
Calcium	53200			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Chromium	49.8			1.975	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	1.92E-01	1.92E-01
Cobalt	29.8			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Copper	16.2			9.188	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	8.91E-01	8.91E-01
Iron	50700			2.634	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Lead	29			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	2.55E-01	2.55E-01
Magnesium	2380			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Manganese	513			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Mercury	0.24			0.013	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	1.26E-03	1.26E-03
Nickel	17			1.993	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	1.93E-01	1.93E-01
Potassium	1860			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Selenium	2.15			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Silver	6.4			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Strontium	82.5			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Vanadium	51			0.627	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	6.08E-02	6.08E-02
Zinc	252			65.431	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	6.35E+00	6.35E+00
4,4'-DDE	0.0044			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
4,4'-DDT	0.013			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Acetone	0.005			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Benz(a)anthracene	0.14			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Benz(b)fluoranthene	0.11			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Benz(k)fluoranthene	0.11			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Benzofluoranthene	0.11			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Benzofluoranthene	0.11			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Benzoic acid	0.036			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Chrysene	0.29			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Di-n-butyl phthalate	0.081			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Fluoranthene	0.42			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Phenanthrene	0.049			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00
Pyrene	0.32			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	0.00E+00	0.00E+00

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source
 Total EDI = EDI soil/sediment + EDI water + EDI food
 Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D24 (continued)
RED-TAILED HAWK - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 35C
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0E+00	NA	0.0E+00	0.0E+00	Aluminum
2.5	NA	NA	NA	---	Arsenic
20.8	3.5E-02	NA	0.0E+00	3.5E-02	Barium
1.45	0.0E+00	NA	0.0E+00	0.0E+00	Beryllium
1.45	4.4E-02	NA	0.0E+00	4.4E-02	Cadmium
NA	---	NA	---	---	Calcium
1	1.9E-01	NA	0.0E+00	1.9E-01	Chromium
NA	---	NA	---	---	Cobalt
47	1.9E-02	NA	0.0E+00	1.9E-02	Copper
NA	---	NA	---	---	Iron
1.13	2.3E-01	NA	0.0E+00	2.3E-01	Lead
NA	---	NA	---	---	Magnesium
997	0.0E+00	NA	0.0E+00	0.0E+00	Manganese
0.006	2.1E-01	NA	0.0E+00	---	Mercury
77.4	2.5E-03	NA	0.0E+00	2.5E-03	Nickel
NA	---	NA	---	---	Potassium
0.4	0.0E+00	NA	0.0E+00	0.0E+00	Selenium
NA	---	NA	---	---	Silver
NA	---	NA	---	---	Strontium
11.4	5.3E-03	NA	0.0E+00	5.3E-03	Vanadium
14.5	4.4E-01	NA	0.0E+00	4.4E-01	Zinc
NA	---	NA	---	---	4,4-DDE
0.003	0.0E+00	NA	0.0E+00	0.0E+00	4,4-DDT
NA	---	NA	---	---	Acetone
NA	---	NA	---	---	Benzo(a)anthracene
NA	---	NA	---	---	Benzo(a)pyrene
NA	---	NA	---	---	Benzo(b)fluoranthene
NA	---	NA	---	---	Benzo(k)fluoranthene
NA	---	NA	---	---	Benzoic acid
NA	---	NA	---	---	Chrysene
0.11	0.0E+00	NA	0.0E+00	0.0E+00	Di-n-butyl phthalate
NA	---	NA	---	---	Fluoranthene
NA	---	NA	---	---	Phenanthrene
NA	---	NA	---	---	Pyrene

HI(sum) = 1.2 0.000 0.000 0.96

APPENDIX D
TABLE D24 (continued)
RED-TAILED HAWK - Uptake Factors and Food Concentrations
LONGHORN ARMY AMMUNITION PLANT - SITE 35C
KARNACK, TEXAS

Max Conc. Plant UF (mg/kg)	% Diet	Est. Plant Conc (mg/kg)	Worm UF (intercept & slope)	% Diet	Est. Worm Conc (mg/kg)	Invert UF % Diet	Est. Invert Conc (mg/kg)	Bird UF % Diet	Est. Bird Conc (mg/kg)	Mammal UF (intercept & slope)	% Diet	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg)	
0-5 ft	NA	(A)		NA	(B)	NA	(C)	NA	(D)		100	(E)	(A+B+C+D+E)	
23800										-5.0249	0.8354	0.07	0.00	Aluminum
16.2										0.0417		7.5	0.07	Arsenic
179													7.46	Barium
1.02													0.00	Beryllium
1.6										-0.5408	0.92	0.7	0.66	Cadmium
53200													0.00	Calcium
49.8										-0.5506	0.315	2.0	1.97	Chromium
29.8										1.8533	0.1309	9.2	0.00	Cobalt
16.2													9.19	Copper
50700										-0.7216	0.5019	2.6	2.63	Iron
29													0.00	Lead
2380													0.00	Magnesium
513										0.054		0.0	0.01	Manganese
0.24										0.1356	0.1956	2.0	1.9933	Mercury
17													0.00	Nickel
1860													0.00	Potassium
2.15													0.00	Selenium
6.4													0.00	Silver
82.5													0.00	Strontium
51										0.0123		0.6	0.63	Vanadium
252										4.1204	0.01096	65.4	65.43	Zinc
0.0044													0.00	4,4'-DDE
0.013													0.00	4,4'-DDT
0.005													0.00	Acetone
0.14													0.00	Benzo(a)anthracene
0.11													0.00	Benzo(a)pyrene
0.28													0.00	Benzo(b)fluoranthene
0.11													0.00	Benzo(k)fluoranthene
0.036													0.00	Benzoic acid
0.29													0.00	Chrysene
0.081													0.00	Di-n-butyl phthalate
0.42													0.00	Fluoranthene
0.049													0.00	Phenanthrene
0.32													0.00	Pyrene

APPENDIX D
TABLE D25
NORTHERN BORWWHITE-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 35C
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum	23800			0.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	1.90E+03	-----	0.00E+00	1.90E+03
Arsenic	16.2			0.9	8.00E+04	0.00E+00	1.30E+05	0.2	1	1.30E+00	-----	7.13E-02	1.37E+00
Barium	179			27.9	8.00E+04	0.00E+00	1.30E+05	0.2	1	1.43E+01	-----	2.18E+00	1.63E+01
Beryllium	1.02			0.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	8.16E-02	-----	0.00E+00	8.16E-02
Cadmium	1.6			1.2	8.00E+04	0.00E+00	1.30E+05	0.2	1	1.28E-01	-----	9.57E-02	2.24E-01
Calcium	51200			0.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	4.26E+03	-----	0.00E+00	4.26E+03
Chromium	49.8			2.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	3.98E+00	-----	1.59E-01	4.14E+00
Cobalt	29.8			0.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	2.38E+00	-----	0.00E+00	2.38E+00
Copper	16.2			3.3	8.00E+04	0.00E+00	1.30E+05	0.2	1	1.30E+00	-----	2.57E-01	1.53E+00
Iron	50700			0.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	4.06E+03	-----	0.00E+00	4.06E+03
Lead	29			91.5	8.00E+04	0.00E+00	1.30E+05	0.2	1	2.32E+00	-----	7.14E+00	9.46E+00
Magnesium	2380			0.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	1.90E+02	-----	0.00E+00	1.90E+02
Manganese	513			0.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	4.10E+01	-----	0.00E+00	4.10E+01
Mercury	0.24			0.1	8.00E+04	0.00E+00	1.30E+05	0.2	1	1.92E-02	-----	4.68E-03	2.39E-02
Nickel	17			1.4	8.00E+04	0.00E+00	1.30E+05	0.2	1	1.36E+00	-----	1.07E-01	1.47E+00
Potassium	1860			0.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	1.49E+02	-----	0.00E+00	1.49E+02
Selenium	2.15			0.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	1.72E-01	-----	0.00E+00	1.72E-01
Silver	6.4			0.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	5.12E-01	-----	0.00E+00	5.12E-01
Strontium	82.5			0.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	6.60E+00	-----	0.00E+00	6.60E+00
Vanadium	51			0.2	8.00E+04	0.00E+00	1.30E+05	0.2	1	4.08E+00	-----	1.95E-02	4.10E+00
Zinc	252			66.6	8.00E+04	0.00E+00	1.30E+05	0.2	1	2.02E+01	-----	5.19E+00	2.54E+01
4,4'-DDE	0.0044			0.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	3.32E-04	-----	0.00E+00	3.32E-04
4,4'-DDT	0.013			0.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	1.04E-03	-----	0.00E+00	1.04E-03
Acetone	0.005			0.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	4.08E-04	-----	0.00E+00	4.08E-04
Benz(a)anthracene	0.14			0.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	1.12E-02	-----	0.00E+00	1.12E-02
Benz(a)pyrene	0.11			0.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	8.80E-03	-----	0.00E+00	8.80E-03
Benz(b)fluoranthene	0.28			0.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	2.24E-02	-----	0.00E+00	2.24E-02
Benz(k)fluoranthene	0.11			0.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	8.80E-03	-----	0.00E+00	8.80E-03
Benzofluoranthene	0.036			0.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	2.88E-03	-----	0.00E+00	2.88E-03
Chrysene	0.29			0.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	2.32E-02	-----	0.00E+00	2.32E-02
Di-n-butyl phthalate	0.081			0.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	6.48E-03	-----	0.00E+00	6.48E-03
Fluoranthene	0.42			0.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	3.36E-02	-----	0.00E+00	3.36E-02
Phenanthrene	0.049			0.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	3.92E-03	-----	0.00E+00	3.92E-03
Pyrene	0.32			0.0	8.00E+04	0.00E+00	1.30E+05	0.2	1	2.56E-02	-----	0.00E+00	2.56E-02

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil / sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D25 (continued)
NORTHERN BOBWHITE-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 35C
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0	17.4	---	17.36	Aluminum 10.2
2.5	0.03	0.5	---	0.5	Arsenic 0.3
20.8	0.1	0.7	---	0.8	Barium 0.5
1.45	0.0	0.1	---	0.1	Beryllium 0.0
1.45	0.1	0.1	---	0.2	Cadmium 0.1
NA	---	---	---	---	Calcium ---
1	0.2	3.98	---	4.1	Chromium 2.4
NA	---	---	---	---	Cobalt ---
47	0.0	0.0	---	0.0	Copper 0.0
NA	---	---	---	---	Iron ---
1.13	6.3	2.05	---	8.4	Lead 4.9
NA	---	---	---	---	Magnesium ---
997	0.0	0.0	---	0.0	Manganese 0.0
0.006	0.780	3.2	---	4.0	Mercury 2.3
77.4	0.0	0.0	---	0.0	Nickel 0.0
NA	---	---	---	---	Potassium ---
0.4	0.0	0.4	---	0.4	Selenium 0.3
NA	---	---	---	---	Silver ---
NA	---	---	---	---	Strontium ---
11.4	0.0	0.4	---	0.4	Vanadium 0.2
14.5	0.36	1.4	---	1.7	Zinc 1.0
NA	---	---	---	---	4,4-DDE ---
0.003	0.00	0.3	---	0.3	4,4-DDT 0.2
NA	---	---	---	---	Acetone ---
NA	---	---	---	---	Benzo(a)anthracene ---
NA	---	---	---	---	Benzo(b)pyrene ---
NA	---	---	---	---	Benzo(k)fluoranthene ---
NA	---	---	---	---	Benzo(k)fluoranthene ---
NA	---	---	---	---	Benzoic acid ---
NA	---	---	---	---	Chrysene ---
0.11	0.00	0.1	---	0.1	Di-n-butyl phthalate 0.0
NA	---	---	---	---	Fluoranthene ---
NA	---	---	---	---	Phenanthrene ---
NA	---	---	---	---	Pyrene ---

HI(sum) = 8 31 0 38

034404

APPENDIX D
TABLE D25 (continued)
NORTHERN BOBWHITE-UP TAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 35C
KARNACK, TEXAS

Max Conc. Soil (mg/kg) 0-5 ft	Plant UF	% Diet	Est. Plant Conc (mg/kg)	Worm UF (or Intercept & slope)	% Diet	Est. Worm Conc (mg/kg)	Invert UF	% Diet	Est. Invert Conc (mg/kg)	Est. Bird Conc (mg/kg)	% Diet	Mammal UF	% Diet	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg) (A+B+C+D+E)	
23800		100%			NA	(B)		NA			NA		NA	(E)	0.0	Aluminum
16.2	-1.744	0.594	1	0.9											0.9	Arsenic
179	0.1561		1	27.9											27.9	Barium
1.02			1												0.0	Beryllium
1.6	-0.18	0.819	1	1.2											1.2	Cadmium
53200			1												0.0	Calcium
49.8	0.041		1	2.0											2.0	Chromium
29.8			1												0.0	Cobalt
16.2	0.014	0.423	1	3.3											3.3	Copper
50700			1												0.0	Iron
29	1.866	0.787	1	91.5											91.5	Lead
2380			1												0.0	Magnesium
513			1												0.0	Manganese
0.24	0.25		1	0.1											0.1	Mercury
17	-1.927	0.791	1	1.4											1.4	Nickel
1860			1												0.0	Potassium
2.15			1												0.0	Selenium
6.4			1												0.0	Silver
82.5			1												0.0	Sroutium
51	0.0049		1	0.2											0.2	Vanadium
252	-0.452	0.841	1	66.6											66.6	Zinc
0.0044			1												0.0	4,4-DDE
0.013			1												0.0	4,4-DDT
0.005			1												0.0	Acetone
0.14			1												0.0	Benzo(a)anthracene
0.11			1												0.0	Benzo(a)pyrene
0.28			1												0.0	Benzo(b)fluoranthene
0.11			1												0.0	Benzo(k)fluoranthene
0.036			1												0.0	Benzoic acid
0.29			1												0.0	Chrysene
0.081			1												0.0	Di-n-butyl phthalate
0.42			1												0.0	Fluoranthene
0.049			1												0.0	Phenanthrene
0.32			1												0.0	Pyrene

Biota Conc = (soil conc)(UF) or
 $\ln(\text{Biota conc.}) = \text{Intercept} + \text{Slope}(\ln(\text{soil conc}))$ except Se, where Food Conc. = Intercept + Slope(soil conc) OR (Food Conc. - Int)/sl = soil conc

APPENDIX D
TABLE D-1 (continued)
AMERICAN WOODCOCK LAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 46
KARNACK, TEXAS

Max Conc. Plant U/P Soil (mg/kg) 0 - 5 ft	% Diet	Ext. Plant Conc. (mg/kg)	Worm U/P (mg/kg) 0 - 10 cm	% Diet	Ext. Worm Conc. (mg/kg)	Insect U/P (mg/kg)	% Diet	Ext. Insect Conc. (mg/kg)	Bird U/P (mg/kg)	% Diet	Ext. Bird Conc. (mg/kg)	Mammal U/P (mg/kg)	% Diet	Ext. Mammal Conc. (mg/kg)	Total Food Conc. (mg/kg)	
NA	NA	NA	NA	100%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(A) B C D E	
35000															6.0	Aluminum
20.1															0.0	Antimony
16.8															1.8	Arsenic
2060															187.5	Barium
0.921															0.0	Beryllium
37.5															147.7	Cadmium
36000															0.0	Calcium
131															40.1	Chromium
71.3															0.0	Cobalt
275															25.5	Copper
126000															0.0	Iron
210															55.9	Lead
5000															0.0	Magnesium
1790															0.0	Manganese
0.56															0.9	Mercury
31															22.2	Nickel
3790															0.0	Potassium
2.91															2.9	Selenium
1.6															0.0	Silver
8960															0.0	Sodium
77															0.0	Sulfur
4180															1318.0	Zinc
0.018															0.0	4'-DDT
0.03															0.0	4'-DDE
0.012															0.0	4'-DDT
0.01															0.0	alpha-BHC
0.007															0.0	Aroclor 1254
0.0025															0.0	Heptachlor
0.010															0.0	Heptachlor epoxide
0.003															0.0	Lindane
0.044															0.0	1,1,1-Trichloroethane
0.066															0.0	2-Hexone
0.18															0.0	4-Methylphenol
0.5															0.0	Axantholone
0.217															0.0	Axanthone
0.43															0.0	Axanthene
2.3															0.0	Benzo(a)anthracene
2.1															0.0	Benzo(a)pyrene
4.5															0.0	Benzo(b)fluoranthene
1.3															0.0	Benzo(g,h,i)perylene
1.2															0.0	Benzo(k)fluoranthene
0.29															0.0	Benzo(l)anthracene
2.349															0.0	Benzo(e)pyrene
0.97															0.0	Benzo(a)phenanthrene
0.8586															0.0	Benzo(b)phenanthrene
0.167															0.0	Benzo(k)phenanthrene
2.6															0.0	Benzo(l)phenanthrene
0.38															0.0	Benzo(a)pyrene
0.1															0.0	Benzo(b)fluoranthene
0.312															0.0	Benzo(g,h,i)perylene
7.462															0.0	Benzo(k)fluoranthene
0.298															0.0	Benzo(l)phenanthrene
1.7															0.0	Benzo(e)pyrene
3															0.0	Benzo(b)phenanthrene
1.6															0.0	Benzo(k)phenanthrene
0.027															0.0	Benzo(l)phenanthrene
0.98															0.0	Benzo(a)pyrene
0.86															0.0	Benzo(b)fluoranthene
2.8															0.0	Benzo(g,h,i)perylene
0.803															0.0	Benzo(k)fluoranthene
0.0224															0.0	Benzo(l)phenanthrene
0.0097															0.0	Benzo(e)pyrene
0															0.0	Benzo(b)phenanthrene
0															0.0	Benzo(k)phenanthrene
0															0.0	Benzo(l)phenanthrene
0															0.0	Benzo(a)pyrene

Blank Conc. = (all listed U/P for
in blank conc. = 100% (all listed U/P for
in blank conc. = 100% (all listed U/P for

APPENDIX D
TABLE D37 (continued)
SHORT-TAILED SHEW-HQ1
LONGHORN ARMY AMMUNITION PLANT - SITE 46
KERRICK, TEXAS

NOVEL RTV-Integration (mg/kg/day)	Feed Hazard Quantity	Soil/Feed Hazard Quantity	Water Hazard Quantity	Total Hazard Quantity	Chemical Percent of Total (H (%)
2.293	8.8	1.1E+01	1.6E+01	1346.0	9.1E+01
0.149	---	1.1E+01	5.7E+02	11	7.6E-01
0.15	---	8.7E+06	6.8E+03	16	1.1E+00
11.8	---	2.6E+01	4.2E+02	23.2	1.6E+00
1.65	6.6E+06	5.0E+02	1.2E+03	0.1	3.6E-03
2.12	4.2E+01	2.6E+06	4.7E+04	43.2	2.9E+00
NA	---	---	---	---	---
7.21	1.1E+06	1.6E+08	4.8E+03	4.8	3.2E-01
NA	---	---	---	---	---
31.4	4.3E+01	4.8E+01	4.8E+04	1.1	7.3E-03
NA	---	---	---	---	---
17.58	1.1E+06	9.3E+01	3.2E+03	2.8	1.9E-01
NA	---	---	---	---	---
NA	---	---	---	---	---
10	9.8E+06	1.6E+08	9.1E+03	1.5	1.6E-01
0.87	---	4.3E+01	---	0.2	5.6E-01
85.91	1.3E+01	1.9E+02	1.9E+04	0.2	1.2E-02
NA	---	---	---	---	---
0.44	3.1E+06	5.3E+01	---	4.4	3.8E-01
NA	---	---	---	---	---
NA	---	---	---	---	---
578	---	1.1E+06	7.8E+05	7.8E+05	7.8E-02
0.628	---	1.6E+01	1.9E+01	14.2	9.6E-01
331.7	---	9.1E+01	1.6E+03	3.2	2.1E-01
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
1.76	---	5.1E+04	---	0.8	3.6E-05
3.32	---	2.8E+04	---	0.8	1.8E-05
0.887	---	4.1E+01	---	0.6	4.3E-03
NA	---	---	---	---	---
NA	---	---	---	---	---
17.58	---	3.6E+03	---	0.8	2.6E-06
120	---	9.1E+07	---	0.8	6.1E-08
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
22	---	7.7E+04	---	0.8	5.3E-05
NA	---	---	---	---	---
NA	---	---	---	---	---
1.19	---	1.6E+01	---	0.1	9.3E-03
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
21.8	---	4.6E+01	---	0.8	5.7E-04
NA	---	---	---	---	---
NA	---	---	---	---	---
31	---	3.9E+04	---	0.8	2.7E-05
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
5400	---	3.6E+04	---	0.8	2.6E-07
6.94	---	8.1E+04	---	0.8	4.6E-05
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
11.9	---	1.6E+04	---	0.8	1.1E-05
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
38.9	---	5.7E+03	---	0.8	3.6E-06
2.697	---	1.1E+03	---	0.8	2.1E-04
NA	---	---	---	---	---
NA	---	---	---	---	---
0.016	---	---	2.3E+02	0.8	1.6E-03

HI(sum) = 52 1.389 14 1.481

APPENDIX D

[illegible]

APPENDIX B
TABLE D28
WHITE-FOOTED MOUSE - HQ:
-LONGHORN ARMY AMMUNITION PLANT - SITE 46
KARNACK, TEXAS

[illegible]

Estimated Daily Intake (EDI) = Medium-specific concentration $\times$ Ingestion Rate $\times$ Fraction absorbed from uncontaminated source
 EDI = EDI soil/soil/air/dust + EDI water + EDI food
 Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value. Hazard Index = Sum of HQs; hazard value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D29
RED-TAILED HAWK - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 46
KARNACK, TEXAS

Contaminant	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion		Inhalation		Fraction Ingested (m2/m2)	Body Weight (kg)	EDI - soil (mg/kg-day)		EDI - SW (mg/kg-day)		EDI - SW (mg/kg-day)		EDI - Food (mg/kg-day)	Total (mg/kg-day)
					Rate - Soil (mg/kg-day)	Rate - SW (mg/kg-day)	Rate - Soil (mg/kg-day)	Rate - SW (mg/kg-day)			Rate - Soil (mg/kg-day)	Rate - SW (mg/kg-day)	Rate - Soil (mg/kg-day)	Rate - SW (mg/kg-day)				
Aluminum	2500	1600	210	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.10	1.10	0.00E+00	0.00E+00	1.20E-01	0.00E+00	0.00E+00	0.00E+00	1.20E-01	1.20E-01
Antimony	20.1	0.001	0.027	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	2.11E-03	0.00E+00	0.00E+00	0.00E+00	2.11E-03	2.11E-03
Barium	16.4	176	0.006	0.041	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	2.82E-04	0.00E+00	0.00E+00	0.00E+00	2.82E-04	2.82E-04
Beryllium	2800	200	3.3	85.92	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.84E-01	0.00E+00	0.00E+00	0.00E+00	1.84E-01	1.84E-01
Bismuth	4.921	1.38	0.0119	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	6.79E-04	0.00E+00	0.00E+00	0.00E+00	6.79E-04	6.79E-04
Boron	0.0007	12.155	0.0007	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	3.82E-04	0.00E+00	0.00E+00	0.00E+00	3.82E-04	3.82E-04
Calcium	20000	3200	58	0.000	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.31E-01	0.00E+00	0.00E+00	0.00E+00	1.31E-01	1.31E-01
Chlorine	131	49	0.23	2.676	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	2.08E-01	0.00E+00	0.00E+00	0.00E+00	2.08E-01	2.08E-01
Cadmium	71.3	0.1	0.12	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	6.44E-03	0.00E+00	0.00E+00	0.00E+00	6.44E-03	6.44E-03
Copper	275	51.8	0.106	12.136	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.25E-01	0.00E+00	0.00E+00	0.00E+00	1.25E-01	1.25E-01
Iron	12000	4200	280	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	6.00E-03	0.00E+00	0.00E+00	0.00E+00	6.00E-03	6.00E-03
Magnesium	280	71.3	0.292	7.114	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.51E-01	0.00E+00	0.00E+00	0.00E+00	1.51E-01	1.51E-01
Manganese	370	100	1.3	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	4.60E-01	0.00E+00	0.00E+00	0.00E+00	4.60E-01	4.60E-01
Molybdenum	0.36	0.49	11.8	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	7.41E-01	0.00E+00	0.00E+00	0.00E+00	7.41E-01	7.41E-01
Nickel	31	0.11	0.11	3.207	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	6.73E-01	0.00E+00	0.00E+00	0.00E+00	6.73E-01	6.73E-01
Polonium	2900	1500	17	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	6.73E-01	0.00E+00	0.00E+00	0.00E+00	6.73E-01	6.73E-01
Selenium	2.91	7.79	0.001	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	6.73E-01	0.00E+00	0.00E+00	0.00E+00	6.73E-01	6.73E-01
Silver	8500	7	0.29	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	9.90E-01	0.00E+00	0.00E+00	0.00E+00	9.90E-01	9.90E-01
Strontium	77	86	6.48	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.63E-02	0.00E+00	0.00E+00	0.00E+00	1.63E-02	1.63E-02
Zinc	4100	760	3.3	67.477	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	2.14E-02	0.00E+00	0.00E+00	0.00E+00	2.14E-02	2.14E-02
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0.015	0.01	0.001	0.00E+00	0.00E+00	5.70E-04	9.70E-04	1.126	1.126	0.00E+00	0.00E+00	1.88E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-01	1.88E-01
4,4'-DDE	0.012	0																

Estimated Daily Intake (EDI) = Medium-specific concentration $\times$ Ingestion Rate $\times$ Fraction Ingested from contaminated source

APPENDIX D
TABLE D39
NORTHERN BOWWHITE-HQ
LONGHORN ARMY AMMUNITION PLANT - SITE 46
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-d)	Ingestion Rate - Sed (mg/kg-d)	Ingestion Rate - SW (mg/kg-d)	Respiratory Rate - Food (mg/kg-d)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-d)	EDI - sed (mg/kg-d)	EDI - SW (mg/kg-d)	EDI - food (mg/kg-d)	EDI Total (mg/kg-d)
Aluminum	15200		210	0.9	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	3.14E-03	0.00E+00	2.73E-01	0.00E+00	3.13E-03
Antimony	20.1		0.037	0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.61E-08	0.00E+00	4.81E-03	0.00E+00	1.61E-08
Arsenic	14.8	174	0.006	0.9	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.34E-08	0.00E+00	7.80E-04	0.00E+00	1.42E-08
Barium	2060	290	3.3	21.6	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	4.55E-02	0.00E+00	4.55E-01	0.00E+00	1.80E-02
Beryllium	0.521	1.38	0.0119	0.8	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	3.70E-07	0.00E+00	1.53E-03	0.00E+00	7.32E-03
Bismuth	77.5		0.0057	16.3	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.03E-07	0.00E+00	8.71E-04	0.00E+00	4.27E-08
Cadmium	20000	3200	58	0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	2.00E-07	0.00E+00	7.14E-08	0.00E+00	2.00E-07
Chlorine	131		0.23	5.4	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.03E-01	0.00E+00	4.19E-01	0.00E+00	1.03E-01
Cobalt	71.3	13	0.17	0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.03E-01	0.00E+00	1.56E-02	0.00E+00	5.77E-08
Copper	275	51.8	0.08	10.4	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	2.00E-01	0.00E+00	1.38E-02	0.00E+00	2.75E-01
Fluorine	120000	43000	230	0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	9.00E-03	0.00E+00	2.63E-01	0.00E+00	9.00E-03
Lead	210	27.3	0.292	42.5	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.68E-01	0.00E+00	3.80E-02	0.00E+00	5.07E-01
Magnesium	2000	1000	13	0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	4.00E-02	0.00E+00	1.65E-08	0.00E+00	4.00E-02
Manganese	3700		11.8	0.1	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	2.99E-02	0.00E+00	1.53E-08	0.00E+00	3.01E-02
Mercury	0.56		0.11	0.1	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	4.48E-02	0.00E+00	1.00E-02	0.00E+00	5.75E-02
Molybdenum	31	1500		0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.68E-08	0.00E+00	1.43E-02	0.00E+00	1.68E-08
Nickel	2799	77	17	0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	2.07E-02	0.00E+00	2.31E-08	0.00E+00	2.07E-02
Platinum	2.14	7.7		0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.33E-01	0.00E+00	1.33E-01	0.00E+00	1.33E-01
Silver	1.4		0.29	0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	6.70E-02	0.00E+00	3.75E-02	0.00E+00	6.66E-02
Selenium	8300	7	0.48	0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	6.20E-02	0.00E+00	9.40E-02	0.00E+00	6.20E-02
Strontium	77	44		0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	3.14E-02	0.00E+00	4.39E-01	0.00E+00	3.14E-02
Zinc	4100	700	3.3	706.5	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	2.14E-03	0.00E+00	2.14E-03	0.00E+00	2.14E-03
4,4'-DIBP	0.028			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4,4'-DDE	0.012			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	9.00E-04	0.00E+00	9.00E-04	0.00E+00	9.00E-04
4,4'-DDE	0.012			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	9.00E-04	0.00E+00	9.00E-04	0.00E+00	9.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E+00	1.00E-04
4-Methylphenol	0.18			0.0	8.00E-04	0.00E+00	1.30E-05	7.80E-04	0.2	1	1.00E-04	0.00E+00	1.00E-04	0.00E	

APPENDIX D

$$\text{Delta Conc} = (\text{soli conc} \times \text{UF}) \text{ or } (\text{Bioa conc.} \times \text{Intercept Slope})$$

APPENDIX D
TABLE D-1 (continued)
AMERICAN WOODCOCK EFT AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 47
KARNACK, TEXAS

Max Conc. Food UP (mg/kg) 9-15 ft	% Diet NA	Est Plant Conc (mg/kg)	Worm UP for Insects & Algae	% Diet 100%	Est Worm Conc (mg/kg)	Soil UP NA	% Diet NA	Est Invert Conc (mg/kg)	Blk UP (mg/kg)	% Diet NA	Est Bird Conc (mg/kg)	Mammal UP	% Diet NA	Est Mammal Conc (mg/kg)	Total Food Conc. (mg/kg)	
<0.001																Chlorine
9															0.0	Chlorine
31.8			-1.421	0.786											2.8	Chlorine
4170			0.891												379.5	Chlorine
1.15															0.0	Chlorine
18.5			2.114	0.795											84.2	Chlorine
57800															0.0	Chlorine
171			0.384												0.0	Chlorine
54.4			1.675	0.384											32.3	Chlorine
194															21.4	Chlorine
89000															0.0	Chlorine
182			0.246												41.4	Chlorine
3570															0.0	Chlorine
2670			0.878	0.377											0.0	Chlorine
5.78			1.889												2.0	Chlorine
25															26.5	Chlorine
2800			0.885												0.0	Chlorine
2.17															2.1	Chlorine
100															0.0	Chlorine
890															0.0	Chlorine
120			4.449	0.378											1000.1	Chlorine
2300															0.0	Chlorine
0.024															0.0	Chlorine
0.49															0.0	Chlorine
0.85															0.0	Chlorine
1.3															0.0	Chlorine
0.43															0.0	Chlorine
0.018															0.0	Chlorine
0.024															0.0	Chlorine
0.394															0.0	Chlorine
0.027															0.0	Chlorine
0.01															0.0	Chlorine
0.1															0.0	Chlorine
0.007															0.0	Chlorine
0.27															0.0	Chlorine
0.38															0.0	Chlorine
0.46															0.0	Chlorine
190															0.0	Chlorine
0.86															0.0	Chlorine
0.011															0.0	Chlorine
2.4															0.0	Chlorine
2.3															0.0	Chlorine
3.5															0.0	Chlorine
1.4															0.0	Chlorine
1.27															0.0	Chlorine
0.796															0.0	Chlorine
0.474															0.0	Chlorine
0.0002															0.0	Chlorine
0.59															0.0	Chlorine
0.541															0.0	Chlorine
7.951															0.0	Chlorine
4.9															0.0	Chlorine
0.4															0.0	Chlorine
0.0111															0.0	Chlorine
3.609															0.0	Chlorine
4.6															0.0	Chlorine
0.12															0.0	Chlorine
8.2															0.0	Chlorine
0.008															0.0	Chlorine
0.236															0.0	Chlorine

Blank Cells = Cell Conc. < 0.01 mg/kg
In Blue Cells = Microbial Superficial Conc. except Soil, where Food Conc. = Microbial Superficial Conc. (Food Conc. Superficial = soil conc.)

APPENDIX D
SHORT-TAILED SHEW-HORN
LONGHORN ARMY AMMUNITION PLANT - SITE 47
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Soil (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Soil (mg/kg)	Rate - Soil (mg/kg-day)	Rate - SW (mg/kg-day)	Ingestion (mg/kg-day)	Inhalation (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI - Total (mg/kg-day)
Aluminum	40000	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	1.18E-03	0.015	1	3.18E-03	---	0.0E+00	3.18E-03
Antimony	9	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	1.18E-03	0.015	1	7.02E-01	---	0.0E+00	7.02E-01
Arsenic	31.8	2.8	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	2.48E-00	0.015	1	2.48E-00	---	1.6E+00	4.18E+00
Boron	4170	379.5	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	3.21E-02	0.015	1	3.21E-02	---	2.78E-02	5.53E-02
Beryllium	1.15	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	8.97E-02	0.015	1	8.97E-02	---	0.0E+00	8.97E-02
Cadmium	18.5	84.2	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	1.44E+00	0.015	1	1.44E+00	---	5.93E-01	5.20E+00
Calcium	77000	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	4.51E-03	0.015	1	4.51E-03	---	0.0E+00	4.51E-03
Chromium	171	52.3	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	1.33E-01	0.015	1	1.33E-01	---	2.14E-01	4.47E-01
Chloride	54.4	21.4	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	4.24E-00	0.015	1	4.24E-00	---	0.0E+00	4.24E-00
Copper	99100	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	1.51E-01	0.015	1	1.51E-01	---	1.29E-01	2.80E-01
Iron	182	44.4	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	1.42E-01	0.015	1	1.42E-01	---	2.90E-01	4.32E-01
Magnesium	3570	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	2.78E-02	0.015	1	2.78E-02	---	0.0E+00	2.78E-02
Manganese	2670	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	2.08E-02	0.015	1	2.08E-02	---	0.0E+00	2.08E-02
Mercury	5.78	29	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	4.51E-01	0.015	1	4.51E-01	---	1.17E+00	1.62E+00
Molybdenum	25	26.5	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	1.91E-00	0.015	1	1.91E-00	---	1.59E-01	1.70E-01
Nickel	2500	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	1.91E-02	0.015	1	1.91E-02	---	0.0E+00	1.91E-02
Phosphorus	2.13	2.1	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	1.68E-01	0.015	1	1.68E-01	---	1.28E+00	1.47E+00
Selenium	109	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	8.50E-00	0.015	1	8.50E-00	---	0.0E+00	8.50E-00
Silver	489	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	6.53E-01	0.015	1	6.53E-01	---	0.0E+00	6.53E-01
Sulfur	120	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	9.63E-01	0.015	1	9.63E-01	---	0.0E+00	9.63E-01
Vanadium	3310	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	1.87E-02	0.015	1	1.87E-02	---	0.0E+00	1.87E-02
Zinc	9024	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	2.02E-02	0.015	1	2.02E-02	---	0.0E+00	2.02E-02
A-P-DDD	0.95	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	7.01E-02	0.015	1	7.01E-02	---	0.0E+00	7.01E-02
A-P-DDD	0.95	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	7.01E-02	0.015	1	7.01E-02	---	0.0E+00	7.01E-02
Cyanide	1.3	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	1.01E-01	0.015	1	1.01E-01	---	0.0E+00	1.01E-01
Ammonia 126	6.53	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	4.12E-02	0.015	1	4.12E-02	---	0.0E+00	4.12E-02
Dieldrin	0.018	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	1.87E-03	0.015	1	1.87E-03	---	0.0E+00	1.87E-03
Heptachlor	0.024	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	2.29E-02	0.015	1	2.29E-02	---	0.0E+00	2.29E-02
1,1,1-Trichlorobenzene	0.027	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	2.18E-03	0.015	1	2.18E-03	---	0.0E+00	2.18E-03
1,1,2-Trichlorobenzene	0.01	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	7.06E-04	0.015	1	7.06E-04	---	0.0E+00	7.06E-04
1,2-Dichlorobenzene	0.1	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	5.23E-03	0.015	1	5.23E-03	---	0.0E+00	5.23E-03
2-Methyl-2-butanol	0.067	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	1.74E-02	0.015	1	1.74E-02	---	0.0E+00	1.74E-02
2-Methyl-2-butanol	0.23	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	2.68E-02	0.015	1	2.68E-02	---	0.0E+00	2.68E-02
Amphetamine	0.46	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	3.59E-02	0.015	1	3.59E-02	---	0.0E+00	3.59E-02
Amphetamine	0.86	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	6.71E-02	0.015	1	6.71E-02	---	0.0E+00	6.71E-02
Amphetamine	0.011	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	1.87E-01	0.015	1	1.87E-01	---	0.0E+00	1.87E-01
Amphetamine	2.4	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	1.70E-01	0.015	1	1.70E-01	---	0.0E+00	1.70E-01
Amphetamine	2.3	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	1.70E-01	0.015	1	1.70E-01	---	0.0E+00	1.70E-01
Amphetamine	1.4	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	1.01E-01	0.015	1	1.01E-01	---	0.0E+00	1.01E-01
Amphetamine	1.27	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	9.91E-02	0.015	1	9.91E-02	---	0.0E+00	9.91E-02
Amphetamine	0.796	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	6.13E-02	0.015	1	6.13E-02	---	0.0E+00	6.13E-02
Amphetamine	0.974	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	3.70E-02	0.015	1	3.70E-02	---	0.0E+00	3.70E-02
Amphetamine	0.062	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	4.86E-04	0.015	1	4.86E-04	---	0.0E+00	4.86E-04
Amphetamine	2.8	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	2.18E-01	0.015	1	2.18E-01	---	0.0E+00	2.18E-01
Amphetamine	0.59	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	4.23E-02	0.015	1	4.23E-02	---	0.0E+00	4.23E-02
Amphetamine	0.541	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	2.18E-02	0.015	1	2.18E-02	---	0.0E+00	2.18E-02
Amphetamine	0.28	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	3.02E-01	0.015	1	3.02E-01	---	0.0E+00	3.02E-01
Amphetamine	7.951	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	8.68E-04	0.015	1	8.68E-04	---	0.0E+00	8.68E-04
Amphetamine	4.9	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	3.12E-02	0.015	1	3.12E-02	---	0.0E+00	3.12E-02
Amphetamine	0.4	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	2.89E-01	0.015	1	2.89E-01	---	0.0E+00	2.89E-01
Amphetamine	0.0111	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	1.50E-05	0.015	1	1.50E-05	---	0.0E+00	1.50E-05
Amphetamine	3.699	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	1.50E-05	0.015	1	1.50E-05	---	0.0E+00	1.50E-05
Amphetamine	4.6	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	1.50E-05	0.015	1	1.50E-05	---	0.0E+00	1.50E-05
Amphetamine	0.13	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	1.50E-05	0.015	1	1.50E-05	---	0.0E+00	1.50E-05
Amphetamine	8.2	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	1.50E-05	0.015	1	1.50E-05	---	0.0E+00	1.50E-05
Amphetamine	0.053	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	1.50E-05	0.015	1	1.50E-05	---	0.0E+00	1.50E-05
Amphetamine	0.236	0.0	7.0E-04	0.0E+00	1.50E-05	6.00E-05	0.015	1.50E-05	0.015	1	1.50E-05	---	0.0E+00	1.50E-05

Forward Daily Intake (EDI) = Maximum specific concentration x Ingestion Rate x Fraction absorbed (unitless) x EDI

Total EDI = EDI soil + EDI water + EDI food

Residual (mg/kg) = Total EDI / Reference Toxicity Value. Hazard Index = Sum of HQs; based on values for HQ exceeds 1.0

APPENDIX D

$MI(\text{sum}) =$	7.6	0.000	0.000	2.6
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APPENDIX D
TABLE D-1 (continued)
RED-TAILED HAWK - 90% UPPER CONFIDENCE LIMIT
LONGHORN ARMY AMMUNITION PLANT - SITE 47
KARNACK, TEXAS

Me Cont. Prod UP	% Diet	Est. Plant	Worm UP	% Diet	Est. Worm	Insect UP	% Diet	Est. Insect	Plant UP	% Diet	Est. Plant	Man UP	% Diet	Est. Man UP	Total Food Conc.	
(mg/kg)		(mg/kg)	(mg/kg)		(mg/kg)	(mg/kg)		(mg/kg)	(mg/kg)		(mg/kg)	(mg/kg)		(mg/kg)	(mg/kg)	
0-5.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100	(E)	(mg/kg)	
400000															0.00	Aluminum
9															0.00	Antimony
31.8															0.12	Arsenic
4170															170.89	Barium
1.15															0.00	Beryllium
18.5															6.32	Cadmium
57800															0.00	Calcium
171															2.91	Chromium
54.4															0.00	Cobalt
194															1.72	Copper
89100															0.00	Iron
182															6.62	Lead
3370															0.00	Magnesium
2670															0.00	Manganese
5.78															0.31	Mercury
25															2.1495	Nickel
2500															0.00	Potassium
2.13															0.00	Selenium
109															0.00	Silver
889															0.00	Sodium
120															1.48	Sulfur
2230															6.755	Zinc
0.024															0.00	4,4'-DDT
0.49															0.00	4,4'-DDE
0.95															0.00	4,4'-DDD
1.3															0.00	Cyfluthrin
0.53															0.00	Azinphos
0.018															0.00	DDT
0.024															0.00	1,1'-Dichloroethane
0.294															0.00	1,1'-Dichloroethane
0.027															0.00	1,2-Dichloroethane
0.01															0.00	2-Hexanone
0.1															0.00	Acetone
0.067															0.00	Acetone
8.23															0.00	Acetone
0.38															0.00	Acetone
0.46															0.00	Acetone
1.99															0.00	Acetone
0.06															0.00	Acetone
0.011															0.00	Acetone
2.5															0.00	Acetone
2.5															0.00	Acetone
1.4															0.00	Acetone
1.27															0.00	Acetone
0.796															0.00	Acetone
0.874															0.00	Acetone
0.0002															0.00	Acetone
2.8															0.00	Acetone
0.99															0.00	Acetone
0.541															0.00	Acetone
0.24															0.00	Acetone
7.951															0.00	Acetone
4.9															0.00	Acetone
0.4															0.00	Acetone
0.011															0.00	Acetone
3.699															0.00	Acetone
4.6															0.00	Acetone
0.12															0.00	Acetone
8.2															0.00	Acetone
0.038															0.00	Acetone
0.756															0.00	Acetone

APPENDIX D
TABLE D35
NORTHERN BORWITHE-HQ
LONGHORN ARMY AMMUNITION PLANT - SITE 47
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Substrate (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested	EDI - soil (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - Soil (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum	40800	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	3.20E-03	.....	.....	0.00E+00	3.20E-03
Antimony	0	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	7.20E-01	.....	.....	0.00E+00	7.20E-01
Arsenic	31.8	1.4	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	2.34E+00	.....	.....	0.00E+00	2.34E+00
Barium	4170	630.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	3.24E-02	.....	.....	0.00E+00	3.24E-02
Beryllium	1.15	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	9.20E-02	.....	.....	0.00E+00	9.20E-02
Cadmium	18.5	0.1	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	1.48E+00	.....	.....	0.00E+00	1.48E+00
Calcium	57800	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	4.62E+03	.....	.....	0.00E+00	4.62E+03
Chromium	171	7.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	1.37E+01	.....	.....	0.00E+00	1.37E+01
Cobalt	54.4	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	4.35E+00	.....	.....	0.00E+00	4.35E+00
Copper	194	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	1.53E+01	.....	.....	0.00E+00	1.53E+01
Iron	89000	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	1.68E+01	.....	.....	0.00E+00	1.68E+01
Lead	182	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	2.88E+02	.....	.....	0.00E+00	2.88E+02
Magnesium	3570	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	4.35E+00	.....	.....	0.00E+00	4.35E+00
Manganese	2470	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	1.53E+01	.....	.....	0.00E+00	1.53E+01
Mercury	5.73	1.4	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	7.13E+03	.....	.....	0.00E+00	7.13E+03
Molybdenum	25	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	1.68E+01	.....	.....	0.00E+00	1.68E+01
Nickel	2000	1.9	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	2.00E+02	.....	.....	0.00E+00	2.00E+02
Potassium	213	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	1.70E+01	.....	.....	0.00E+00	1.70E+01
Selenium	100	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	8.72E+00	.....	.....	0.00E+00	8.72E+00
Silver	899	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	7.11E+01	.....	.....	0.00E+00	7.11E+01
Sulfur	120	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	9.60E+00	.....	.....	0.00E+00	9.60E+00
Titanium	2300	422.2	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	1.68E+02	.....	.....	0.00E+00	1.68E+02
Zinc	0.824	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	1.37E+03	.....	.....	0.00E+00	1.37E+03
4-P-DDD	0.69	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	3.72E+03	.....	.....	0.00E+00	3.72E+03
4-P-DDDE	0.95	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	7.00E+03	.....	.....	0.00E+00	7.00E+03
4-P-DDT	1.3	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	1.08E+01	.....	.....	0.00E+00	1.08E+01
Cyanide	0.53	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	4.20E+02	.....	.....	0.00E+00	4.20E+02
Dieldrin	0.018	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	1.72E+03	.....	.....	0.00E+00	1.72E+03
Heptachlor	0.024	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	1.72E+03	.....	.....	0.00E+00	1.72E+03
1,1,1-Trichloroethane	0.027	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	2.32E+02	.....	.....	0.00E+00	2.32E+02
1,1-Dichloroethane	0.01	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	2.05E+03	.....	.....	0.00E+00	2.05E+03
1,2-Dichloroethane	0.1	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	6.00E+04	.....	.....	0.00E+00	6.00E+04
2-Hexanone	0.067	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	5.40E+03	.....	.....	0.00E+00	5.40E+03
2-Heptanone	0.23	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	1.44E+03	.....	.....	0.00E+00	1.44E+03
2-Methylheptanone	0.34	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	3.74E+02	.....	.....	0.00E+00	3.74E+02
Acetone	0.66	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	1.72E+03	.....	.....	0.00E+00	1.72E+03
Acrylonitrile	1.00	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	1.13E+03	.....	.....	0.00E+00	1.13E+03
Benzo(a)anthracene	0.06	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	6.80E+02	.....	.....	0.00E+00	6.80E+02
Benzo(a)fluoranthene	0.11	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	1.92E+01	.....	.....	0.00E+00	1.92E+01
Benzo(b)fluoranthene	0.14	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	1.40E+01	.....	.....	0.00E+00	1.40E+01
Benzo(k)fluoranthene	0.35	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	2.80E+01	.....	.....	0.00E+00	2.80E+01
Benzothiazole	1.6	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	1.13E+01	.....	.....	0.00E+00	1.13E+01
Bis(2-chlorophenyl)phthalate	1.27	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	3.79E+02	.....	.....	0.00E+00	3.79E+02
Bis(2-ethylhexyl)phthalate	0.766	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	6.39E+02	.....	.....	0.00E+00	6.39E+02
Carbon Disulfide	0.074	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	4.60E+04	.....	.....	0.00E+00	4.60E+04
Chlorobenzene	0.0052	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	2.40E+01	.....	.....	0.00E+00	2.40E+01
Chrysene	2.8	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	4.72E+02	.....	.....	0.00E+00	4.72E+02
Dibenz(a,h)anthracene	0.99	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	4.31E+02	.....	.....	0.00E+00	4.31E+02
Dibenz(b,h)anthracene	0.541	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	2.44E+02	.....	.....	0.00E+00	2.44E+02
Dibenz(g,h,i)anthracene	0.28	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	6.34E+01	.....	.....	0.00E+00	6.34E+01
Dibenz(p,q)anthracene	7.651	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	3.02E+01	.....	.....	0.00E+00	3.02E+01
Dibenz(ghi)perylene	4.9	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	2.30E+02	.....	.....	0.00E+00	2.30E+02
Fluorene	0.4	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	8.80E+04	.....	.....	0.00E+00	8.80E+04
Indeno(1,2,3-cd)pyrene	0.011	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	2.94E+01	.....	.....	0.00E+00	2.94E+01
Naphthalene	2.699	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	3.68E+01	.....	.....	0.00E+00	3.68E+01
Phenanthrene	4.6	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	6.60E+03	.....	.....	0.00E+00	6.60E+03
Phenol	0.12	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	6.54E+01	.....	.....	0.00E+00	6.54E+01
Pyrene	8.2	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	4.44E+03	.....	.....	0.00E+00	4.44E+03
Triphenylene	0.058	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	2.05E+02	.....	.....	0.00E+00	2.05E+02
Trichloroethene	0.236	0.0	0.0	0.0	0.00E+00	0.00E+00	0.00E+00	0.2	1	2.05E+02	.....	.....	0.00E+00	2.05E+02

Estimated Daily Intake (EDI) = Median-specific concentration X Ingestion Rate X Fraction Ingested from contaminated source
Total EDI = EDI soil + EDI water + EDI food
Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value - Hazard Index = Sum of HQs; based value indicates the HQ exceeds 1.0

APPENDIX D

$$\text{Blast Conc} = (\text{soil conc} \times \text{UF})_{\text{or}}$$

[illegible]

HI(sum) =	197	45	0	242
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APPENDIX D
TABLE D16 (continued)
AMERICAN WOODCOCK-UP TAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 48
KARNACK, TEXAS

Max Conc. Plant UF	% Diet	Est. Plant Conc. (mg/kg)	Worm UF (Intercept & slope)	% Diet	Est. Worm Conc. (mg/kg)	Percent UF (% Diet)	% Diet	Est. Insect Conc. (mg/kg)	% Diet	Est. Bird Conc. (mg/kg)	Mammal UF	% Diet	Est. Mammal Conc. (mg/kg)	Total Food Conc. (mg/kg)	
Soil	NA	(A)		100%	(B)		NA	(C)	NA			NA	(E)	(A+B+C+D+E)	Aluminum
0-1/16"															Antimony
11			-1.421	0.706	1	1.3								0.0	Arsenic
10.7			0.891		1	228.4								1.3	Barium
2309					1									228.4	Beryllium
2.39			2.114	0.795	1	57.3								0.0	Calcium
11.4					1									57.3	Chlorine
2260			0.266		1	12.7								0.0	Chromium
41.5					1									12.7	Cobalt
84.6			1.615	0.264	1	18.1								0.0	Copper
102					1									18.1	Iron
51809			0.266		1	40.2								0.0	Lead
151					1									40.2	Magnesium
1420			0.078	0.337	1	0.7								0.0	Manganese
1420			1.859		1	13.8								0.7	Mercury
0.112			0.885		1	1.8								13.8	Nickel
13					1									1.8	Potassium
1090			4.449	0.338	1	4.5								0.0	Selenium
1.87					1									0.0	Silver
1.2					1									0.0	Sodium
514					1									0.0	Vanadium
49					1									4.5	Zinc
186					1									0.0	4,4'-DDT
0.0065					1									0.0	4,4'-DDE
0.012					1									0.0	Aroclor 1254
0.034					1									0.0	1,1-Dichloroethane
0.19					1									0.0	2-Bandone
0.002					1									0.0	2-Methyl naphthalene
0.026					1									0.0	Acetophenone
1.825					1									0.0	Acetone
83					1									0.0	Anthracene
0.021					1									0.0	Benzene (a,b,m,p)
0.90					1									0.0	Benzene (o,p)
1.9					1									0.0	Benzene (m,p)
0.007					1									0.0	Benzene (o,p,m)
3.9					1									0.0	Benzene (m,p,o)
0.67					1									0.0	Benzene (m,p,o)
1.1					1									0.0	Benzene (m,p,o)
0.34					1									0.0	Benzene (m,p,o)
0.451					1									0.0	Benzene (m,p,o)
0.29					1									0.0	Benzene (m,p,o)
0.145					1									0.0	Benzene (m,p,o)
2.2					1									0.0	Benzene (m,p,o)
0.229					1									0.0	Benzene (m,p,o)
0.17					1									0.0	Benzene (m,p,o)
1.833					1									0.0	Benzene (m,p,o)
0.935					1									0.0	Benzene (m,p,o)
0.083					1									0.0	Benzene (m,p,o)
0.002					1									0.0	Benzene (m,p,o)
3.6					1									0.0	Benzene (m,p,o)
0.23					1									0.0	Benzene (m,p,o)
0.75					1									0.0	Benzene (m,p,o)
4.392					1									0.0	Benzene (m,p,o)
2.9					1									0.0	Benzene (m,p,o)
2.4					1									0.0	Benzene (m,p,o)
0.003					1									0.0	Benzene (m,p,o)
0.204					1									0.0	Benzene (m,p,o)
0.002					1									0.0	Benzene (m,p,o)
0.01					1									0.0	Benzene (m,p,o)
0.007					1									0.0	Benzene (m,p,o)
0.447					1									0.0	Benzene (m,p,o)
0.018					1									0.0	Benzene (m,p,o)

Blank Conc. = null conc (UF) is
Inflated conc = Intercept (Slope null conc) except for, where Food Conc. = Intercept (Slope null conc) OR Food Conc. = 100% of null conc

APPENDIX D
TABLE D07
SHORT-TAILED SHEW-HQ
LONGHORN ARMY AMMUNITION PLANT - SITE 48
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI - Total (mg/kg-day)
Aluminum	19000	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.51E-03	---	---	0.00E+00
Antimony	11	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	8.58E-01	---	---	0.00E+00
Arsenic	16.7	1.3	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	6.23E-01	---	---	7.72E-01
Barium	2300	229.4	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.90E+02	---	---	1.77E+02
Beryllium	3.29	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	2.57E-01	---	---	0.00E+00
Bismuth	11.4	57.3	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	8.89E-01	---	---	2.44E+01
Calcium	2360	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.80E+02	---	---	0.00E+00
Chlorine	41.5	12.7	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	3.28E+06	---	---	9.63E+06
Chromium	84.6	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	6.00E+00	---	---	0.00E+00
Cobalt	102	18.1	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	7.90E+00	---	---	0.00E+00
Copper	51800	40.2	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	4.00E+03	---	---	1.09E+01
Lead	151	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.80E+01	---	---	2.41E+01
Magnesium	1820	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.32E+02	---	---	0.00E+00
Manganese	1420	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.11E+02	---	---	0.00E+00
Mercury	0.312	0.7	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	2.43E-02	---	---	0.00E+00
Molybdenum	11	13.8	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.01E+00	---	---	1.26E+00
Nickel	180	1.8	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	6.98E-01	---	---	0.00E+00
Potassium	1.87	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.66E-01	---	---	1.11E+00
Silver	1.2	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	9.45E-02	---	---	0.00E+00
Selenium	314	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	4.01E+01	---	---	0.00E+00
Sulfur	49	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	3.70E+04	---	---	0.00E+00
Tungsten	188	476.3	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.47E+01	---	---	2.84E+02
Zinc	0.0665	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	3.07E+04	---	---	0.00E+00
4,4'-DDE	0.012	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	9.36E-04	---	---	0.00E+00
4,4'-DDD	0.024	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.87E-03	---	---	0.00E+00
4,4'-DDE	0.019	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.48E-02	---	---	0.00E+00
1,1-Dichlorobenzene	0.002	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.48E-02	---	---	0.00E+00
2-Bromobenzene	0.026	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.56E-04	---	---	0.00E+00
2-Methylhexahydrobenzofuran	1.835	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	2.81E-03	---	---	0.00E+00
Acetophenone	0.3	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.63E-01	---	---	0.00E+00
Acetone	0.021	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	2.24E-02	---	---	0.00E+00
Acrylonitrile	0.59	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.64E-03	---	---	0.00E+00
Benzofuran	1.9	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	4.00E-02	---	---	0.00E+00
Benzofuran	0.087	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.48E-01	---	---	0.00E+00
Benzofuran	2.9	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	6.70E-03	---	---	0.00E+00
Benzofuran	0.67	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	2.28E-01	---	---	0.00E+00
Benzofuran	1.1	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	5.23E-02	---	---	0.00E+00
Benzofuran	0.34	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	8.88E-02	---	---	0.00E+00
Benzofuran	0.451	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	2.65E-02	---	---	0.00E+00
Benzofuran	0.39	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	3.52E-02	---	---	0.00E+00
Benzofuran	0.165	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	2.26E-02	---	---	0.00E+00
Benzofuran	0.229	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.17E-02	---	---	0.00E+00
Benzofuran	0.17	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.79E-02	---	---	0.00E+00
Benzofuran	1.823	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.37E-02	---	---	0.00E+00
Benzofuran	0.975	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.78E-02	---	---	0.00E+00
Benzofuran	0.800	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	7.61E-02	---	---	0.00E+00
Benzofuran	0.092	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	6.47E-02	---	---	0.00E+00
Benzofuran	3.6	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.46E-04	---	---	0.00E+00
Benzofuran	0.25	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	2.11E-01	---	---	0.00E+00
Benzofuran	0.75	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.95E-02	---	---	0.00E+00
Benzofuran	4.332	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	3.63E-01	---	---	0.00E+00
Benzofuran	2.8	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	2.26E-01	---	---	0.00E+00
Benzofuran	0.000	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.87E-01	---	---	0.00E+00
Benzofuran	0.294	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	2.24E-04	---	---	0.00E+00
Benzofuran	0.002	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.59E-02	---	---	0.00E+00
Benzofuran	0.01	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.59E-04	---	---	0.00E+00
Benzofuran	0.001	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	7.80E-04	---	---	0.00E+00
Benzofuran	0.007	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	3.88E-02	---	---	0.00E+00
Benzofuran	0.007	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	6.00E+05	0.015	1	1.60E-03	---	---	0.00E+00

Estimated Daily Risk (EDI) = Maximum daily concentration x Ingestion Rate x Fraction Ingested from contaminated source
Total EDI = EDI soil + EDI water + EDI food
Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value (Hazard Index) - Sum of HQs. Hazard Index indicates the HQ exceeds 1.0

[illegible]

HI(sum) =	22	696	0	742
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APPENDIX D

MacConkey	Soil	Test	Ex. Plant	Worm UP (or Insects)	% Diet	Ex. Worm Conc. (mg/kg)	Ex. Insect Conc. (mg/kg)	Ex. Mammal Conc. (mg/kg)	Total Food Conc. (mg/kg)	Chemical
			% Diet	% Diet						
			NA	100%						
10000	11									Aluminum
	10.7									Antimony
2500	2.29									Arsenic
114	2.114									Barium
2300	0.204									Beryllium
41.5	1.675									Cadmium
84.6	0.204									Chromium
102	0.204									Cobalt
51000	0.204									Copper
151	0.204									Iron
1820	0.204									Lead
1420	0.204									Magnesium
0.312	0.204									Manganese
13	0.204									Molybdenum
1000	0.204									Nickel
1.87	0.204									Potassium
514	0.204									Selenium
49	0.204									Silver
188	0.204									Sodium
0.0065	0.204									Vanadium
0.012	0.204									Zinc
0.024	0.204									4,4'-DDE
0.18	0.204									4,4'-DDE
0.002	0.204									4,4'-DDE
0.004	0.204									4,4'-DDE
1.835	0.204									4,4'-DDE
0.3	0.204									4,4'-DDE
0.021	0.204									4,4'-DDE
0.39	0.204									4,4'-DDE
1.9	0.204									4,4'-DDE
0.007	0.204									4,4'-DDE
2.9	0.204									4,4'-DDE
0.67	0.204									4,4'-DDE
1.1	0.204									4,4'-DDE
0.34	0.204									4,4'-DDE
0.451	0.204									4,4'-DDE
0.29	0.204									4,4'-DDE
0.145	0.204									4,4'-DDE
2.2	0.204									4,4'-DDE
0.229	0.204									4,4'-DDE
0.17	0.204									4,4'-DDE
1.823	0.204									4,4'-DDE
0.975	0.204									4,4'-DDE
0.083	0.204									4,4'-DDE
0.002	0.204									4,4'-DDE
2.6	0.204									4,4'-DDE
0.25	0.204									4,4'-DDE
0.75	0.204									4,4'-DDE
4.332	0.204									4,4'-DDE
2.9	0.204									4,4'-DDE
2.4	0.204									4,4'-DDE
0.003	0.204									4,4'-DDE
0.704	0.204									4,4'-DDE
0.002	0.204									4,4'-DDE
0.81	0.204									4,4'-DDE
0.087	0.204									4,4'-DDE
0.447	0.204									4,4'-DDE
0.018	0.204									4,4'-DDE

APPENDIX D
TABLE D-10
NORTHERN BROWNIE-HQ
LONGHORN ARMY AMMUNITION PLANT - SITE 48
KARNACK, TEXAS

Contaminant	Max Conc. Soil (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - Food (mg/kg-day)	EDI - Total (mg/kg-day)
Aluminum	10000	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.54E-03	---	0.00E+00	1.54E-03
Antimony	11	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	8.00E-01	---	0.00E+00	8.00E-01
Arsenic	16.7	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	8.58E-01	---	0.00E+00	8.58E-01
Boron	2300	391.4	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	2.03E-02	---	0.00E+00	2.03E-02
Beryllium	3.29	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	2.51E-01	---	0.00E+00	2.51E-01
Cadmium	11.4	6.1	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	9.12E-01	---	0.00E+00	9.12E-01
Calcium	2300	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.80E-02	---	0.00E+00	1.80E-02
Chlorine	41.5	1.7	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	3.13E-00	---	0.00E+00	3.13E-00
Cobalt	84.6	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	6.77E-00	---	0.00E+00	6.77E-00
Copper	102	7.2	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	8.16E-00	---	0.00E+00	8.16E-00
Iron	51000	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	4.14E-03	---	0.00E+00	4.14E-03
Lead	151	335.2	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.31E-01	---	0.00E+00	1.31E-01
Magnesium	1900	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.48E-02	---	0.00E+00	1.48E-02
Manganese	1420	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.14E-02	---	0.00E+00	1.14E-02
Mercury	0.312	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	2.50E-02	---	0.00E+00	2.50E-02
Nickel	13	1.1	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.84E-00	---	0.00E+00	1.84E-00
Phosphorus	1100	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	8.00E-01	---	0.00E+00	8.00E-01
Selenium	1.87	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
Silver	1.2	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	9.60E-02	---	0.00E+00	9.60E-02
Sulfur	514	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	4.11E-01	---	0.00E+00	4.11E-01
Vanadium	49	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
Zinc	188	52.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	5.20E-04	---	0.00E+00	5.20E-04
4-A-1200	0.0065	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	9.60E-04	---	0.00E+00	9.60E-04
4-A-1201	0.012	0.024	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1202	0.19	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1203	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1204	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1205	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1206	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1207	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1208	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1209	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1210	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1211	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1212	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1213	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1214	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1215	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1216	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1217	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1218	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1219	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1220	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1221	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1222	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1223	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1224	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1225	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1226	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1227	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1228	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1229	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1230	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1231	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1232	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1233	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1234	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1235	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1236	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1237	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1238	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1239	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1240	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1241	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1242	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1243	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1244	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1245	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1246	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1247	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1248	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1249	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1250	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1251	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1252	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1253	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1254	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1255	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1256	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1257	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1258	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1259	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1260	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1261	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1262	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A-1263	0.002	0.0	0.0	8.00E-04	0.00E+00	1.30E+05	0.2	1	1.50E-01	---	0.00E+00	1.50E-01
4-A												

APPENDIX D
TABLE D (Continued)
NORTHERN BORNHOLE-UTAH AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT, SITE 46
KARNACK, TEXAS

Max Conc. Soil (mg/kg)	Max Conc. Plant (mg/kg)	% Dist. 100%	Ex. Plant Conc. (mg/kg)	Worm Eff. (mg/kg)	% Dist. NA	Ex. Worm Conc. (mg/kg)	BenefitUP % Dist. NA	Ex. Invert Conc. (mg/kg)	BenefitUP % Dist. NA	Ex. Invert Conc. (mg/kg)	Manual UP	% Dist. NA	Ex. Manual Conc. (mg/kg)	Total Food Conc. (mg/kg)	Element
10000	1													0.0	Aluminum
11	1													0.0	Antimony
10.7	-1.764	0.594	1	0.7										6.7	Arsenic
2510	0.1561		1	391.6										301.8	Barium
3.29			1											0.0	Beryllium
11.4	-0.18	0.819	1	6.1										4.1	Cadmium
2360			1											0.0	Calcium
41.5	0.041		1	1.7										1.7	Chromium
94.6			1											0.0	Cobalt
102	0.014	0.423	1	7.2										7.2	Copper
51000			1											0.0	Iron
151	1.866	0.787	1	235.2										335.2	Lead
1800			1											0.0	Magnesium
1420			1											0.0	Manganese
0.312	0.25		1	0.1										0.1	Mercury
13	-1.927	0.791	1	1.1										1.1	Nickel
1100			1											0.0	Potassium
1.87			1											0.0	Selenium
1.2			1											0.0	Silver
514			1											0.0	Squidum
49	0.0609		1	0.2										0.2	Vanadium
186	-0.432	0.441	1	12.0										25.0	Zinc
0.065			1											0.0	4,4'-DHD
0.017			1											0.0	4,4'-DHD
0.024			1											0.0	4,4'-DHD
0.19			1											0.0	4,4'-DHD
0.002			1											0.0	4,4'-DHD
0.006			1											0.0	4,4'-DHD
1.835			1											0.0	4,4'-DHD
0.3			1											0.0	4,4'-DHD
0.021			1											0.0	4,4'-DHD
0.96			1											0.0	4,4'-DHD
1.9			1											0.0	4,4'-DHD
0.007			1											0.0	4,4'-DHD
3.8			1											0.0	4,4'-DHD
0.07			1											0.0	4,4'-DHD
1.1			1											0.0	4,4'-DHD
0.34			1											0.0	4,4'-DHD
0.451			1											0.0	4,4'-DHD
0.29			1											0.0	4,4'-DHD
0.145			1											0.0	4,4'-DHD
2.2			1											0.0	4,4'-DHD
0.229			1											0.0	4,4'-DHD
0.17			1											0.0	4,4'-DHD
1.833			1											0.0	4,4'-DHD
0.975			1											0.0	4,4'-DHD
0.083			1											0.0	4,4'-DHD
0.002			1											0.0	4,4'-DHD
3.6			1											0.0	4,4'-DHD
0.25			1											0.0	4,4'-DHD
0.75			1											0.0	4,4'-DHD
4.392			1											0.0	4,4'-DHD
2.9			1											0.0	4,4'-DHD
2.4			1											0.0	4,4'-DHD
0.003			1											0.0	4,4'-DHD
0.304			1											0.0	4,4'-DHD
0.002			1											0.0	4,4'-DHD
0.01			1											0.0	4,4'-DHD
0.007			1											0.0	4,4'-DHD
0.407			1											0.0	4,4'-DHD
0.018			1											0.0	4,4'-DHD

Blank Conc. - null result (UT) or
Inflated conc. - Inflated (Stipulated) except for, where Food Conc. - Inflated (Stipulated) OR Food Conc. - Inflated - well conc.

APPENDIX D
TABLE D41
AMERICAN WOODCOCK-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 50
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
	<i>n=3/f</i>														
Aluminum	11100	9200	11	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	8.77E-02	0.00E+00	1.10E+00	0.00E+00	8.78E-02
Arsenic	6.53	14.2	0.013	0.9	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	5.14E-01	0.00E+00	1.30E-03	6.90E-01	1.21E+00
Barium	140	310	0.29	12.7	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.11E-01	0.00E+00	2.90E-02	9.68E-01	2.08E+01
Beryllium	0.966	2.66	0.0014	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	7.63E-02	0.00E+00	1.40E-04	0.00E+00	7.65E-02
Calcium	4400	5500	15	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.48E-02	0.00E+00	1.50E+00	0.00E+00	3.49E+02
Chromium	38	59	0.01	11.6	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.00E+00	0.00E+00	1.00E-03	8.84E+00	1.10E+01
Cobalt	13	31	0.0044	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.03E+00	0.00E+00	1.03E+00	0.00E+00	1.03E+00
Copper	11.4	24.2	0.044	10.2	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	9.01E-01	0.00E+00	4.40E-03	7.71E+00	8.62E+00
Iron	35600	40000	12	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.81E+03	0.00E+00	1.20E+00	0.00E+00	2.81E+03
Lead	31.4	71.7	0.069	8.4	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.48E+00	0.00E+00	6.90E-03	6.35E+00	8.84E+00
Magnesium	990	5000	0.009	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	7.82E+01	0.00E+00	---	0.00E+00	7.82E+01
Manganese	562	1120	1.2	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	4.41E+01	0.00E+00	1.20E-01	0.00E+00	4.45E+01
Nickel	10	37	0.08	10.6	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	7.90E-01	0.00E+00	---	8.05E+00	8.84E+00
Potassium	1000	2900	0.0027	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	7.90E+01	0.00E+00	---	0.00E+00	7.90E+01
Selenium	2.92	3.44	0.008	2.9	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.31E-01	0.00E+00	---	2.19E+00	2.42E+00
Strontium	12	82	0.001	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	9.48E-01	0.00E+00	8.00E-03	0.00E+00	9.56E-01
Vanadium	60	71	0.47	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	4.74E+00	0.00E+00	4.70E-02	0.00E+00	4.74E+00
Zinc	38	570	0.018	282.1	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.42E+03	0.00E+00	---	0.00E+00	1.42E+03
4,4'-DDD	0.018	0.0027	0.0029	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.40E-03	0.00E+00	---	0.00E+00	3.40E-03
4,4'-DDE	0.041	0.003	0.0029	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.66E-03	0.00E+00	2.90E-04	0.00E+00	1.95E-03
Acetone	0.021	0.011	0.0029	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.85E-03	0.00E+00	---	0.00E+00	2.85E-03
Perchlorate	0.0361	0.003	0.0029	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.40E-02	0.00E+00	---	0.00E+00	3.40E-02
Ancho 1254	0.43	0.003	0.0029	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.07E-02	0.00E+00	---	0.00E+00	3.07E-02
Benzoic acid	0.388	0.003	0.0029	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.33E-02	0.00E+00	7.30E-04	0.00E+00	3.40E-02
Butylbenzyl phthalate	0.421	0.003	0.0029	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	9.53E-02	0.00E+00	---	0.00E+00	9.53E-02
Trichloroethene	0.0059	0.003	0.0029	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	4.66E-04	0.00E+00	1.20E-03	0.00E+00	1.67E-03
Calcium	0.923	0.923	0.011	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	---	0.00E+00	---	0.00E+00	0.00E+00
Cyanide	0.9479	0.9479	0.011	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	---	0.00E+00	1.10E-03	0.00E+00	1.10E-03
Sodium	900	900	9	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	---	0.00E+00	9.00E-01	0.00E+00	9.00E-01
cis-1,2-Dichloroethylene	0.115	0.115	0.0033	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	---	0.00E+00	3.30E-04	0.00E+00	0.00E+00
Methyl ethyl ketone	0.0024	0.0024	0.0033	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	---	0.00E+00	---	0.00E+00	0.00E+00
Methylene chloride	0.0057	0.0057	0.0033	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	---	0.00E+00	---	0.00E+00	0.00E+00
p-cymene	0.014	0.014	0.0033	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	---	0.00E+00	---	0.00E+00	0.00E+00
2,6-dinitrotoluene	0.054	0.054	0.0033	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	---	0.00E+00	1.10E-03	0.00E+00	1.10E-03
Antimony	0.007	0.007	0.0033	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	---	0.00E+00	5.40E-03	0.00E+00	5.40E-03
Thallium	0.007	0.007	0.0033	0.0	7.90E-04	0.00E+00	1.00E+05	7.60E+05	0.198	1	---	0.00E+00	1.70E-04	0.00E+00	1.70E-04

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D41 (continued)
AMERICAN WOODCOCK--HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 50
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0	8.0	1.0E-02	8.00	Aluminum 15.3
2.5	0.28	0.2	5.2E-04	0.5	Arsenic 0.9
20.8	0.5	0.5	1.4E-03	1.0	Barium 1.9
NA	---	---	---	---	Beryllium ---
NA	---	---	---	---	Calcium ---
1	8.8	3.80	1.0E-03	11.8	Chromium 22.7
NA	---	---	---	---	Cobalt ---
47	0.2	0.0	9.4E-05	0.2	Copper 0.4
NA	---	---	---	---	Iron ---
1.13	5.6	2.20	6.1E-03	7.8	Lead 15.0
NA	---	---	---	---	Magnesium ---
997	0.0	0.0	1.2E-04	0.0	Manganese 0.1
77.4	0.1	0.0	---	0.1	Nickel 0.2
NA	---	---	---	---	Potassium ---
0.4	5.5	0.6	---	6.0	Selenium 11.6
NA	---	---	---	---	Strontium ---
11.4	0.0	0.4	---	0.4	Vanadium 0.8
14.5	14.78	0.2	3.2E-03	15.0	Zinc 28.7
NA	---	---	---	---	4,4'-DDD ---
NA	---	---	---	---	4,4'-DDE ---
0.003	0.80	1.1	---	1.1	4,4'-DDT 2.1
NA	---	---	---	---	Acetone ---
NA	---	---	---	---	Perchlorate ---
0.18	0.00	0.2	---	0.2	Aroclor 1254 0.4
NA	---	---	---	---	Benzoic acid ---
1.1	0.80	0.0	6.6E-04	0.0	Bis(2-ethylhexyl)phthalate ---
NA	---	---	---	---	Butylbenzyl phthalate ---
NA	---	---	---	---	Trichloroethene ---
1.45	0.00	---	---	0.0	Cadmium 0.0
NA	---	---	---	---	Cyanide ---
NA	---	---	---	---	Sodium ---
NA	---	---	---	---	cis-1,2-Dichloroethylene ---
NA	---	---	---	---	Methyl ethyl ketone ---
NA	---	---	---	---	methylene chloride ---
NA	---	---	---	---	p-cymene ---
NA	---	---	---	---	2,6-dinitrotoluene ---
NA	---	---	---	---	Antimony ---
NA	---	---	---	---	Thallium ---

HI(sum) = 36 17 0 52

APPENDIX D
TABLE D41 (continued)
AMERICAN WOODCOCK-UP TAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 50
KARNACK, TEXAS

Max Conc. Plant UF (mg/kg)	% Diet	Est. Plant Conc (mg/kg)	Worm UF (or Intercept & slope)	% Diet	Est. Worm Conc (mg/kg)	Invert UF - % Diet NA	Est. Invert Conc (mg/kg)	Bird UF	% Diet	Est. Bird Conc (mg/kg)	Mammal UF	% Diet	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg)	
0-5 ft	NA	(A)		100%	(B)				NA	NA		NA	(E)	(A+B+C+D+E)	
11100														0.0	Aluminum
6.53			-1.421	0.706						0.9				0.9	Arsenic
140			0.091							12.7				12.7	Barium
0.966														0.0	Beryllium
4400														0.0	Calcium
38			0.306							11.6				11.6	Chromium
13														0.0	Cobalt
11.4			1.675	0.264						10.2				10.2	Copper
35600														0.0	Iron
31.4			0.266							8.4				8.4	Lead
990														0.0	Magnesium
562														0.0	Manganese
10			1.059							10.6				10.6	Nickel
1000														0.0	Potassium
292			0.985							2.9				2.9	Selenium
12														0.0	Sroutium
60														0.0	Vanadium
38			4.449	0.128						282.1				282.1	Zinc
0.018														0.0	4,4'-DDD
0.043														0.0	4,4'-DDE
0.041														0.0	4,4'-DDT
0.021														0.0	Acetone
0.0361														0.0	Perchlorate
0.43														0.0	Acetic acid
0.288														0.0	Acetic acid
0.421														0.0	Benzoic acid
1.206														0.0	Butylbenzyl phthalate
0.0059														0.0	Butylbenzyl phthalate
0														0.0	Trichloroethane
0														0.0	Cadmium
0														0.0	Cyanide
0														0.0	Sodium
0														0.0	cis-1,2-Dichloroethylene
0														0.0	Methyl ethyl ketone
0														0.0	methylene chloride
0														0.0	p-cymene
0														0.0	2,6-dinitrotoluene
0														0.0	Antimony
0														0.0	Thallium

Birds Conc = (soil conc)(UF) or
ln(Bird conc) = ln(Intercept + Slope(soil conc)) except Se, where Food Conc. = Intercept + Slope(soil conc) OR (Food Conc. - ln) x k1 = soil conc

APPENDIX D
TABLE D42
SHORT-TAILED SHREW--HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 50
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum	11100	9200	11	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	8.66E-02	0.00E+00	1.65E-00	0.00E+00	8.67E-02
Arsenic	6.53	14.2	0.013	0.9	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	5.09E-01	0.00E+00	1.95E-03	5.45E-01	1.00E+00
Barium	140	310	0.29	12.7	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.09E-01	0.00E+00	4.35E-02	7.64E-01	1.80E-01
Beryllium	0.966	2.66	0.0014	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	7.53E-02	0.00E+00	2.10E-04	0.00E+00	7.56E-02
Calcium	4400	5500	15	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.43E-02	0.00E+00	2.25E+00	0.00E+00	3.45E-02
Chromium	38	59	0.01	11.6	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.96E+00	0.00E+00	1.50E-03	6.98E+00	9.94E+00
Cobalt	13	31	0.044	10.2	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.01E+00	0.00E+00	6.00E-03	0.00E+00	1.01E+00
Copper	11.4	24.2	0.044	10.2	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	8.89E-01	0.00E+00	6.00E-03	6.09E+00	6.99E+00
Iron	35600	40000	12	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.78E+03	0.00E+00	1.80E+00	0.00E+00	2.78E+03
Lead	31.4	71.7	0.069	8.4	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.45E+00	0.00E+00	1.04E-02	5.01E+00	7.47E+00
Magnesium	990	5000	0.0	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	7.72E+01	0.00E+00	---	0.00E+00	7.72E+01
Manganese	562	1120	1.2	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	4.38E+01	0.00E+00	1.80E-01	0.00E+00	4.40E+01
Nickel	10	37	0.0	10.6	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	7.80E-01	0.00E+00	---	6.35E+00	7.13E+00
Potassium	1000	2900	0.0	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	7.80E+01	0.00E+00	---	0.00E+00	7.80E+01
Selenium	2.92	3.44	0.08	2.9	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.28E-01	0.00E+00	---	1.73E+00	1.95E+00
Strontium	12	82	0.0	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	9.36E-01	0.00E+00	1.20E-02	0.00E+00	9.40E-01
Vanadium	60	71	0.47	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	4.68E+00	0.00E+00	---	0.00E+00	4.68E+00
Zinc	38	570	0.0	282.1	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.96E+00	0.00E+00	7.05E-02	1.69E+02	1.72E+02
4,4'-DDD	0.018	0.0027	0.0	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.40E-03	0.00E+00	---	0.00E+00	1.40E-03
4,4'-DDE	0.043	0.0027	0.0	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.35E-03	0.00E+00	---	0.00E+00	3.35E-03
4,4'-DDT	0.041	0.003	0.0	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.20E-03	0.00E+00	---	0.00E+00	3.20E-03
Acetone	0.021	0.011	0.0029	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.64E-03	0.00E+00	4.35E-04	0.00E+00	2.07E-03
Perchlorate	0.0361	0.0361	0.0	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.82E-03	0.00E+00	---	0.00E+00	2.82E-03
Aroclor 1254	0.43	0.43	0.0	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.35E-02	0.00E+00	---	0.00E+00	3.35E-02
Benzoic acid	0.388	0.421	0.0073	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.03E-02	0.00E+00	---	0.00E+00	3.03E-02
Bis(2-ethylhexyl)phthalate	1.206	0.059	0.012	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.28E-02	0.00E+00	---	0.00E+00	3.28E-02
Butylbenzyl phthalate	0.923	0.923	0.011	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	9.41E-02	0.00E+00	---	0.00E+00	9.41E-02
Trichloroethylene	0.059	0.059	0.011	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	4.60E-04	0.00E+00	1.80E-03	0.00E+00	2.26E-03
Cadmium	0.923	0.923	0.011	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	---	0.00E+00	0.00E+00
Cyanide	900	900	9	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	---	0.00E+00	0.00E+00
Sodium	0.115	0.115	0.0033	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	---	0.00E+00	0.00E+00
cis-1,2-Dichloroethylene	0.0024	0.0024	0.0033	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	4.95E-04	0.00E+00	4.95E-04
Methyl ethyl ketone	0.0057	0.0057	0.011	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	---	0.00E+00	0.00E+00
methylene chloride	0.014	0.014	0.011	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	---	0.00E+00	0.00E+00
p-cymene	0.054	0.054	0.0017	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	---	0.00E+00	0.00E+00
2,4-dinitrophenol	0.054	0.054	0.0017	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	---	0.00E+00	0.00E+00
Antimony	0.054	0.054	0.0017	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	---	0.00E+00	0.00E+00
Thallium	0.0017	0.0017	0.0017	0.0	7.80E-04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	2.55E-04	0.00E+00	2.55E-04

Estimated Daily Intake (EDI) = (Medium-specific concentration x Ingestion Rate x Fraction Ingested) from contaminated source

Total EDI = EDI soil/sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D42 (continued)
SHORT-TAILED SHREW--HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 50
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sec Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
2,295	0.0	3.8E+02	7.2E-01	378.0	9.3E+01
0.15	---	3.4E+00	1.3E-02	7	1.7E+00
11.8	---	9.3E-01	3.7E-03	1.6	3.9E-01
1.45	0.0E+00	5.2E-02	1.4E-04	0.1	1.3E-02
NA	---	---	---	---	---
7.21	9.7E-01	4.1E-01	2.1E-04	1.4	3.4E-01
NA	---	---	---	---	---
33.4	1.8E-01	2.7E-02	2.0E-04	0.2	5.2E-02
NA	---	---	---	---	---
17.58	2.9E-01	1.4E-01	5.9E-04	0.4	1.0E-01
NA	---	---	---	---	---
193	0.0E+00	2.3E-01	9.3E-04	0.2	5.6E-02
87.91	7.2E-02	8.9E-03	---	0.1	2.0E-02
NA	---	---	---	---	---
0.44	3.9E+00	5.2E-01	---	4.4	1.1E+00
578	---	1.6E-03	2.1E-05	1.6E-03	4.0E-04
0.428	---	1.1E+01	---	10.9	2.7E+00
351.7	---	8.4E-03	2.0E-04	0.5	1.2E-01
NA	---	---	---	---	---
NA	---	---	---	---	---
1.76	---	1.8E-03	---	0.0	4.5E-04
22	---	7.4E-05	2.0E-05	0.0	2.3E-05
NA	---	---	---	---	---
0.067	---	5.0E-01	---	0.5	1.2E-01
NA	---	---	---	---	---
21.8	---	1.5E-03	5.0E-05	0.0	3.8E-04
NA	---	---	---	---	---
0.832	---	5.5E-04	2.2E-03	0.0	6.7E-04
2.12	---	---	---	0.0	0.0E+00
141.9	---	---	1.2E-05	0.0	2.9E-06
NA	---	---	---	---	---
NA	---	---	---	---	---
3892	---	---	---	0.0	0.0E+00
12.9	---	---	---	0.0	0.0E+00
NA	---	---	---	---	---
NA	---	---	---	---	---
0.149	---	---	5.4E-02	0.1	1.3E-02
0.016	---	---	1.6E-02	0.0	3.9E-03

HI(sum) = 5 394 1 405

APPENDIX D
TABLE D42 (continued)
SHORT-TAILED SHREW—UPTAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 50
KARNACK, TEXAS

Max Conc. Plant UF	% Diet	Est. Plant Conc (mg/kg)	Worm UF (or Intercept & slope)	% Diet	Est. Worm Conc (mg/kg)	Invert UF	% Diet	Est. Invert Conc (mg/kg)	Bind UF	% Diet	Est. Bind Conc (mg/kg)	Mammal UF	% Diet	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg)	
Soil (mg/kg)	NA	(A)		100%	(B)		NA	(C)		NA	(D)		NA	(E)	(A+B+C+D+E)	
11100															0.0	Aluminum
6.53			-1.421	0.706	1	0.9									0.9	Arsenic
140			0.091		1	12.7									12.7	Barium
0.966					1										0.0	Beryllium
4400					1										0.0	Calcium
38			0.306		1	11.6									11.6	Chromium
13					1										0.0	Cobalt
11.4			1.675	0.264	1	10.2									10.2	Copper
35600					1										0.0	Iron
31.4			0.266		1	8.4									8.4	Lead
990					1										0.0	Magnesium
562			1.059		1	10.6									0.0	Manganese
10					1										10.6	Nickel
1000			0.985		1	2.9									0.0	Potassium
2.92					1										0.0	Selenium
12					1										0.0	Srionium
60					1										0.0	Vanadium
38			4.449	0.328	1	282.1									282.1	Zinc
0.018					1										0.0	4,4'-DDD
0.043					1										0.0	4,4'-DDE
0.041					1										0.0	4,4'-DDT
0.021					1										0.0	Acetone
0.0361					1										0.0	Perchlorae
0.43					1										0.0	Aroclor 1254
0.388					1										0.0	Benzoic acid
0.421					1										0.0	Bis(2-ethylhexyl)phthalate
1.206					1										0.0	Bis(2-ethylhexyl)phthalate
0.0059					1										0.0	Trichloroethane
0					1										0.0	Cadmium
0					1										0.0	Cyanide
0					1										0.0	Sodium
0					1										0.0	cis-1,2-Dichloroethylene
0					1										0.0	Methyl ethyl ketone
0					1										0.0	methylene chloride
0					1										0.0	p-cymene
0					1										0.0	2,4-dinitrotoluene
0					1										0.0	Antimony
0					1										0.0	Thallium

APPENDIX D
TABLE D-3
WHITE-ROOTED MOUSE - HQ:
LONGHORN ARMY AMMUNITION PLANT - SITE 50
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum	11100	9200	11	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	3.41E+01	0.00E+00	1.65E+00	0.00E+00	3.61E+01
Arsenic	653	14.2	0.013	0.7	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.02E-02	0.00E+00	1.95E-03	1.15E-01	1.37E-01
Beryllium	140	310	0.29	173	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	4.34E-01	0.00E+00	4.35E-02	2.77E-00	3.25E+00
Bismuth	0.966	2.66	0.0014	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.90E-03	0.00E+00	2.10E-04	0.00E+00	3.20E-03
Calcium	4400	5500	15	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.36E+01	0.00E+00	2.25E+00	0.00E+00	1.59E+01
Chromium	38	59	0.01	6.6	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.10E-01	0.00E+00	1.50E-03	1.05E+00	1.17E+00
Cobalt	13	31	0.0	6.5	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	4.03E-02	0.00E+00	6.00E-03	0.00E+00	4.03E-02
Copper	11.4	24.2	0.044	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	3.51E-02	0.00E+00	6.00E-03	1.04E+00	1.08E+00
Iron	35600	40000	12	52.9	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.10E+02	0.00E+00	1.80E+00	0.00E+00	1.12E+02
Lead	31.4	71.7	0.069	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	9.73E-02	0.00E+00	1.04E-02	8.45E+00	8.57E+00
Magnesium	990	5000	1.2	5.7	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.70E+00	0.00E+00	1.80E-01	0.00E+00	1.92E+00
Manganese	562	1120	0.08	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	3.07E+00	0.00E+00	1.80E-01	0.00E+00	3.07E+00
Nickel	10	37	0.0	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.01E-02	0.00E+00	1.80E-01	0.00E+00	9.19E-01
Potassium	1000	2900	3.44	1.4	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	3.10E+00	0.00E+00	0.00E+00	0.00E+00	3.10E+00
Selenium	2.92	3.44	0.0	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	9.95E-03	0.00E+00	1.20E-02	0.00E+00	2.30E-01
Silver	12	82	0.47	0.1	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	3.75E-02	0.00E+00	0.00E+00	0.00E+00	4.93E-02
Vanadium	38	570	0.0027	147.8	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.80E-01	0.00E+00	7.05E-02	2.35E-02	2.10E-01
Zinc	0.018	0.027	0.0	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	5.30E-05	0.00E+00	0.00E+00	0.00E+00	2.38E-01
4,4'-DDD	0.045	0.003	0.0029	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.27E-04	0.00E+00	4.35E-04	0.00E+00	5.38E-03
4,4'-DDE	0.041	0.003	0.0029	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.27E-04	0.00E+00	4.35E-04	0.00E+00	5.38E-03
4,4'-DDT	0.021	0.011	0.0029	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.27E-04	0.00E+00	4.35E-04	0.00E+00	5.38E-03
Acetone	0.0361	0.003	0.0029	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.33E-03	0.00E+00	0.00E+00	0.00E+00	1.33E-03
Acetic acid	0.388	0.003	0.0029	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.33E-03	0.00E+00	0.00E+00	0.00E+00	1.33E-03
Benzoic acid	0.421	0.003	0.0029	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.33E-03	0.00E+00	0.00E+00	0.00E+00	1.33E-03
Bis(2-ethylhexyl)phthalate	1.206	0.0059	0.0073	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.33E-03	0.00E+00	0.00E+00	0.00E+00	1.33E-03
Bis(2-ethylhexyl)phthalate	1.206	0.0059	0.0073	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.33E-03	0.00E+00	0.00E+00	0.00E+00	1.33E-03
Trichloroethylene	0.0059	0.003	0.0073	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.33E-03	0.00E+00	0.00E+00	0.00E+00	1.33E-03
Cadmium	0.923	0.9479	0.011	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.33E-03	0.00E+00	0.00E+00	0.00E+00	1.33E-03
Cyanide	900	0.115	9	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.33E-03	0.00E+00	0.00E+00	0.00E+00	1.33E-03
Sodium	0.0024	0.0057	0.0033	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.33E-03	0.00E+00	0.00E+00	0.00E+00	1.33E-03
cis-1,2-Dichloroethylene	0.0057	0.014	0.011	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.33E-03	0.00E+00	0.00E+00	0.00E+00	1.33E-03
Methyl ethyl ketone	0.0057	0.014	0.011	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.33E-03	0.00E+00	0.00E+00	0.00E+00	1.33E-03
methylene chloride	0.0057	0.014	0.011	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.33E-03	0.00E+00	0.00E+00	0.00E+00	1.33E-03
p-cymene	0.0057	0.014	0.011	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.33E-03	0.00E+00	0.00E+00	0.00E+00	1.33E-03
2,4-dinitrotoluene	0.0057	0.014	0.011	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.33E-03	0.00E+00	0.00E+00	0.00E+00	1.33E-03
Antimony	0.0057	0.014	0.011	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.33E-03	0.00E+00	0.00E+00	0.00E+00	1.33E-03
Thallium	0.0057	0.014	0.011	0.0	3.10E-03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.33E-03	0.00E+00	0.00E+00	0.00E+00	1.33E-03

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D43 (continued)
WHITE-FOOTED MOUSE - HQ
LONGHORN ARMY AMMUNITION PLANT - SITE 50
KARNACK, TEXAS

RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
2.086	0.0E+00	1.6E+01	7.9E-01	17.3	8.4E+01
0.136	8.5E-01	1.5E-01	1.4E-02	1.0	4.9
10.8	2.6E-01	4.0E-02	4.0E-03	0.30	1.452
1.32	6.0E+00	2.3E-03	1.6E-04	0.00	0.0
NA	NA	NA	NA	NA	NA
6.55	1.6E-01	1.8E-02	2.3E-04	0.18	0.87
NA	NA	NA	NA	NA	NA
30.4	3.4E-02	1.3E-03	2.3E-04	0.04	0.17
NA	NA	NA	NA	NA	NA
15.98	5.3E-01	6.1E-03	6.5E-04	0.54	2.59
NA	NA	NA	NA	NA	NA
176	0.0E+00	9.9E-03	1.0E-03	0.01	0.05
79.89	1.2E-02	3.9E-04	0.01	0.01	0.06
NA	NA	NA	NA	NA	NA
0.399	5.8E-01	2.3E-02	NA	NA	NA
525	0.0E+00	7.1E-05	2.3E-05	0.6	2.90
0.389	6.0E-02	4.4E-01	NA	9.4E-05	0.00
319.5	7.4E-02	3.7E-04	2.3E-04	0.5	2.60
NA	NA	NA	NA	7.5E-02	0.361
NA	NA	NA	NA	NA	NA
NA	0.0E+00	7.0E-05	NA	0.00	0.00
1.6	0.0E+00	3.7E-06	2.3E-05	0.00	0.00
20	0.0E+00	NA	NA	NA	NA
NA	0.0E+00	2.7E-02	NA	0.02	0.11
NA	NA	NA	NA	NA	NA
19.8	0.0E+00	6.6E-05	5.5E-05	0.00	0.00
NA	NA	NA	NA	NA	NA
0.756	0.0E+00	2.4E-05	2.4E-03	0.00	0.01
1.926	0.0E+00	NA	NA	0.00	0.00
128.9	0.0E+00	NA	1.3E-05	0.00	0.00
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
353.7	0.0E+00	NA	NA	NA	NA
11.7	0.0E+00	NA	NA	0.00	0.00
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
0.135	0.0E+00	NA	6.0E-02	0.06	0.29
0.015	0.0E+00	NA	1.7E-02	0.02	0.08

HI(sum) =

3 17

1 21

APPENDIX D
TABLE D43 (continued)
WHITE-FOOTED MOUSE - Uptake Factors and Food Concentrations
LONGHORN ARMY AMMUNITION PLANT - SITE 50
KARNACK, TEXAS

Max Conc. Soil (mg/kg) (2-5 ft)	Plant UF (or intercept & slope)	% Diet 50%	Ext. Plant Conc. (mg/kg)	Worm UF (or intercept & slope)	% Diet 50%	Ext. Worm Conc. (mg/kg)	Invert UF (or intercept & slope)	% Diet NA	Ext. Invert Conc. (mg/kg)	Bird UF (or intercept & slope)	% Diet NA	Ext. Bird Conc. (mg/kg)	Mammal UF (or intercept & slope)	% Diet NA	Ext. Mammal Conc. (mg/kg)	Total Food Conc. (mg/kg) (A+B+C+D+E)	
11100		0.5			0.5											0.0	Aluminum
6.53	-1.744	0.594	0.5	-1.421	0.706	0.5										0.7	Arsenic
140	0.1561		0.5	0.091		0.5										17.3	Beryllium
0.966			0.5			0.5										0.0	Barium
4400			0.5			0.5										0.0	Bismuth
38	0.041		0.5	0.306		0.5										6.6	Calcium
13			0.5			0.5										0.0	Chromium
11.4	0.014	0.423	0.5	1.675	0.264	0.5										0.0	Cobalt
35600			0.5			0.5										6.5	Copper
31.4	1.866	0.787	0.5	0.266		0.5										52.9	Iron
990			0.5			0.5										0.0	Lead
562			0.5			0.5										0.0	Magnesium
10	-1.927	0.791	0.5	1.059		0.5										0.0	Manganese
1000			0.5			0.5										5.7	Nickel
2.92			0.5	0.985		0.5										0.0	Potassium
12			0.5			0.5										1.4	Selenium
60	0.0069		0.5			0.5										0.0	Silver
38	-0.452	0.841	0.5	4.449	0.328	0.5										147.8	Sodium
0.018			0.5			0.5										0.0	Zinc
0.043			0.5			0.5										0.0	4,4-DDD
0.041			0.5			0.5										0.0	4,4-DDT
0.021			0.5			0.5										0.0	Acetone
0.0341			0.5			0.5										0.0	Perchlorate
0.43			0.5			0.5										0.0	Aroclor 1254
0.398			0.5			0.5										0.0	Benzoic acid
0.421			0.5			0.5										0.0	Big 2-ethylhexyl phthalate
1.206			0.5			0.5										0.0	Bisphenol A
0.0059			0.5			0.5										0.0	Trichloroethylene
0			0.5			0.5										0.0	Cadmium
0			0.5			0.5										0.0	Cyanide
0			0.5			0.5										0.0	Sodium
0			0.5			0.5										0.0	cis-1,2-Dichloroethylene
0			0.5			0.5										0.0	Methyl ethyl ketone
0			0.5			0.5										0.0	Methylene chloride
0			0.5			0.5										0.0	p-cymene
0			0.5			0.5										0.0	2,4-dinitrochlorobenzene
0			0.5			0.5										0.0	Arsimony
0			0.5			0.5										0.0	Thallium

APPENDIX D
TABLE D44
RED-TAILED HAWK - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 50
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
	<i>D-3 f</i>													
Aluminum	11100	9200	11	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	6.27E-01	0.00E+00	6.27E-01
Arsenic	6.53	14.2	0.013	0.032	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	7.41E-04	3.06E-03	3.80E-03
Barium	140	310	0.29	5.838	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	1.65E-02	5.68E-01	5.83E-01
Beryllium	0.966	2.66	0.0014	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	7.98E-05	0.00E+00	7.98E-05
Calcium	4400	5500	15	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	8.55E-01	0.00E+00	8.55E-01
Chromium	38	59	0.01	1.813	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	5.70E-04	1.76E-01	1.76E-01
Cobalt	13	31	0.000	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	---	0.00E+00	0.00E+00
Copper	11.4	24.2	0.044	8.775	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	2.51E-03	8.51E-01	8.51E-01
Iron	35600	40000	12	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	6.84E-01	0.00E+00	6.84E-01
Lead	31.4	71.7	0.069	2.741	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	3.93E-03	2.66E-01	2.70E-01
Magnesium	990	5000	1.2	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	6.84E-02	0.00E+00	6.84E-02
Manganese	562	1120	0.000	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	---	0.00E+00	0.00E+00
Nickel	10	37	1.797	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	---	1.74E-01	1.74E-01
Perassium	1000	2900	0.000	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	---	0.00E+00	0.00E+00
Selenium	2.92	3.44	0.000	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	---	0.00E+00	0.00E+00
Strontium	12	82	0.08	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	4.56E-03	0.00E+00	4.56E-03
Vanadium	60	71	0.738	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	---	7.16E-02	7.16E-02
Zinc	38	570	0.47	64.089	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	2.68E-02	6.22E+00	6.22E+00
4,4'-DDD	0.018	0.0027	0.000	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	---	0.00E+00	0.00E+00
4,4'-DDE	0.043	0.003	0.000	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	---	0.00E+00	0.00E+00
4,4'-DDT	0.041	0.003	0.000	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	---	0.00E+00	0.00E+00
Acetone	0.021	0.011	0.0029	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	1.65E-04	0.00E+00	1.65E-04
Perchlorate	0.0361	0.000	0.000	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	---	0.00E+00	0.00E+00
Aroclor 1254	0.43	0.000	0.000	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	---	0.00E+00	0.00E+00
Benzoic acid	0.388	0.000	0.000	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	---	0.00E+00	0.00E+00
Bis(2-ethylhexyl)phthalate	0.421	0.000	0.0073	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	4.16E-04	0.00E+00	4.16E-04
Bis(heptyl)phthalate	1.206	0.000	0.000	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	---	0.00E+00	0.00E+00
Trichloroethene	0.0059	0.033	0.012	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	6.84E-04	0.00E+00	6.84E-04
Cadmium	0.923	0.9479	0.011	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	---	0.00E+00	0.00E+00
Cyanide	900	9	0.0033	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	6.27E-04	0.00E+00	6.27E-04
cis-1,2-Dichloroethylene	0.0024	0.0057	0.011	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	5.13E-01	0.00E+00	5.13E-01
Methyl ethyl ketone	0.0057	0.0014	0.0011	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	1.88E-04	0.00E+00	1.88E-04
methylene chloride	0.014	0.0011	0.0054	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	---	0.00E+00	0.00E+00
p-cymene	0.0054	0.0017	0.0017	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	6.27E-04	0.00E+00	6.27E-04
2,6-dinitrotoluene	0.0054	0.0017	0.0017	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	3.08E-03	0.00E+00	3.08E-03
Antimony	0.0017	0.0017	0.0017	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	9.69E-05	0.00E+00	9.69E-05
Thallium	0.0017	0.0017	0.0017	0.000	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	0.00E+00	---	0.00E+00	0.00E+00

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source
Total EDI = EDI soil sediment + EDI water + EDI food
Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

KARNACK, TEXAS

HI(sum) =	0.9	0.000	0.013	0.9
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APPENDIX D
TABLE D44 (continued)
RED-TAILED HAWK - Uptake Factors and Food Concentrations
LONGHORN ARMY AMMUNITION PLANT - SITE 50
KARNACK, TEXAS

Max Conc. Plant Uf (mg/kg)	% Diet	Est. Plant Conc (mg/kg)	Worm Uf (or Intercept & slope)	% Diet	Est. Worm Conc (mg/kg)	Invert Uf (or Intercept & slope)	% Diet	Est. Invert Conc (mg/kg)	Bird Uf (or Intercept & slope)	% Diet	Est. Bird Conc (mg/kg)	Mammal Uf (or Intercept & slope)	% Diet	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg) (A+B+C+D+E)
0-5 ft	NA	(A)		NA	(B)		NA	(C)		NA	(D)		100	(E)	
11100												-5.0249	0.8354	0.03	Aluminum
6.53												0.0417		0.03	Arsenic
140														5.84	Barium
0.966														0.00	Beryllium
4400														0.00	Calcium
38												-0.5506	0.315	1.81	Chromium
13												1.8533	0.1309	0.00	Cobalt
11.4														8.77	Copper
35600												-0.7216	0.5019	0.00	Iron
31.4														2.74	Lead
990														0.00	Magnesium
562												0.1356	0.1956	0.00	Manganese
10														1.7948	Nickel
1000														0.00	Peassium
2.92														0.00	Selenium
12														0.00	Selenium
60												0.0123	0.01096	0.74	Selenium
38												4.1204		64.11	Vanadium
0.018														0.00	Zinc
0.043														0.00	4,4'-DDD
0.041														0.00	4,4'-DDE
0.021														0.00	4,4'-DDT
0.0361														0.00	Acetone
0.43														0.00	Perchlorate
0.388														0.00	Aroclor 1254
0.421														0.00	Benzoic acid
1.206														0.00	Bis(2-ethylhexyl)phthalate
0.0059														0.00	Bis(2-ethylhexyl)phthalate
0														0.00	Trichloroethene
0														0.00	Cadmium
0														0.00	Cyanide
0														0.00	Sodium
0														0.00	cis-1,2-Dichloroethylene
0														0.00	Methyl ethyl ketone
0														0.00	methylene chloride
0														0.00	p-xylene
0														0.00	2,6-dinitrotoluene
0														0.00	Azinphos
0														0.00	Thallium

APPENDIX D
TABLE D45
NORTHERN BOBWHITE-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 50
KARNACK, TEXAS

Contaminant	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - Food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum	11100	9200	11	0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	8.88E+02	0.00E+00	1.43E+00	0.00E+00	8.89E+02
Arsenic	6.53	14.2	0.013	0.5	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	5.22E-01	0.00E+00	1.69E-03	4.16E-02	5.66E-01
Barium	140	310	0.29	21.9	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	1.12E+01	0.00E+00	3.77E-02	1.70E+00	1.29E+01
Beryllium	0.966	2.66	0.0014	0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	7.73E-02	0.00E+00	1.82E-04	0.00E+00	7.75E-02
Cadmium	4400	5500	15	0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	3.32E+02	0.00E+00	1.95E-03	0.00E+00	3.54E+02
Chromium	38	59	0.01	1.6	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	3.04E+00	0.00E+00	1.30E-03	0.00E+00	3.16E+00
Cobalt	13	31		0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	1.04E+00	0.00E+00	---	0.00E+00	1.04E+00
Copper	11.4	24.2	0.044	2.8	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	9.12E-01	0.00E+00	5.72E-03	2.21E-01	1.14E+00
Iron	35600	40000	12	0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	2.85E+03	0.00E+00	1.56E+00	0.00E+00	2.85E+03
Lead	31.4	71.7	0.069	97.4	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	2.51E+00	0.00E+00	8.97E-03	7.60E+00	1.01E+01
Magnesium	990	5000		0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	7.92E+01	0.00E+00	---	0.00E+00	7.92E+01
Manganese	562	1120	1.2	0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	4.30E+01	0.00E+00	1.56E-01	0.00E+00	4.51E+01
Nickel	10	37		0.9	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	8.00E-01	0.00E+00	---	7.02E-02	8.70E-01
Potassium	1000	2900		0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	8.00E+01	0.00E+00	---	0.00E+00	8.00E+01
Selenium	2.92	3.44		0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	2.34E-01	0.00E+00	---	0.00E+00	2.34E-01
Strontium	12	82		0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	9.60E-01	0.00E+00	1.04E-02	0.00E+00	9.70E-01
Vanadium	0.3	71		0.3	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	4.80E+00	0.00E+00	---	2.29E-02	4.82E+00
Zinc	38	570	0.47	13.6	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	3.04E+00	0.00E+00	6.11E-02	1.05E+00	4.16E+00
4,4'-DDD	0.018	0.0027		0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	1.44E-03	0.00E+00	---	0.00E+00	1.44E-03
4,4'-DDE	0.043			0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	3.44E-03	---	---	0.00E+00	3.44E-03
4,4'-DDT	0.041	0.003		0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	3.28E-03	0.00E+00	---	0.00E+00	3.28E-03
Averone	0.021	0.011	0.0039	0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	1.68E-03	0.00E+00	3.77E-04	0.00E+00	2.06E-03
Perchlorate	0.0161			0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	2.89E-03	---	---	0.00E+00	2.89E-03
Anchlor 1254	0.43			0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	3.44E-02	---	---	0.00E+00	3.44E-02
Benzoic acid	0.388			0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	3.10E-02	---	---	0.00E+00	3.10E-02
Big(2-ethylhexyl)phthalate	0.421		0.0073	0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	3.37E-02	---	9.49E-04	0.00E+00	3.46E-02
Butylbenzyl phthalate	1.206			0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	9.65E-02	---	---	0.00E+00	9.65E-02
Trichloroethylene	0.0059	0.033	0.012	0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	4.72E-04	0.00E+00	1.56E-03	0.00E+00	2.03E-03
Cadmium	0.923	0.9479	0.011	0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	---	0.00E+00	---	0.00E+00	0.00E+00
Cyanide	900		9	0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	---	0.00E+00	1.43E-03	0.00E+00	1.43E-03
cis-1,2-Dichloroethylene	0.115		0.0033	0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	---	0.00E+00	1.17E+00	0.00E+00	1.17E+00
Methyl ethyl ketone	0.0024			0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	---	0.00E+00	4.29E-04	0.00E+00	4.29E-04
methylene chloride	0.0057			0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	---	0.00E+00	---	0.00E+00	0.00E+00
p-cymene	0.014			0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	---	0.00E+00	---	0.00E+00	0.00E+00
2,6-dinitrotoluene			0.011	0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	---	---	1.43E-03	0.00E+00	1.43E-03
Animony			0.054	0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	---	---	7.02E-03	0.00E+00	7.02E-03
Thallium			0.0017	0.0	8.00E-04	0.00E+00	1.30E+05	7.80E-04	0.2	1	---	---	2.21E-04	0.00E+00	2.21E-04

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value. Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D45 (continued)
NORTHERN BOBWHITE-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 50
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0	8.1	1.3E-02	8.11	Aluminum
2.5	0.02	0.2	6.8E-04	0.2	Arsenic
20.8	0.1	0.5	1.8E-03	0.6	Barium
NA	—	—	—	—	Beryllium
NA	—	—	—	—	Calcium
1	0.1	3.04	1.3E-03	3.2	Chromium
NA	—	—	—	—	Cobalt
47	0.0	0.0	1.2E-04	0.0	Copper
NA	—	—	—	—	Iron
1.13	6.7	2.22	7.9E-03	9.0	Lead
NA	—	—	—	—	Magnesium
997	0.0	0.0	1.6E-04	0.0	Manganese
77.4	0.0	0.0	—	0.0	Nickel
NA	—	—	—	—	Potassium
0.4	0.0	0.6	—	0.6	Selenium
NA	—	—	—	—	Strontium
11.4	0.0	0.4	—	0.4	Vanadium
14.5	0.07	0.2	4.2E-03	0.3	Zinc
NA	—	—	—	—	4,4'-DDD
NA	—	—	—	—	4,4'-DDE
0.003	0.00	1.1	—	1.1	4,4'-DDT
NA	—	—	—	—	Acetone
NA	—	—	—	—	Perchlorate
0.18	0.00	0.2	—	0.2	Anchlor 1254
NA	—	—	—	—	Benzoic acid
1.1	0.00	0.0	8.6E-04	0.0	Bis(2-ethylhexyl)phthalate
NA	—	—	—	—	Butylhexyl phthalate
NA	—	—	—	—	Trichloroethene
1.45	0.00	—	—	0.0	Cadmium
NA	—	—	—	—	Cyanide
NA	—	—	—	—	Sodium
NA	—	—	—	—	cis-1,2-Dichloroethylene
NA	—	—	—	—	Methyl ethyl ketone
NA	—	—	—	—	methylene chloride
NA	—	—	—	—	p-Xylene
NA	—	—	—	—	2,6-dinitrotoluene
NA	—	—	—	—	Antimony
NA	—	—	—	—	Thallium

HI(sum) = 7 17 0 24

APPENDIX D
TABLE D45(continued)
NORTHERN BOBWHITE-UP TAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 50
KARNACK, TEXAS

Max Conc. Plant UF Soil (mg/kg) 0-5 ft	% Diet 100%	Est. Plant Conc (mg/kg)	Worm UF (or Intercept & slope)	% Diet NA	Est. Worm Conc (mg/kg)	Invert UF % Diet NA	Est. Invert Conc (mg/kg)	Bird UF % Diet NA	Est. Bird Conc (mg/kg)	Mammal UF	% Diet NA	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg) (A+B+C+D+E)	
11100	1				(B)							(E)		Aluminum
6.53	-1.744	0.594	1	0.5									0.0	Arsenic
140	0.1561		1	21.9									0.5	Barium
0.966			1										21.9	Beryllium
4400			1										0.0	Calcium
38	0.041		1	1.6									0.0	Chromium
13			1										1.6	Cobalt
11.4	0.014	0.423	1	2.8									0.0	Copper
35600			1										2.8	Iron
31.4	1.866	0.787	1	97.4									0.0	Lead
990			1										97.4	Magnesium
562			1										0.0	Manganese
10	-1.927	0.791	1	0.9									0.0	Nickel
1000			1										0.9	Potassium
2.92			1										0.0	Selenium
12			1										0.0	Sroutium
60	0.0049		1	0.3									0.3	Vanadium
38	-0.452	0.841	1	13.6									13.6	Zinc
0.018			1										0.0	4,4'-DDD
0.043			1										0.0	4,4'-DDE
0.041			1										0.0	4,4'-DDT
0.021			1										0.0	Acetone
0.0361			1										0.0	Perchlorate
0.43			1										0.0	Aroclor 1254
0.388			1										0.0	Benzoic acid
0.421			1										0.0	Bis(2-ethylhexyl)phthalate
1.206			1										0.0	Bis(heptyl)phthalate
0.0059			1										0.0	Trichloroethene
0			1										0.0	Cadmium
0			1										0.0	Cyanide
0			1										0.0	Sodium
0			1										0.0	cis-1,2-Dichloroethylene
0			1										0.0	Methyl ethyl ketone
0			1										0.0	Methylene chloride
0			1										0.0	p-cymene
0			1										0.0	2,6-dinitrotoluene
0			1										0.0	Antimony
0			1										0.0	Thallium

Biota Conc = (soil conc)(UF) or
 ln(Biota conc.) = Intercept + Slope(ln(soil conc)) except Se, where Food Conc. = Intercept + Slope(soil conc) OR (Food Conc./ln(soil conc)) = soil conc

APPENDIX D
TABLE D46
AMERICAN WOODCOCK-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 60
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
	0.1×10^{-3}														
Aluminum	4400			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.48E+02	---	---	0.00E+00	3.48E+02
Arsenic	3.37			0.6	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.66E-01	---	---	4.33E-01	6.99E-01
Barium	59			5.4	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	4.66E+00	---	---	4.08E+00	8.74E+00
Calcium	730			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	5.77E+01	---	---	0.00E+00	5.77E+01
Chromium	7.9			2.4	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	6.24E-01	---	---	1.84E+00	2.46E+00
Copper	3.8			7.6	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.00E-01	---	---	5.77E+00	6.07E+00
Iron	8200			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	6.48E+02	---	---	0.00E+00	6.48E+02
Lead	7.76			2.1	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	6.13E-01	---	---	1.57E+00	2.18E+00
Manganese	281			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.22E+01	---	---	0.00E+00	2.22E+01
Nickel	4.8			5.1	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.79E-01	---	---	3.86E+00	4.24E+00
Potassium	600			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	4.74E+01	---	---	0.00E+00	4.74E+01
Selenium	1.78			1.8	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.41E-01	---	---	1.33E+00	1.47E+00
Vanadium	16			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.26E+00	---	---	0.00E+00	1.26E+00
Zinc	14			203.3	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.11E+00	---	---	1.54E+02	1.56E+02
4,4'-DDE	0.203			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.00E-02	---	---	0.00E+00	1.60E-02
4,4'-DDT	0.438			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.02E-02	---	---	0.00E+00	3.62E-02
Aldrin	0.0024			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.90E-04	---	---	0.00E+00	1.90E-04
Dieldrin	25.404			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.01E+00	---	---	0.00E+00	2.01E+00
Endosulfan Sulfate	0.0007			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	5.33E-05	---	---	0.00E+00	5.33E-05
Slitex	0.01396			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.08E-03	---	---	0.00E+00	2.68E-03

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D46 (continued)
AMERICAN WOODCOCK--HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 60
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0	3.2	---	3.17	Aluminum 5.2
2.5	0.17	0.1	---	0.3	Arsenic 0.5
20.8	0.2	0.2	---	0.4	Barium 0.7
NA	---	---	---	---	Calcium ---
1	1.8	0.62	---	2.5	Chromium 4.0
47	0.1	0.0	---	0.1	Copper 0.2
NA	---	---	---	---	Iron ---
1.13	1.4	0.54	---	1.9	Lead 3.2
997	0.0	0.0	---	0.0	Manganese 0.0
77.4	0.0	0.0	---	0.1	Nickel 0.1
NA	---	---	---	---	Potassium ---
0.4	3.3	0.4	---	3.7	Selenium 6.0
11.4	0.0	0.1	---	0.1	Vanadium 0.2
14.5	10.65	0.1	---	10.7	Zinc 17.6
NA	---	---	---	---	4,4'-DDE ---
0.003	0.00	12.1	---	12.1	4,4'-DDT 19.7
NA	---	---	---	---	Aldrin ---
0.077	0.00	26.1	---	26.1	Dieldrin 42.6
NA	---	---	---	---	Endosulfan Sulfate ---
NA	---	---	---	---	Silvex ---

HI(sum) = 18 43 0 61

APPENDIX D
TABLE D46 (continued)
AMERICAN WOODCOCK-UP TAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 60
KARNACK, TEXAS

Max. Conc. Plant UF (mg/kg) 0-5 ft	% Diet NA	Est. Plant Conc (mg/kg)	Worm UF (Intercept & slope)	% Diet 100%	Est. Worm Conc (mg/kg)	Invert UF % Diet NA	Est. Invert Conc (mg/kg)	Bird UF % Diet NA	Est. Bird Conc (mg/kg)	Mammal UF	% Diet NA	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg) (A+B+C+D+E)	
4400													0.0	Aluminum
3.37			-1.421	0.706	1	0.6							0.6	Arsenic
59			0.091		1	5.4							5.4	Barium
730					1								0.0	Calcium
7.9			0.306		1	2.4							2.4	Chromium
3.8			1.675	0.264	1	7.6							7.6	Copper
8200					1								0.0	Iron
7.76			0.266		1	2.1							2.1	Lead
281					1								0.0	Manganese
4.8			1.059		1	5.1							5.1	Nickel
600					1								0.0	Potassium
1.78			0.985		1	1.8							1.8	Selenium
16					1								0.0	Vanadium
14			4.449	0.328	1	203.3							203.3	Zinc
0.203					1								0.0	4,4'-DDE
0.458					1								0.0	4,4'-DDT
0.0024					1								0.0	Aldrin
25.404					1								0.0	Dieldrin
0.0007					1								0.0	Endosulfan Sulfone
0.03396					1								0.0	Silver

Bioa Concsm (soil conc)(UF) or
 ln(Bioa conc) = Intercept + Slope(ln(soil conc)) except Se, where Food Conc. = Intercept + Slope(soil conc) OR (Food Conc. - ln)/sl = soil conc

APPENDIX D
TABLE D47
SHORT-TAILED SHREW--HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 60
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
	0-5 ft														
Aluminum	4400				7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.43E+02	-----	-----	0.00E+00	3.43E+02
Arsenic	3.37				7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.63E-01	-----	-----	3.42E-01	6.04E-01
Barium	59				7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	4.60E+00	-----	-----	3.22E+00	7.82E+00
Calcium	730				7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	5.69E+01	-----	-----	0.00E+00	5.69E+01
Chromium	7.9				7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	6.16E-01	-----	-----	1.45E+00	2.07E+00
Copper	3.8				7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.96E-01	-----	-----	4.56E+00	4.85E+00
Iron	8200				7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	6.40E-02	-----	-----	0.00E+00	6.40E-02
Lead	7.76				7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	6.05E-01	-----	-----	1.24E+00	1.84E+00
Manganese	281				7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.19E+01	-----	-----	0.00E+00	2.19E+01
Nickel	4.8				7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.74E-01	-----	-----	3.05E+00	3.42E+00
Potassium	600				7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	4.68E-01	-----	-----	0.00E+00	4.68E-01
Selenium	1.78				7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.39E-01	-----	-----	1.05E+00	1.10E+00
Vanadium	16				7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.23E+00	-----	-----	0.00E+00	1.23E+00
Zinc	14				7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.09E+00	-----	-----	1.22E+02	1.23E+02
4,4'-DDE	0.203				7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.58E-02	-----	-----	0.00E+00	1.58E-02
4,4'-DDT	0.458				7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.57E-02	-----	-----	0.00E+00	3.57E-02
Aldrin	0.0024				7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.87E-04	-----	-----	0.00E+00	1.87E-04
Diêlrin	25.404				7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.98E+00	-----	-----	0.00E+00	1.98E+00
Endosulfan Sulfate	0.0007				7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	5.46E-05	-----	-----	0.00E+00	5.46E-05
Silver	0.03396				7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.65E-03	-----	-----	0.00E+00	2.65E-03

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs. boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D47(continued)
SHORT-TAILED SHREW-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 60
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
2.295	0.0	1.5E+02	---	149.5	Aluminum
0.15	---	1.8E+00	---	4	Arsenic
11.8	---	3.9E-01	---	0.7	Barium
NA	---	---	---	---	Calcium
7.21	2.0E-01	8.5E-02	---	0.3	Chromium
33.4	1.4E-01	8.9E-03	---	0.1	Copper
NA	---	---	---	---	Iron
17.58	7.0E-02	3.4E-02	---	0.1	Lead
193	0.0E+00	1.1E-01	---	0.1	Manganese
87.91	3.5E-02	4.3E-03	---	0.0	Nickel
NA	---	---	---	---	Potassium
0.44	2.4E+00	3.2E-01	---	2.7	Selenium
0.428	---	2.9E+00	---	2.9	Vanadium
351.7	---	3.1E-03	---	0.3	Zinc
NA	---	---	---	---	4,4'-DDE
1.76	---	2.0E-02	---	0.0	4,4'-DDT
0.44	---	4.3E-04	---	0.0	Aldrin
0.044	---	4.5E+01	---	45.0	Dieldrin
NA	---	---	---	---	Endosulfan Sulfate
NA	---	---	---	---	Silver
HI(sum) =					0
	3	200			206

APPENDIX D
TABLE D47 (continued)
SHORT-TAILED SHREW- UPTAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 60
KARNACK, TEXAS

Max Conc. Plant UF Soil (mg/kg) 0-5 ft	% Diet NA	Est. Plant Conc (mg/kg) (A)	Worm UF (or Intercept & slope)	% Diet 100%	Est. Worm Conc (mg/kg) (B)	Invert UF % Diet NA	Est. Invert Conc (mg/kg) (C)	Bird UF % Diet NA	Est. Bird Conc (mg/kg) (D)	Mammal UF	% Diet NA	Est. Mammal Conc (mg/kg) (E)	Total Food Conc. (mg/kg) (A+B+C+D+E)	
4400					1								0.0	Aluminum
3.37			-1.421	0.706	1	0.6							0.6	Arsenic
59			0.091		1	5.4							5.4	Barium
730					1								0.0	Calcium
7.9			0.306		1	2.4							2.4	Chromium
3.8			1.675	0.264	1	7.6							7.6	Copper
8200					1								0.0	Iron
7.76			0.266		1	2.1							2.1	Lead
281					1								0.0	Manganese
4.8			1.059		1	5.1							5.1	Nickel
600					1								0.0	Potassium
1.78			0.985		1	1.8							1.8	Selenium
16					1								0.0	Vanadium
14			4.449	0.328	1	203.3							203.3	Zinc
0.203					1								0.0	4,4'-DDE
0.458					1								0.0	4,4'-DDT
0.0024					1								0.0	Aldrin
25.404					1								0.0	Dieldrin
0.0007					1								0.0	Endosulfan Sulfate
0.03396					1								0.0	Silver

APPENDIX D
TABLE D48
WHITE-FOOTED MOUSE - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 60
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg) 0-5 ft	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum	4400			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.36E+01	-----	-----	0.00E+00	1.36E+01
Arsenic	3.37			0.5	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.04E-02	-----	-----	7.43E-02	8.48E-02
Barium	59			7.3	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.81E-01	-----	-----	1.17E+00	1.35E+00
Calcium	730			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.26E+00	-----	-----	0.00E+00	2.26E+00
Chromium	6			1.4	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.45E-02	-----	-----	2.19E-01	2.44E-01
Copper	3.8			4.7	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.18E-02	-----	-----	7.50E-01	7.62E-01
Iron	8200			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.54E+01	-----	-----	0.00E+00	2.54E+01
Lead	7.76			17.2	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.41E-02	-----	-----	2.76E+00	2.78E+00
Manganese	281			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	8.71E-01	-----	-----	0.00E+00	8.71E-01
Nickel	4.8			2.8	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.49E-02	-----	-----	4.47E-01	4.62E-01
Potassium	600			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.86E+00	-----	-----	0.00E+00	1.86E+00
Selenium	1.78			0.9	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	5.52E-03	-----	-----	1.40E-01	1.46E-01
Vanadium	16			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	4.96E-02	-----	-----	6.27E-03	5.59E-02
Zinc	14			104.6	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	4.34E-02	-----	-----	1.67E+01	1.68E+01
4,4'-DDE	0.203			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	6.29E-04	-----	-----	0.00E+00	6.29E-04
4,4'-DDT	0.458			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.42E-03	-----	-----	0.00E+00	1.42E-03
Aldrin	0.024			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	7.44E-06	-----	-----	0.00E+00	7.44E-06
Dieldrin	25.404			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	7.88E-02	-----	-----	0.00E+00	7.88E-02
Endosulfan Sulfate	0.0007			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.17E-06	-----	-----	0.00E+00	2.17E-06
Silvex	0.03396			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.05E-04	-----	-----	0.00E+00	1.05E-04

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D48 (continued)
WHITE-FOOTED MOUSE - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 60
KARNACK, TEXAS

RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
2.086	0.0E+00	6.5E+00	---	6.5	6.5E+01
0.136	5.5E-01	7.7E-02	---	0.6	6.2
10.8	1.1E-01	1.7E-02	---	0.12	1.241
NA	---	---	---	---	---
6.55	3.3E-02	3.7E-03	---	0.04	0.37
30.4	2.5E-02	3.9E-04	---	0.03	0.25
NA	---	---	---	---	---
15.98	1.7E-01	1.5E-03	---	0.17	1.73
176	0.0E+00	4.9E-03	---	0.06	0.05
79.89	5.6E-03	1.9E-04	---	0.01	0.06
NA	---	---	---	---	---
0.399	3.5E-01	1.4E-02	---	0.4	3.63
0.389	1.6E-02	1.3E-01	---	0.1	1.43
319.5	5.2E-02	1.4E-04	---	5.3E-02	0.522
NA	---	---	---	---	---
1.6	0.0E+00	8.9E-04	---	0.00	0.01
0.399	0.0E+00	1.9E-05	---	0.00	0.00
0.04	0.0E+00	2.0E+00	---	1.97	19.56
NA	---	---	---	---	---
NA	---	---	---	---	---

HI(sum) = 1 9 0 10

APPENDIX D
TABLE D48 (continued)
WHITE-FOOTED MOUSE - Uptake Factors and Food Concentrations
LONGHORN ARMY AMMUNITION PLANT - SITE 60
KARNACK, TEXAS

Max Conc. Soil (mg/kg) 0-5 ft	Plant UF Intercept	Plant UF (or & slope)	% Diet 50%	Est. Plant Conc. (mg/kg)	Worm UF Intercept	Worm UF (or & slope)	% Diet 50%	Est. Worm Conc. (mg/kg)	Invert UF	% Diet NA	Est. Invert Conc. (mg/kg)	Bid UF	% Diet NA	Est. Bid Conc. (mg/kg)	Mammal UF	% Diet NA	Est. Mammal Conc. (mg/kg)	Total Food Conc. (mg/kg) (A+B+C+D+E)	
4400	-1.744	0.594	0.5	0.5	-1.421	0.706	0.5	0.5	0.3									0.0	Aluminum
3.37	0.1561		0.5	0.5	0.091		0.5	0.5	2.7									0.5	Arsenic
59			0.5	0.5			0.5	0.5										7.3	Barium
730			0.5	0.5			0.5	0.5										0.0	Calcium
7.9	0.041		0.5	0.5	0.306		0.5	0.5	1.2									1.4	Chromium
3.8	0.014	0.423	0.5	0.5	1.675	0.264	0.5	0.5	3.8									4.7	Copper
8200			0.5	0.5			0.5	0.5										0.0	Iron
7.76	1.866	0.787	0.5	16.2	0.266		0.5	0.5	1.0									17.2	Lead
281			0.5	0.5			0.5	0.5										0.0	Manganese
4.8	-1.927	0.791	0.5	0.3	1.059		0.5	0.5	2.5									2.8	Nickel
600			0.5	0.5			0.5	0.5										0.0	Potassium
1.78			0.5	0.5	0.985		0.5	0.5	0.9									0.0	Selenium
16	0.0049		0.5	0.0			0.5	0.5										0.0	Vanadium
0.203	-0.452	0.841	0.5	2.9	4.449	0.328	0.5	0.5	101.6									104.6	Zinc
0.458			0.5	0.5			0.5	0.5										0.0	4,4'-DDE
0.0024			0.5	0.5			0.5	0.5										0.0	4,4'-DDT
25404			0.5	0.5			0.5	0.5										0.0	Aldrin
0.0007			0.5	0.5			0.5	0.5										0.0	Dieldrin
0.03396			0.5	0.5			0.5	0.5										0.0	Endosulfan Sulfate
																		0.0	Silver

APPENDIX D
TABLE D49
RED-TAILED HAWK - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 60
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
	$\phi = 3 \text{ ft}$															
Aluminum	4400			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	-----	0.00E+00	0.00E+00
Arsenic	3.37			0.018	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	-----	1.76E-03	1.76E-03
Barium	59			2.460	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	-----	2.39E-01	2.39E-01
Calcium	730			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	-----	0.00E+00	0.00E+00
Chromium	7.9			1.066	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	-----	1.07E-01	1.07E-01
Copper	3.8			7.599	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	-----	7.37E-01	7.37E-01
Iron	8200			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	-----	0.00E+00	0.00E+00
Lead	7.76			1.359	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	-----	1.32E-01	1.32E-01
Manganese	281			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	-----	0.00E+00	0.00E+00
Nickel	4.8			1.556	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	-----	1.51E-01	1.51E-01
Potassium	600			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	-----	0.00E+00	0.00E+00
Selenium	1.78			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	-----	0.00E+00	0.00E+00
Vanadium	16			0.197	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	-----	0.00E+00	0.00E+00
Zinc	14			63.391	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	-----	1.91E-02	1.91E-02
4,4'-DDE	0.203			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	-----	6.15E+00	6.15E+00
4,4'-DDT	0.458			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	-----	0.00E+00	0.00E+00
Aldrin	0.0024			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	-----	0.00E+00	0.00E+00
Dieldrin	25.404			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	-----	0.00E+00	0.00E+00
Endosulfan Sulfate	0.0007			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	-----	0.00E+00	0.00E+00
Silvex	0.03396			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	-----	-----	-----	0.00E+00	0.00E+00

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D49 (continued)
RED-TAILED HAWK - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 60
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0E+00	NA	0.0E+00	0.0E+00	Aluminum
2.5	NA	NA	NA	---	Arsenic
20.8	1.1E-02	NA	0.0E+00	1.1E-02	Barium
NA	---	NA	---	---	Calcium
1	1.1E-01	NA	0.0E+00	1.1E-01	Chromium
47	1.6E-02	NA	0.0E+00	1.6E-02	Copper
NA	---	NA	---	---	Iron
1.13	1.2E-01	NA	0.0E+00	1.2E-01	Lead
997	0.0E+00	NA	0.0E+00	0.0E+00	Manganese
77.4	2.0E-03	NA	0.0E+00	2.0E-03	Nickel
NA	---	NA	---	---	Potassium
0.4	0.0E+00	NA	0.0E+00	0.0E+00	Selenium
11.4	1.7E-03	NA	0.0E+00	1.7E-03	Vanadium
14.5	4.2E-01	NA	0.0E+00	4.2E-01	Zinc
NA	---	NA	---	---	4,4'-DDE
0.003	0.0E+00	NA	0.0E+00	0.0E+00	4,4'-DDT
NA	---	NA	---	---	Aldrin
0.077	0.0E+00	NA	0.0E+00	0.0E+00	Dieldrin
NA	---	NA	---	---	Endosulfan Sulfate
NA	---	NA	---	---	Silver

HI(sum) = 0.7 0.000 0.000 0.7

APPENDIX D
TABLE D49(continued)
RED-TAILED HAWK - Uptake Factors and Food Concentrations
LONGHORN ARMY AMMUNITION PLANT - SITE 56
KARNACK, TEXAS

Max. Conc. Plant UF (mg/kg)	% Diet	Est. Plant Conc (mg/kg)	Worm UF Intercept & slope)	% Diet	Est. Worm Conc (mg/kg)	Invert UF % Diet	Est. Invert Conc (mg/kg)	Bird UF % Diet	Est. Bird Conc (mg/kg)	Mammal UF Intercept & slope)	% Diet	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg)	
	NA	(A)		NA	(B)	NA	(C)	NA	(D)		100	(E)	(A+B+C+D+E)	
4400										-5.0249	0.8354	0.02	0.00	Aluminum
3.37										0.0417		2.5	0.02	Arsenic
59													2.46	Barium
730										-0.5506	0.315	1.1	0.00	Calcium
7.9										1.8533	0.1309	7.6	1.11	Chromium
3.8													7.60	Copper
8200										-0.7216	0.5019	1.4	0.00	Iron
7.76													1.36	Lead
281										0.1356	0.1956	1.6	0.00	Manganese
4.8													1.5565	Nickel
600													0.00	Potassium
1.78										0.0123		0.2	0.00	Selenium
16										4.1204	0.01096	63.4	0.20	Vanadium
14													63.39	Zinc
0.203													0.00	4,4'-DDE
0.458													0.00	4,4'-DDT
0.0024													0.00	Aldrin
25.404													0.00	Dieldrin
0.0007													0.00	Endosulfan Sulfate
0.03396													0.00	Silver

APPENDIX D
TABLE D50
NORTHERN BOBWHITE-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 60
KARNACK, TEXAS

Constituent	Max Conc. (mg/kg)	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
		0-5 ft														
Aluminum	4400				0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	3.52E+02	-----	-----	0.00E+00	3.52E+02
Arsenic	3.37				0.4	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.70E-01	-----	-----	2.81E-02	2.98E-01
Barium	59				9.2	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	4.72E+00	-----	-----	7.18E-01	5.44E+00
Calcium	730				0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	5.84E+01	-----	-----	0.00E+00	5.84E+01
Chromium	7.9				0.3	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	6.32E-01	-----	-----	2.53E-02	6.57E-01
Copper	3.8				1.8	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	3.04E-01	-----	-----	1.39E-01	4.43E-01
Iron	8200				0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	6.56E+02	-----	-----	0.00E+00	6.56E+02
Lead	7.76				32.4	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	6.21E-01	-----	-----	2.53E+00	3.15E+00
Manganese	281				0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.25E+01	-----	-----	0.00E+00	2.25E+01
Nickel	4.8				0.5	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	3.84E-01	-----	-----	3.93E-02	4.23E-01
Potassium	600				0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	4.80E+01	-----	-----	0.00E+00	4.80E+01
Selenium	1.78				0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.42E-01	-----	-----	0.00E+00	1.42E-01
Vanadium	16				0.1	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.28E+00	-----	-----	6.12E-03	1.29E+00
Zinc	14				5.9	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.12E+00	-----	-----	4.57E-01	1.58E+00
4,4'-DDE	0.203				0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.62E-02	-----	-----	0.00E+00	1.62E-02
4,4'-DDT	0.458				0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	3.66E-02	-----	-----	0.00E+00	3.66E-02
Aldrin	0.0024				0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.92E-04	-----	-----	0.00E+00	1.92E-04
Dieldrin	25.404				0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.03E+00	-----	-----	0.00E+00	2.03E+00
Endosulfan Sulfate	0.0007				0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	5.60E-05	-----	-----	0.00E+00	5.60E-05
Silver	0.03396				0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.72E-03	-----	-----	0.00E+00	2.72E-03

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs. boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D50 (continued)
NORTHERN BOBWHITE-HQS
LONGHORN ARMY AMMUNITION PLANT - SITE 60
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0	3.2	---	3.21	Aluminum 5.3
2.5	0.01	0.1	---	0.1	Arsenic 0.2
20.8	0.0	0.2	---	0.3	Barium 0.4
NA	---	---	---	---	Calcium ---
1	0.0	0.63	---	0.7	Chromium 1.1
47	0.0	0.0	---	0.0	Copper 0.0
NA	---	---	---	---	Iron ---
1.13	2.2	0.55	---	2.8	Lead 4.6
997	0.0	0.0	---	0.0	Manganese 0.0
77.4	0.0	0.0	---	0.0	Nickel 0.0
NA	---	---	---	---	Potassium ---
0.4	0.0	0.4	---	0.4	Selenium 0.6
11.4	0.0	0.1	---	0.1	Vanadium 0.2
14.5	0.03	0.1	---	0.1	Zinc 0.2
NA	---	---	---	---	4,4'-DDE ---
0.003	0.00	12.2	---	12.2	4,4'-DDT 20.0
NA	---	---	---	---	Aldrin ---
0.077	0.00	26.4	---	26.4	Dieldrin 43.2
NA	---	---	---	---	Endosulfan Sulfate ---
NA	---	---	---	---	Silvex ---

HI(sum) = 2 44 0 46

APPENDIX D
TABLE D50(continued)
NORTHERN BOBWHITE-UPTAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 60
KARNACK, TEXAS

Max Conc. Plant UF (mg/kg) 0-5 ft	% Diet 100%	Est. Plant Conc. (mg/kg) (A)	Worm UF (or Intercept & slope)	% Diet NA	Est. Worm Conc. (mg/kg) (B)	Invert UF % Diet NA	Est. Invert Conc. (mg/kg)	Bird UF % Diet NA	Est. Bird Conc. (mg/kg)	Mammal UF	% Diet NA	Est. Mammal Conc. (mg/kg) (E)	Total Food Conc. (mg/kg) (A+B+C+D+E)	
4400	1	1											0.0	Aluminum
3.37	-1.744	0.594	1	0.4									0.4	Arsenic
59	0.1561	9.2	1	9.2									9.2	Barium
730			1										0.0	Calcium
7.9	0.041	0.3	1	0.3									0.3	Chromium
3.8	0.014	0.423	1	1.8									1.8	Copper
8200			1										0.0	Iron
7.76	1.866	0.787	1	32.4									32.4	Lead
281			1										0.0	Manganese
4.8	-1.927	0.791	1	0.5									0.5	Nickel
600			1										0.0	Potassium
1.78			1										0.0	Selenium
16	0.0049	0.1	1	0.1									0.1	Vanadium
14	-0.452	0.841	1	5.9									5.9	Zinc
0.203			1										0.0	4,4'-DDE
0.458			1										0.0	4,4'-DDT
0.0024			1										0.0	Aldrin
25.404			1										0.0	Dieldrin
0.0007			1										0.0	Endosulfan Sulfate
0.03396			1										0.0	Silver

Bioa Conc= (soil conc)(UF) or
 $\ln(\text{Bioa conc.}) = \text{Intercept} + \text{Slope}(\ln(\text{soil conc}))$ except Se, where Food Conc. = Intercept + Slope(soil conc) OR (Food Conc. - Int)/sl = soil conc

APPENDIX D
TABLE D51
AMERICAN WOODCOCK—HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 67
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
	0.5 fl														
Aluminum	13800			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.25E+03	----	----	0.00E+00	1.25E+03
Arsenic	8.86			1.1	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	7.00E-01	----	----	8.56E-01	1.56E+00
Barium	837			76.2	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	6.61E+01	----	----	5.79E+01	1.24E+02
Beryllium	1.28			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.01E-01	----	----	0.00E+00	1.01E-01
Cadmium	0.298			3.2	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.35E-02	----	----	2.40E+00	2.43E+00
Calcium	9460			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	7.47E-02	----	----	0.00E+00	7.47E-02
Chromium	32.3			9.9	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.55E+00	----	----	7.51E+00	1.01E+01
Cobalt	8.86			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	7.00E-01	----	----	0.00E+00	7.00E-01
Copper	6.26			8.7	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	4.95E-01	----	----	6.58E+00	7.08E+00
Iron	27400			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.16E+03	----	----	0.00E+00	2.16E+03
Lead	55.8			14.8	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	4.41E+00	----	----	1.13E+01	1.57E+01
Magnesium	1620			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.28E+02	----	----	0.00E+00	1.28E+02
Manganese	271			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.14E+01	----	----	0.00E+00	2.14E+01
Nickel	14.7			15.6	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	1.10E+00	----	----	1.18E+01	1.30E+01
Potassium	536			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	4.23E+01	----	----	0.00E+00	4.23E+01
Selenium	1.09			1.1	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	8.01E-02	----	----	8.16E-01	9.02E-01
Silver	0.297			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.35E-02	----	----	0.00E+00	2.35E-02
Strontium	40.7			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.22E+00	----	----	0.00E+00	3.22E+00
Vanadium	40.5			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.20E+00	----	----	0.00E+00	3.20E+00
Zinc	34.9			274.3	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	2.76E+00	----	----	2.08E+02	2.11E+02
Methylene Chloride	0.0059			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	4.66E-04	----	----	0.00E+00	4.66E-04
Sodium	452			0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	1	3.57E+01	----	----	0.00E+00	3.57E+01

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/ sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D51 (continued)
AMERICAN WOODCOCK-HQS
LONGHORN ARMY AMMUNITION PLANT - SITE 67
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0	11.4	---	11.38	Aluminum 18.6
2.5	0.34	0.3	---	0.6	Arsenic 1.0
20.8	2.8	3.2	---	6.0	Barium 9.8
NA	---	---	---	---	Beryllium ---
1.45	1.7	0.0	---	1.7	Cadmium 2.7
NA	---	---	---	---	Calcium ---
1	7.5	2.55	---	10.1	Chromium 16.5
NA	---	---	---	---	Cobalt ---
47	0.1	0.0	---	0.2	Copper 0.2
NA	---	---	---	---	Iron ---
1.13	10.0	3.90	---	13.9	Lead 22.8
NA	---	---	---	---	Magnesium ---
997	0.0	0.0	---	0.0	Manganese 0.0
77.4	0.2	0.0	---	0.2	Nickel 0.3
NA	---	---	---	---	Potassium ---
0.4	2.0	0.2	---	2.3	Selenium 3.7
NA	---	---	---	---	Silver ---
NA	---	---	---	---	Strontium ---
11.4	0.0	0.3	---	0.3	Vanadium 0.5
14.5	14.38	0.2	---	14.6	Zinc 23.9
NA	---	---	---	---	Methylene Chloride ---
NA	---	---	---	---	Sodium ---
HI(sum) =					39 22 0 61

APPENDIX D
TABLE D51 (continued)
AMERICAN WOODCOCK-UP TAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 67
KARNACK, TEXAS

Max Conc. Plant UF Soil (mg/kg) 0-5 ft	% Diet NA	Est. Plant Conc (mg/kg) (A)	Worm UF (or Intercept & slope)	% Diet 100%	Est. Worm Conc (mg/kg) (B)	Invert UF NA	% Diet NA	Est. Invert Conc (mg/kg)	Bird UF NA	% Diet NA	Est. Bird Conc (mg/kg)	Mammal UF	% Diet NA	Est. Mammal Conc (mg/kg) (E)	Total Food Conc. (mg/kg) (A+B+C+D+E)	
15800															0.0	Aluminum
8.86			-1.421	0.706											1.1	Arsenic
837			0.091												76.2	Barium
1.28															0.0	Beryllium
0.298			2.114	0.795											3.2	Cadmium
9460															0.0	Calcium
32.3			0.306												9.9	Chromium
8.86															0.0	Cobalt
6.26			1.675	0.264											8.7	Copper
27400															0.0	Iron
55.8			0.266												14.8	Lead
1620															0.0	Magnesium
271															0.0	Manganese
14.7			1.059												15.6	Nickel
536															0.0	Potassium
1.09			0.985												1.1	Selenium
0.297															0.0	Silver
40.7															0.0	Strontium
40.5															0.0	Vanadium
34.9			4.449	0.328											274.3	Zinc
0.0059															0.0	Methylene Chloride
452															0.0	Sodium

Biota Conc = (soil conc)(UF) or
In(Biota conc) = Intercept + Slope ln(soil conc) except Se, where Food Conc = Intercept + Slope(soil conc) OR (Food Conc - Int)/S = soil conc

APPENDIX D
TABLE D52
SHORT-TAILED SHREW-HQS
LONGHORN ARMY AMMUNITION PLANT - SITE 67
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - Food (mg/kg-day)	EDI Total (mg/kg-day)
	0.5-5 ft														
Aluminum	15800			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.21E+03	-----	-----	0.00E+00	1.21E+03
Arsenic	8.86			1.1	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	6.91E-01	-----	-----	6.76E-01	1.37E+00
Barium	837			76.2	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	6.53E+01	-----	-----	4.57E+01	1.11E+02
Beryllium	1.28			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	9.98E-02	-----	-----	0.00E+00	9.98E-02
Cadmium	0.298			3.2	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.33E-02	-----	-----	1.90E+00	1.92E+00
Calcium	9460			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	7.38E+02	-----	-----	0.00E+00	7.38E+02
Chromium	32.3			9.9	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.52E+00	-----	-----	5.93E+00	8.45E+00
Cobalt	8.86			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	6.91E-01	-----	-----	0.00E+00	6.91E-01
Copper	6.26			8.7	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	4.88E-01	-----	-----	5.20E+00	5.69E+00
Iron	27400			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.14E+03	-----	-----	0.00E+00	2.14E+03
Lead	55.8			14.8	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	4.35E+00	-----	-----	8.91E+00	1.33E+01
Magnesium	1620			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.28E+02	-----	-----	0.00E+00	1.28E+02
Manganese	271			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.11E+01	-----	-----	0.00E+00	2.11E+01
Nickel	14.7			15.6	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	1.15E+00	-----	-----	0.00E+00	1.15E+00
Potassium	536			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	4.18E+01	-----	-----	0.00E+00	4.18E+01
Selenium	1.09			1.1	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	8.50E-02	-----	-----	6.44E-01	7.29E-01
Silver	0.297			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.32E-02	-----	-----	0.00E+00	2.32E-02
Strontium	40.7			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.17E+00	-----	-----	0.00E+00	3.17E+00
Vanadium	40.5			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.16E+00	-----	-----	0.00E+00	3.16E+00
Zinc	34.9			274.3	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	2.72E+00	-----	-----	1.63E+02	1.67E+02
Methylene Chloride	0.0059			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	4.60E-04	-----	-----	0.00E+00	4.60E-04
Sodium	452			0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	3.53E+01	-----	-----	0.00E+00	3.53E+01

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value. Hazard Index = Sum of HQs. boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D52 (continued)
SHORT-TAILED SHREW-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 67
KARNACK, TEXAS

NOEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
2.295	0.0	5.4E+02	---	537.0	Aluminum
0.15	---	4.6E+00	---	9	Arsenic
11.8	---	5.5E+00	---	9.4	Barium
1.45	0.0E+00	6.9E+02	---	0.1	Beryllium
2.12	9.0E-01	1.1E+02	---	0.9	Cadmium
NA	---	---	---	---	Calcium
7.21	4.2E-01	3.5E-01	---	1.2	Chromium
NA	---	---	---	---	Cobalt
33.4	1.6E-01	1.5E+02	---	0.2	Copper
NA	---	---	---	---	Iron
17.58	5.1E-01	2.5E-01	---	0.8	Lead
NA	---	---	---	---	Magnesium
193	0.0E+00	1.1E-01	---	0.1	Manganese
87.91	1.1E-01	1.3E+02	---	0.1	Nickel
NA	---	---	---	---	Potassium
0.44	1.5E+00	1.9E-01	---	1.7	Selenium
NA	---	---	---	---	Silver
578	---	5.5E+03	---	5.5E-03	Strontium
0.428	---	7.4E+00	---	7.4	Vanadium
351.7	---	7.7E+03	---	0.5	Zinc
12.9	---	3.6E+05	---	0.0	Methylene Chloride
NA	---	---	---	---	Sodium

HI(sum) = 4 556 0 568

APPENDIX D
TABLE D52 (continued)
SHORT-TAILED SHREW—UPTAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 67
KARNACK, TEXAS

Max Conc. Plant UF Soil (mg/kg) 0--5 ft	% Diet	Est. Plant Conc (mg/kg)	Worm UF (or Intercept & slope)	% Diet	Est. Worm Conc (mg/kg)	Invert UF	% Diet	Est. Invert Conc (mg/kg)	Bird UF	% Diet	Est. Bird Conc (mg/kg)	Mammal UF	% Diet	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg) (A+B+C+D+E)	
	NA	(A)		100%	(B)		NA	(C)		NA	(D)		NA	(E)		
15800			-1.421	0.706	1	1.1									0.0	Aluminum
8.86			0.091		1	76.2									1.1	Arsenic
837					1										76.2	Barium
1.28					1										0.0	Beryllium
0.298			2.114	0.795	1	3.2									3.2	Cadmium
9460					1										0.0	Calcium
32.3			0.306		1	9.9									9.9	Chromium
8.86					1										0.0	Cobalt
6.26			1.675	0.264	1	8.7									8.7	Copper
27400					1										0.0	Iron
55.8			0.266		1	14.8									14.8	Lead
1620					1										0.0	Magnesium
271					1										0.0	Manganese
14.7			1.059		1	15.6									15.6	Nickel
536					1										0.0	Potassium
1.09			0.985		1	1.1									1.1	Selenium
0.297					1										0.0	Silver
40.7					1										0.0	Strontium
40.5					1										0.0	Vanadium
34.9			4.449	0.328	1	274.3									274.3	Zinc
0.0059					1										0.0	Methylene Chloride
452					1										0.0	Sodium

APPENDIX D
TABLE D53
WHITE-FOOTED MOUSE - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 67
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum	13800			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	4.90E+01	-----	-----	0.00E+00	4.90E+01
Arsenic	8.86			0.9	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.75E+02	-----	-----	1.41E+01	1.69E+01
Barium	837			103.4	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.59E+00	-----	-----	1.65E+01	1.91E+01
Beryllium	1.28			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.97E+03	-----	-----	0.00E+00	3.97E+03
Cadmium	0.298			1.7	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	9.24E+04	-----	-----	2.78E+01	2.79E+01
Calcium	9460			5.6	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.03E+01	-----	-----	0.00E+00	2.93E+01
Chromium	32.3			8.86	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.00E+01	-----	-----	8.97E+01	9.97E+01
Cobalt	8.86			5.4	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	2.75E+02	-----	-----	0.00E+00	2.75E+02
Copper	6.26			84.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.94E+02	-----	-----	8.89E+01	8.89E+01
Iron	27400			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	8.49E+01	-----	-----	0.00E+00	8.49E+01
Lead	55.8			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.73E+01	-----	-----	1.34E+01	1.36E+01
Magnesium	1620			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	5.02E+00	-----	-----	0.00E+00	5.02E+00
Manganese	271			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	8.40E+01	-----	-----	0.00E+00	8.40E+01
Nickel	14.7			8.4	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	4.56E+02	-----	-----	0.00E+00	1.34E+00
Potassium	536			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.66E+00	-----	-----	0.00E+00	1.66E+00
Selenium	1.09			0.5	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	3.38E+03	-----	-----	8.39E+02	8.39E+02
Silver	0.297			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	9.21E+04	-----	-----	0.00E+00	9.21E+04
Strontium	46.7			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.26E+01	-----	-----	0.00E+00	1.26E+01
Vanadium	46.5			0.1	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.26E+01	-----	-----	1.39E+02	1.41E+01
Zinc	34.9			143.5	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.08E+01	-----	-----	2.30E+01	2.31E+01
Methylene Chloride	0.0059			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.83E+05	-----	-----	0.00E+00	1.83E+05
Sodium	452			0.0	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	1.40E+00	-----	-----	0.00E+00	1.40E+00

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D53 (continued)
WHITE-FOOTED MOUSE - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 67
KARNACK, TEXAS

RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Solid/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
2.086	0.0E+00	2.3E+01	---	23.5	8.3E+01
0.116	1.0E+00	2.0E-01	---	1.2	4.4
10.8	1.5E+00	2.4E-01	---	1.77	6.250
1.32	0.0E+00	3.0E-03	---	0.00	0.0
1.926	1.4E-01	4.8E-04	---	0.14	0.5
NA	---	---	---	---	---
6.55	1.4E-01	1.5E-02	---	0.15	0.54
NA	---	---	---	---	---
30.4	2.9E-02	6.4E-04	---	0.03	0.10
NA	---	---	---	---	---
15.98	4.4E-01	1.1E-02	---	0.85	3.00
NA	---	---	---	---	---
176	0.0E+00	4.8E-03	---	0.00	0.02
79.89	1.7E-02	5.7E-04	---	0.02	0.06
NA	---	---	---	---	---
0.399	2.2E-01	8.5E-03	---	0.2	0.79
NA	---	---	---	---	---
525	0.0E+00	2.4E-04	---	2.4E-04	0.00
0.389	4.1E-02	3.2E-01	---	0.4	1.28
319.5	7.2E-02	3.4E-04	---	7.2E-02	0.255
11.7	0.0E+00	1.6E-06	---	0.00	0.00
NA	---	---	---	---	---

HI(sum) = 4 24 0 28

APPENDIX D
TABLE D53 (continued)
WHITE-FOOTED MOUSE - Uptake Factors and Food Concentrations
LONGHORN ARMY AMMUNITION PLANT - SITE 67
KARNACK, TEXAS

Max Conc (mg/kg)	Plant UF (or Intercept & slope)	% Diet 50%	Est Plant Conc (mg/kg)	Worm UF (or Intercept & slope)	% Diet 50%	Est. Worm Conc (mg/kg)	Invert UF (or Intercept & slope)	% Diet 50%	Est. Invert Conc (mg/kg)	Bird UF (or Intercept & slope)	% Diet 50%	Est. Bird Conc (mg/kg)	Mammal UF (or Intercept & slope)	% Diet 50%	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg)	
(0-5 ft)			(A)			(B)			(C)			(D)			(E)	(A+B+C+D+E)	
15800	-1.744	0.594	0.5	-1.421	0.706	0.5										0.0	Aluminum
8.86	0.1561		0.5	0.091		0.5										0.9	Arsenic
837			0.5			0.5										103.4	Barium
1.28			0.5			0.5										0.0	Beryllium
0.298	-0.18	0.819	0.5	2.114	0.795	0.5										1.7	Cadmium
9460			0.5			0.5										0.0	Calcium
32.3	0.041		0.5	0.306		0.5										5.6	Chromium
8.86	0.014	0.423	0.5	1.675	0.264	0.5										0.0	Cobalt
6.26			0.5			0.5										5.4	Copper
27400	1.866	0.787	0.5	0.266		0.5										0.0	Iron
55.8			0.5			0.5										84.0	Lead
1620			0.5			0.5										0.0	Magnesium
271	-1.927	0.791	0.5	1.059		0.5										0.0	Manganese
14.7			0.5			0.5										8.4	Nickel
536			0.5			0.5										0.0	Potassium
1.09			0.5			0.5										0.5	Selenium
0.297			0.5			0.5										0.0	Silver
40.7			0.5			0.5										0.0	Strontium
40.5	0.0049		0.5			0.5										0.1	Vanadium
34.9	-0.452	0.841	0.5	4.449	0.328	0.5										143.5	Zinc
0.0059			0.5			0.5										0.0	Methylene Chloride
452			0.5			0.5										0.0	Sodium

APPENDIX D
TABLE D54
RED-TAILED HAWK - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 67
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - Food (mg/kg-day)	EDI Total (mg/kg-day)
	0.5 ft														
Aluminum	15800			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	---	---	0.00E+00	0.00E+00
Arsenic	8.86			0.041	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	---	---	3.94E-03	3.94E-03
Barium	837			34.903	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	---	---	3.39E+00	3.39E+00
Beryllium	1.28			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	---	---	0.00E+00	0.00E+00
Cadmium	0.298			0.142	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	---	---	1.37E-02	1.37E-02
Calcium	9460			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	---	---	0.00E+00	0.00E+00
Chromium	32.3			1.723	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	---	---	1.67E-01	1.67E-01
Cobalt	8.86			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	---	---	0.00E+00	0.00E+00
Copper	6.26			8.112	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	---	---	7.87E-01	7.87E-01
Iron	27400			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	---	---	0.00E+00	0.00E+00
Lead	55.8			3.658	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	---	---	3.55E-01	3.55E-01
Magnesium	1620			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	---	---	0.00E+00	0.00E+00
Manganese	271			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	---	---	0.00E+00	0.00E+00
Nickel	14.7			1.937	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	---	---	1.88E-01	1.88E-01
Potassium	536			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	---	---	0.00E+00	0.00E+00
Selenium	1.09			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	---	---	0.00E+00	0.00E+00
Silver	0.297			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	---	---	0.00E+00	0.00E+00
Sroutium	40.7			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	---	---	0.00E+00	0.00E+00
Vanadium	40.5			0.498	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	---	---	4.83E-02	4.83E-02
Zinc	34.9			64.029	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	---	---	6.21E+00	6.21E+00
Methylene Chloride	0.0059			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	---	---	0.00E+00	0.00E+00
Sodium	452			0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	0.00E+00	---	---	0.00E+00	0.00E+00

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/ sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE DS4 (continued)
RED-TAILED HAWK - HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 67
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0E+00	NA	0.0E+00	0.0E+00	Aluminum
2.5	NA	NA	NA	---	Arsenic
20.8	1.6E-01	NA	0.0E+00	1.6E-01	Barium
NA	---	NA	---	---	Beryllium
1.45	9.5E-03	NA	0.0E+00	9.5E-03	Cadmium
NA	---	NA	---	---	Calcium
1	1.7E-01	NA	0.0E+00	1.7E-01	Chromium
NA	---	NA	---	---	Cobalt
47	1.7E-02	NA	0.0E+00	1.7E-02	Copper
NA	---	NA	---	---	Iron
1.13	3.1E-01	NA	0.0E+00	3.1E-01	Lead
NA	---	NA	---	---	Magnesium
997	0.0E+00	NA	0.0E+00	0.0E+00	Manganese
77.4	2.4E-03	NA	0.0E+00	2.4E-03	Nickel
NA	---	NA	---	---	Potassium
0.4	0.0E+00	NA	0.0E+00	0.0E+00	Selenium
NA	---	NA	---	---	Silver
NA	---	NA	---	---	Strontium
11.4	4.2E-03	NA	0.0E+00	4.2E-03	Vanadium
14.5	4.3E-01	NA	0.0E+00	4.3E-01	Zinc
NA	---	NA	---	---	Methylene Chloride
NA	---	NA	---	---	Sodium

HI(sum) = 1.1 0.000 0.000 1.1

APPENDIX D
TABLE D54 (continued)
RED-TAILED HAWK - Uptake Factors and Food Concentrations
LONGHORN ARMY AMMUNITION PLANT - SITE 67
KARNACK, TEXAS

Max. Conc. Plant UF Soil (mg/kg) 0--5 ft	% Diet NA	Est. Plant Conc (mg/kg)	Worm UF Intercept (mg/kg)	% Diet NA	Est. Worm Conc (mg/kg)	Invert UF % Diet NA	Est. Invert Conc (mg/kg)	Brad UF % Diet NA	Est. Bird Conc (mg/kg)	Mammal UF Intercept (mg/kg)	(or & slope)	% Diet 100	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg)	(A+B+C+D+E)
15800															Aluminum
8.86										-5.0249	0.8354		0.04	0.04	Arsenic
837										0.0417			34.9	34.9	Barium
1.28														0.00	Beryllium
0.298										-0.8408	0.92		0.1	0.14	Cadmium
9460										-0.5506	0.315		1.7	0.00	Calcium
32.3														1.72	Chromium
8.86										1.8513	0.1309		8.1	0.00	Cobalt
6.26														3.66	Copper
27400										-0.7216	0.5019		3.7	0.00	Iron
55.8														0.00	Lead
1620														0.00	Magnesium
271										0.1356	0.1956		1.9	0.00	Manganese
14.7														1.9374	Nickel
536														0.00	Potassium
1.09														0.00	Selenium
0.297														0.00	Silver
40.7														0.00	Strontium
40.5										0.0123			0.5	0.50	Vanadium
34.9										-4.1204	0.01096		64.0	64.03	Zinc
0.0059														0.00	Methylene Chloride
452														0.00	Sodium

APPENDIX D
TABLE D55
NORTHERN BOBWHITE-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 67
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
	<i>0--5 ft</i>												
Aluminum	15800			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1.26E+03	----	0.00E+00	1.26E+03
Antic	8.86			0.6	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	7.09E-01	----	4.98E-02	7.59E-01
Barium	837			130.7	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	6.70E+01	----	1.02E+01	7.72E+01
Beryllium	1.28			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1.02E-01	----	0.00E+00	1.02E-01
Cadmium	0.298			0.3	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	2.38E-02	----	2.42E-02	4.80E-02
Calcium	9460			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	7.57E+02	----	0.00E+00	7.57E+02
Chromium	32.3			1.3	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	2.58E+00	----	1.03E-01	2.69E+00
Cobalt	8.86			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	7.09E-01	----	0.00E+00	7.09E-01
Copper	6.26			2.2	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	5.01E-01	----	1.72E-01	6.73E-01
Iron	27400			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	2.19E+03	----	0.00E+00	2.19E+03
Lead	55.8			153.1	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	4.46E+00	----	1.19E+01	1.64E+01
Magnesium	1620			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1.30E+02	----	0.00E+00	1.30E+02
Manganese	271			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	2.17E+01	----	0.00E+00	2.17E+01
Nickel	14.7			1.2	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1.18E+00	----	9.52E-02	1.27E+00
Potassium	536			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	4.29E+01	----	0.00E+00	4.29E+01
Selenium	1.09			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	8.72E-02	----	0.00E+00	8.72E-02
Silver	0.297			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	2.38E-02	----	0.00E+00	2.38E-02
Strontium	40.7			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	3.26E+00	----	0.00E+00	3.26E+00
Vanadium	40.5			0.2	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	3.26E+00	----	1.55E-02	3.26E+00
Zinc	34.9			12.6	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	2.79E+00	----	9.85E-01	3.78E+00
Methylene Chloride	0.0059			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	4.72E-04	----	0.00E+00	4.72E-04
Sodium	452			0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	3.62E+01	----	0.00E+00	3.62E+01

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil / sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D55 (continued)
NORTHERN BOBWHITE-HQs
LONGHORN ARMY AMMUNITION PLANT - SITE 67
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0	11.5	---	11.52	18.9
2.5	0.02	0.3	---	0.3	0.5
20.8	0.5	3.2	---	3.7	6.1
NA	---	---	---	---	---
1.45	0.0	0.0	---	0.0	0.1
NA	---	---	---	---	---
1	0.1	2.58	---	2.7	4.4
NA	---	---	---	---	---
47	0.0	0.0	---	0.0	0.0
NA	---	---	---	---	---
1.13	16.6	3.95	---	14.5	23.8
NA	---	---	---	---	---
997	0.0	0.0	---	0.0	0.0
77.4	0.0	0.0	---	0.0	0.0
NA	---	---	---	---	---
0.4	0.0	0.2	---	0.2	0.4
NA	---	---	---	---	---
NA	---	---	---	---	---
11.4	0.0	0.3	---	0.3	0.5
14.5	0.07	0.2	---	0.3	0.4
NA	---	---	---	---	---
NA	---	---	---	---	---

HI(sum) = 11 22 0 34

APPENDIX D
TABLE D55(continued)
NORTHERN BOBWHITE-UP TAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - SITE 67
KARNACK, TEXAS

Max Conc. Plant UF Soil (mg/kg) 0-5 ft	% Diet	Est. Plant Conc (mg/kg)	Worm UF (or Intercept & slope)	% Diet	Est. Worm Conc (mg/kg)	Invert UF	% Diet	Est. Invert Conc (mg/kg)	Bird UF	% Diet	Est. Bird Conc (mg/kg)	Mammal UF	% Diet	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg) (A+B+C+D+E)	
	100%	(A)		NA	(B)		NA			NA			NA	(E)		
15800															0.0	Aluminum
8.86	-1.744	0.594													0.6	Arsenic
837	0.1561	130.7													130.7	Barium
1.28															0.0	Beryllium
0.298	-0.18	0.819													0.3	Cadmium
9460															0.0	Calcium
32.3	0.041	1.3													1.3	Chromium
8.86															0.0	Cobalt
6.26	0.014	0.423													2.2	Copper
27400															0.0	Iron
55.8	1.866	0.787													153.1	Lead
1620															0.0	Magnesium
271															0.0	Manganese
14.7	-1.927	0.791													1.2	Nickel
536															0.0	Potassium
1.09															0.0	Selenium
0.297															0.0	Silver
40.7															0.0	Strontium
40.5	0.0049	0.2													0.2	Vanadium
34.9	-0.452	0.841													12.6	Zinc
0.0059															0.0	Methylene Chloride
452															0.0	Sodium

Bioa Conc= (soil conc)(UF) or
 $\ln(\text{Bioa conc.}) = \text{Intercept} + \text{Slope}(\ln(\text{soil conc}))$ except Se, where Food Conc. = Intercept + slope(soil conc) OR (Food Conc. - Int)/sl = soil conc.

APPENDIX D
AMERICAN WOODCOCK-HQ
LONGHORN ARMY AMMUNITION PLANT - Grant Prairie Creek
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-d)	Ingestion Rate - SW (mg/kg-d)	Ingestion Rate - Food (mg/kg-d)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-d)	EDI - SW (mg/kg-d)	EDI - Food (mg/kg-d)	EDI - Total (mg/kg-d)
Aluminum	1000	1.4	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	5.40E-01	0.00E+00	0.00E+00	5.40E-01
Antimony		0.009	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	6.90E-03	0.00E+00	0.00E+00	6.90E-03
Arsenic	5.95	0.017	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	1.70E-03	0.00E+00	0.00E+00	1.70E-03
Barium	310	0.21	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	2.10E-02	0.00E+00	0.00E+00	2.10E-02
Beryllium	1.9	0.0007	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	7.60E-05	0.00E+00	0.00E+00	7.60E-05
Bismuth	6500	16	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	1.60E-01	0.00E+00	0.00E+00	1.60E-01
Boron	71	0.012	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	1.30E-03	0.00E+00	0.00E+00	1.30E-03
Bromine	31	0.029	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	2.90E-03	0.00E+00	0.00E+00	2.90E-03
Calcium	40000	29	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	2.90E-03	0.00E+00	0.00E+00	2.90E-03
Carbon	972	0.052	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	3.00E-03	0.00E+00	0.00E+00	3.00E-03
Cadmium	6400	5.6	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	3.00E-03	0.00E+00	0.00E+00	3.00E-03
Chlorine	1320	2.18	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	6.60E-01	0.00E+00	0.00E+00	6.60E-01
Chromium	0.55	0.0	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	2.10E-01	0.00E+00	0.00E+00	2.10E-01
Copper	49	4.83	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fluorine	3800	0.006	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	4.30E-01	0.00E+00	0.00E+00	4.30E-01
Gallium	508	0.001	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Germanium	15	0.51	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	1.00E-01	0.00E+00	0.00E+00	1.00E-01
Hydrogen	82	0.0	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Iodine	54	0.51	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Iron	140	10.3	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lead	0.3479	0.011	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lithium	700	0.023	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Magnesium	22	0.0	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manganese	0.972	0.0034	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mercury	0.55	0.0	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Molybdenum	49	4.83	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel	3800	0.006	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Phosphorus	508	0.001	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potassium	15	0.51	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Selenium	82	0.0	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Silver	54	0.51	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sulfur	140	10.3	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Titanium	0.3479	0.011	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Vanadium	700	0.023	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Zinc	22	0.0	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chloride	0.972	0.0034	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cyanide	0.55	0.0	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nitrate	49	4.83	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Perchlorate	3800	0.006	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sulfate	508	0.001	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Thallium	15	0.51	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Arsenic	0.972	0.0034	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Barium	310	0.21	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Bismuth	6500	16	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Boron	71	0.012	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Bromine	31	0.029	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Calcium	40000	29	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Carbon	972	0.052	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium	6400	5.6	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chlorine	1320	2.18	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chromium	0.55	0.0	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Copper	49	4.83	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Fluorine	3800	0.006	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Gallium	508	0.001	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Germanium	15	0.51	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hydrogen	82	0.0	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Iodine	54	0.51	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Iron	140	10.3	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lead	0.3479	0.011	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lithium	700	0.023	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Magnesium	22	0.0	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manganese	0.972	0.0034	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mercury	0.55	0.0	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Molybdenum	49	4.83	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel	3800	0.006	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Phosphorus	508	0.001	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potassium	15	0.51	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Selenium	82	0.0	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Silver	54	0.51	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sulfur	140	10.3	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Titanium	0.3479	0.011	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Vanadium	700	0.023	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Zinc	22	0.0	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chloride	0.972	0.0034	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cyanide	0.55	0.0	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nitrate	49	4.83	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Perchlorate	3800	0.006	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sulfate	508	0.001	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Thallium	15	0.51	0.0	7.90E-04	0.00E+00	1.00E+01	0.198	0.00E+00	0			

APPENDIX D
TABLE D-57

Estimated Daily Intake (EDI) = Medium specific concentration $\times$ Ingestion Rate $\times$ Fraction Ingested from ambient source

APPENDIX D
TABLE B57 (continued)
SHORT-TAILED SHEW—HQ
LONGHORN ARMY AMMUNITION PLANT - Goose Prairie Creek
KARNACK, TEXAS

NOXEL RTN (mg/kg-dry)	Food Based Quotient	Soil/Feed Based Quotient	Water Based Quotient	Total Hazard Quotient	Chemical Percent of Total HQ (%)
2,375	0.0	---	3.5E-01	0.4	6.8E-01
0.144	---	---	6.9E-02	0	1.3E-01
0.115	---	---	1.7E-02	0	3.2E-02
1.1	---	---	2.7E-03	0.0	5.1E-01
1.45	0.0E+00	---	7.3E-04	0.0	1.4E-02
NA	---	---	---	---	---
7.31	0.0E+00	---	2.5E-04	0.0	4.8E-02
NA	---	---	---	---	---
3.4	0.0E+00	---	1.3E-04	0.0	2.5E-02
NA	---	---	---	---	---
17.58	0.0E+00	---	4.4E-04	0.0	6.5E-02
NA	---	---	---	---	---
19	0.0E+00	---	1.7E-03	0.0	3.2E-01
0.07	---	---	---	0.0	0.0E+00
87.91	0.0E+00	---	---	0.0	0.0E+00
NA	---	---	---	---	---
0.44	0.0E+00	---	2.0E-03	0.0	3.7E-01
NA	---	---	---	---	---
576	---	---	---	1.4E-04	---
0.428	---	---	---	0.0	0.0E+00
331.7	---	---	2.3E-04	0.0	4.5E-02
NA	---	---	---	---	---
141.9	---	---	1.3E-04	0.0	2.2E-03
1395	---	---	2.7E-04	0.0	4.3E-02
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
0.016	---	---	3.9E-02	0.0	5.6E+00
22	---	---	3.6E-02	0.0	7.9E+00
21.8	---	---	3.6E-03	0.0	7.6E-01
NA	---	---	---	---	---
NA	---	---	---	---	---
23	---	---	7.5E-04	0.0	1.4E-02
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	1.3E-07	0.0	2.5E-05
NA	---	---	---	---	---
30.9	---	---	1.1E-04	0.0	2.1E-02
0.022	---	---	2.2E-03	0.0	4.2E-01
0.374	---	---	2.8E-03	0.0	3.9E-01
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
NA	---	---	---	---	---
0.067	---	---	---	0.0	0.0E+00
0.53	---	---	---	0.0	0.0E+00
NA	---	---	---	---	---
NA	---	---	---	---	---
6.04	---	---	---	0.0	0.0E+00

HQ (sum) = 0 0 1 0.5

APPENDIX D

$$Bioda\ Conc = (soft\ conc \times UF) \text{ or}$$

APPENDIX D
TABLE D61
AMERICAN WOODCOCK—HQs
LONGHORN ARMY AMMUNITION PLANT - Central Creek
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum					0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	0.00E+00	2.80E-01	0.00E+00	2.80E-01
Antimony			2.8		0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	---	2.70E-03	0.00E+00	2.70E-03
Arsenic			0.027		0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	---	1.20E-03	0.00E+00	1.20E-03
Barium			0.075		0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	0.00E+00	7.50E-03	0.00E+00	7.50E-03
Beryllium					0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	---	---	0.00E+00	0.00E+00
Calcium			25		0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	0.00E+00	2.50E+00	0.00E+00	2.50E+00
Chromium					0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	0.00E+00	---	0.00E+00	0.00E+00
Cobalt					0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	0.00E+00	---	0.00E+00	0.00E+00
Copper			0.009		0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	---	9.00E-04	0.00E+00	9.00E-04
Iron			8.4		0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	0.00E+00	8.40E-01	0.00E+00	8.40E-01
Lead			0.01		0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	0.00E+00	1.00E-03	0.00E+00	1.00E-03
Magnesium			19		0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	0.00E+00	1.90E+00	0.00E+00	1.90E+00
Manganese			2.39		0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	0.00E+00	2.39E-01	0.00E+00	2.39E-01
Nickel					0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	0.00E+00	---	0.00E+00	0.00E+00
Potassium					0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	0.00E+00	---	0.00E+00	0.00E+00
Selenium					0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	0.00E+00	---	0.00E+00	0.00E+00
Srionium			0.44		0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	0.00E+00	4.40E-02	0.00E+00	4.40E-02
Vanadium					0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	0.00E+00	---	0.00E+00	0.00E+00
Zinc			0.04		0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	0.00E+00	4.00E-03	0.00E+00	4.00E-03
Chloride			31.8		0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	---	3.18E+00	0.00E+00	3.18E+00
Nitrate			0.205		0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	---	2.05E-02	0.00E+00	2.05E-02
Sodium			24		0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	---	2.40E+00	0.00E+00	2.40E+00
Sulfate			110		0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	---	1.10E+01	0.00E+00	1.10E+01
Acetone			0.01		0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	---	1.00E-03	0.00E+00	1.00E-03
Methylene chloride			0.017		0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	---	1.70E-03	0.00E+00	1.70E-03
Cadmium			6.27		0.0	7.90E+04	0.00E+00	1.00E+05	7.60E+05	0.198	---	0.00E+00	---	0.00E+00	0.00E+00

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D61 (continued)
AMERICAN WOODCOCK—HQs
LONGHORN ARMY AMMUNITION PLANT - Central Creek
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0	---	2.6E-03	0.00	53.0
NA	---	---	---	---	Antimony
2.5	0.00	---	4.8E-04	0.0	10.0
20.8	0.0	---	3.6E-04	0.0	7.5
NA	---	---	---	---	Barium
NA	---	---	---	---	Beryllium
1	0.0	---	---	0.0	---
NA	---	---	---	---	Calcium
47	0.0	---	---	---	Chromium
NA	---	---	---	---	Cobalt
NA	---	---	1.9E-05	0.0	0.4
1.13	0.0	---	8.8E-04	0.0	---
NA	---	---	---	---	Copper
997	0.0	---	2.4E-04	0.0	---
77.4	0.0	---	---	0.0	---
NA	---	---	---	---	Iron
0.4	0.0	---	---	0.0	18.4
NA	---	---	---	---	Lead
14.5	0.00	---	2.8E-04	0.0	---
NA	---	---	---	---	Magnesium
NA	---	---	---	---	Manganese
77.4	0.0	---	---	0.0	5.0
NA	---	---	---	---	Nickel
0.4	0.0	---	---	0.0	0.0
NA	---	---	---	---	Potassium
11.4	0.0	---	---	0.0	---
14.5	0.00	---	---	0.0	0.0
NA	---	---	---	0.0	0.0
NA	---	---	---	---	Vanadium
NA	---	---	---	---	Zinc
NA	---	---	---	---	Chloride
NA	---	---	---	---	Nitrate
NA	---	---	---	---	Sodium
NA	---	---	---	---	Sulfate
NA	---	---	---	---	Acetone
1.45	0.00	---	---	0.0	0.0
					Methylene chloride
					Cadmium

HI(sum) = 0 0 0 0.005

APPENDIX D
TABLE D61 (continued)
AMERICAN WOODCOCK-UP TAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - Central Creek
KARNACK, TEXAS

Max. Conc. Plant UF (mg/kg)	% Diet	Est. Plant Conc (mg/kg)	Worms UF (or Intercept & slope)	% Diet	Est. Worm Conc (mg/kg)	Invert UF	% Diet	Est. Invert Conc (mg/kg)	Bird UF	% Diet	Est. Bird Conc (mg/kg)	Mammal UF	% Diet	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg)	
0--5 ft	NA	(A)		100%	(B)		NA			NA			NA	(E)	(A+B+C+D+E)	
0					1										0.0	Aluminum
0					1										0.0	Antimony
0			-1.421	0.706	1	0.0									0.0	Arsenic
0			0.091		1	0.0									0.0	Barium
0					1										0.0	Beryllium
0					1										0.0	Calcium
0			0.306		1	0.0									0.0	Chromium
0					1										0.0	Cobalt
0			1.675	0.264	1	0.0									0.0	Copper
0					1										0.0	Iron
0			0.266		1	0.0									0.0	Lead
0					1										0.0	Magnesium
0					1										0.0	Manganese
0			1.059		1	0.0									0.0	Nickel
0					1										0.0	Potassium
0			0.985		1	0.0									0.0	Selenium
0					1										0.0	Strontium
0					1										0.0	Vanadium
0			4.449	0.328	1	0.0									0.0	Zinc
0					1										0.0	Chloride
0					1										0.0	Nitrate
0					1										0.0	Sodium
0					1										0.0	Sulfate
0					1										0.0	Acetone
0					1										0.0	Methylene chloride
0					1										0.0	Cadmium

Biota Conc = (soil conc)(UF) or
 ln(Biota conc.) = Intercept + Slope(ln(soil conc)) except Se, where Food Conc. = Intercept + Slope(soil conc) OR (Food Conc. - ln)/sl = soil conc

APPENDIX D
TABLE D62
SHORT-TAILED SHREW-HQs
LONGHORN ARMY AMMUNITION PLANT - Central Creek
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum		5200	2.8	0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	4.20E-01	0.00E+00	4.20E-01
Antimony			0.027	0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	4.05E-03	0.00E+00	4.05E-03
Arsenic		3.3	0.012	0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	1.80E-03	0.00E+00	1.80E-03
Barium		90	0.075	0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	1.13E-02	0.00E+00	1.13E-02
Beryllium		1.02		0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Calcium		1500		0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	3.75E+00	0.00E+00	3.75E+00
Chromium		24	25	0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cobalt		15		0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Copper		10.3	0.009	0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	1.35E-03	0.00E+00	1.35E-03
Iron		20000	8.4	0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	1.26E+00	0.00E+00	1.26E+00
Lead		13.6	0.01	0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	1.50E-03	0.00E+00	1.50E-03
Magnesium		2200	19	0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	2.85E+00	0.00E+00	2.85E+00
Manganese		423	2.39	0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	3.59E-01	0.00E+00	3.59E-01
Nickel		25		0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potassium		960		0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Selenium		1.9		0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	6.60E-02	0.00E+00	6.60E-02
Strontium		27	0.44	0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Vanadium		27		0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	6.00E-03	0.00E+00	6.00E-03
Zinc		49	0.04	0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	4.77E+00	0.00E+00	4.77E+00
Chloride			31.8	0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	3.08E-02	0.00E+00	3.08E-02
Nitrate			0.205	0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	3.60E+00	0.00E+00	3.60E+00
Sodium			24	0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	1.65E+01	0.00E+00	1.65E+01
Sulfate			110	0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	1.50E-03	0.00E+00	1.50E-03
Acetone			0.01	0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	2.55E-03	0.00E+00	2.55E-03
Methylene chloride			0.017	0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium		6.27		0.0	7.80E+04	0.00E+00	1.50E+05	0.015	1	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D62 (continued)
SHORT-TAILED SHREW-HQs
LONGHORN ARMY AMMUNITION PLANT - Central Creek
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
2,295	0.0	---	1.8E-01	0.2	8.1E-01
0.149	---	---	2.7E-02	0	1.2E-01
0.15	---	---	1.2E-02	0	5.3E-00
11.8	---	---	9.5E-04	0.0	4.2E-01
1.45	0.0E+00	---	---	0.0	0.0E+00
NA	---	---	---	---	---
7.21	0.0E+00	---	---	0.0	0.0E+00
NA	---	---	---	---	---
31.4	0.0E+00	---	4.0E-05	0.0	1.8E-02
NA	---	---	---	---	---
17.58	0.0E+00	---	8.5E-05	0.0	3.8E-02
NA	---	---	---	---	---
193	0.0E+00	---	1.9E-03	0.0	8.2E-01
87.91	0.0E+00	---	---	0.0	0.0E+00
NA	---	---	---	---	---
0.44	0.0E+00	---	---	0.0	0.0E+00
578	---	---	1.1E-04	1.1E-04	5.1E-02
0.428	---	---	---	0.0	0.0E+00
351.7	---	---	1.7E-05	0.0	7.6E-03
NA	---	---	---	---	---
1395	---	---	2.2E-05	0.0	9.8E-03
NA	---	---	---	---	---
NA	---	---	---	---	---
22	---	---	6.8E-05	0.0	3.0E-02
12.9	---	---	2.0E-04	0.0	8.8E-02
2.12	---	---	---	0.0	0.0E+00

HI(sum) = 0 0 0 0.2

APPENDIX D
TABLE D62 (continued)
SHORT-TAILED SHREW—UPTAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - Central Creek
KARNACK, TEXAS

Max. Conc. Plant UF Soil (mg/kg) 0-5 ft	% Diet	Est. Plant Conc (mg/kg)	Worm UF (or Intercept & slope)	% Diet	Est. Worm Conc (mg/kg)	Invert UF	% Diet	Est. Invert Conc (mg/kg)	Bird UF	% Diet	Est. Bird Conc (mg/kg)	Mammal UF	% Diet	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg) (A+B+C+D+E)	
	NA	(A)		100%	(B)		NA	(C)		NA	(D)		NA	(E)		
0					1										0.0	Aluminum
0					1										0.0	Antimony
0			-1.421	0.706	1	0.0									0.0	Arsenic
0			0.091		1	0.0									0.0	Barium
0					1										0.0	Beryllium
0					1										0.0	Calcium
0			0.306		1	0.0									0.0	Chromium
0					1										0.0	Cobalt
0			1.675	0.264	1	0.0									0.0	Copper
0			0.266		1	0.0									0.0	Iron
0					1										0.0	Lead
0					1										0.0	Magnesium
0			1.059		1	0.0									0.0	Manganese
0					1										0.0	Nickel
0			0.995		1	0.0									0.0	Potassium
0					1										0.0	Selenium
0					1										0.0	Strontium
0					1										0.0	Vanadium
0			4.449	0.328	1	0.0									0.0	Zinc
0					1										0.0	Chloride
0					1										0.0	Nitrate
0					1										0.0	Sodium
0					1										0.0	Sulfate
0					1										0.0	Acetone
0					1										0.0	Methylene chloride
0					1										0.0	Cadmium

APPENDIX D
TABLE D63
WHITE-FOOTED MOUSE - HQs
LONGHORN ARMY AMMUNITION PLANT - Central Creek
KARNACK, TEXAS

Contaminant	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum		5200	2.8	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	4.20E-01	0.00E+00	4.20E-01
Antimony			0.027	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	---	4.03E-03	0.00E+00	4.03E-03
Arsenic		3.3	0.012	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	1.80E-03	0.00E+00	1.80E-03
Barium		90	0.075	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	1.13E-02	0.00E+00	1.13E-02
Beryllium		1.02		3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	---	0.00E+00	0.00E+00
Cadmium		1500	25	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	3.75E+00	0.00E+00	3.75E+00
Chromium		24		3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	---	0.00E+00	0.00E+00
Cobalt		15		3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	---	0.00E+00	0.00E+00
Copper		10.3	0.009	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	1.35E-03	0.00E+00	1.35E-03
Iron		113.6	8.4	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	1.26E+00	0.00E+00	1.26E+00
Lead		20000	0.01	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	1.50E-03	0.00E+00	1.50E-03
Magnesium		2200	19	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	2.85E+00	0.00E+00	2.85E+00
Manganese		423	2.39	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	3.59E-01	0.00E+00	3.59E-01
Nickel		25		3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	---	0.00E+00	0.00E+00
Potassium		960		3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	---	0.00E+00	0.00E+00
Selenium		1.9	0.44	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	6.60E-02	0.00E+00	6.60E-02
Strontium		27		3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	---	0.00E+00	0.00E+00
Vanadium		49		3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	---	0.00E+00	0.00E+00
Zinc			0.04	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	6.00E-03	0.00E+00	6.00E-03
Chloride		31.8		3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	4.77E+00	0.00E+00	4.77E+00
Nitrate		0.205		3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	3.08E-02	0.00E+00	3.08E-02
Sodium		24		3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	3.60E+00	0.00E+00	3.60E+00
Sulfate		110		3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	1.65E+01	0.00E+00	1.65E+01
Acetone		0.01		3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	1.50E-03	0.00E+00	1.50E-03
Methylene chloride			0.017	3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	2.55E-03	0.00E+00	2.55E-03
Cadmium		6.27		3.10E+03	0.00E+00	1.50E+05	1.60E+05	0.022	1	---	0.00E+00	---	0.00E+00	0.00E+00

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil / sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D63 (continued)
WHITE-FOOTED MOUSE - HQs
LONGHORN ARMY AMMUNITION PLANT - Central Creek
KARNACK, TEXAS

RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
2.086	0.0E+00	---	2.0E-01	0.2	6.1E+01
0.135	0.0E+00	---	3.0E-02	0.0	12.1
0.136	0.0E+00	---	1.3E-02	0.0	5.3
10.8	0.0E+00	---	1.0E-03	0.00	0.420
1.32	0.0E+00	---	---	0.00	0.0
NA	---	---	---	---	---
6.55	0.0E+00	---	---	0.00	0.00
NA	---	---	---	---	---
30.4	0.0E+00	---	4.4E-05	0.00	0.02
NA	---	---	---	---	---
15.98	0.0E+00	---	9.4E-05	0.00	0.04
NA	---	---	---	---	---
176	0.0E+00	---	2.0E-03	0.00	0.82
79.89	0.0E+00	---	---	0.00	0.00
NA	---	---	---	---	---
0.399	0.0E+00	---	---	0.0	0.00
525	0.0E+00	---	1.3E-04	1.3E-04	0.05
0.899	0.0E+00	---	---	0.0	0.00
319.5	0.0E+00	---	1.9E-05	1.9E-05	0.008
NA	---	---	---	---	---
1268	0.0E+00	---	2.4E-05	0.00	0.01
NA	---	---	---	---	---
NA	---	---	---	---	---
20	0.0E+00	---	7.5E-05	0.00	0.03
11.7	0.0E+00	---	2.2E-04	0.00	0.09
1.926	0.0E+00	---	---	0.00	0.00

HI(sum) = 0 0 0.2 0.2

APPENDIX D
TABLE D63 (continued)
WHITE-FOOTED MOUSE - Uptake Factors and Food Concentrations
LONGHORN ARMY AMMUNITION PLANT - Central Creek
KARNACK, TEXAS

Max Conc. (mg/kg)	Plant U/F (or Intercept & slope)	% Diet 50%	Est. Plant Conc (mg/kg)	Worm U/F (or Intercept & slope)	% Diet 50%	Est. Worm Conc (mg/kg)	Invert U/F (or Intercept & slope)	% Diet 50%	Est. Invert Conc (mg/kg)	Bird U/F (or Intercept & slope)	% Diet 50%	Est. Bird Conc (mg/kg)	Mammal U/F (or Intercept & slope)	% Diet 50%	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg)	
0-5 ft			(A)			(B)			(C)			(D)			(E)	(A+B+C+D+E)	
0	0	0.5	0.5	0	0.5	0.5	0	0.5	0.5	0	0.5	0.5	0	0.5	0.5	0.0	Aluminum
0	-1.744	0.594	0.5	-1.421	0.706	0.5	-1.421	0.706	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Antimony
0	0.1561	0.5	0.5	0.091	0.5	0.5	0.091	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Arsenic
0	0	0.5	0.5	0	0.5	0.5	0	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Barium
0	0	0.5	0.5	0	0.5	0.5	0	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Beryllium
0	0	0.5	0.5	0	0.5	0.5	0	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Calcium
0	0.041	0.5	0.5	0.306	0.5	0.5	0.306	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Chromium
0	0	0.5	0.5	0	0.5	0.5	0	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Cobalt
0	0.014	0.423	0.5	1.675	0.264	0.5	1.675	0.264	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Copper
0	1.866	0.787	0.5	0.266	0.5	0.5	0.266	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Iron
0	-1.927	0.791	0.5	1.059	0.5	0.5	1.059	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Lead
0	0	0.5	0.5	0.985	0.5	0.5	0.985	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Magnesium
0	0	0.5	0.5	0	0.5	0.5	0	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Manganese
0	0.0049	0.5	0.5	0	0.5	0.5	0	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Nickel
0	-0.452	0.841	0.5	4.449	0.128	0.5	4.449	0.128	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Potassium
0	0	0.5	0.5	0	0.5	0.5	0	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Selenium
0	0	0.5	0.5	0	0.5	0.5	0	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Silver
0	0	0.5	0.5	0	0.5	0.5	0	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Sodium
0	0	0.5	0.5	0	0.5	0.5	0	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Sulfate
0	0	0.5	0.5	0	0.5	0.5	0	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Urea
0	0	0.5	0.5	0	0.5	0.5	0	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Vanadium
0	0	0.5	0.5	0	0.5	0.5	0	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Zinc
0	0	0.5	0.5	0	0.5	0.5	0	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Chloride
0	0	0.5	0.5	0	0.5	0.5	0	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Nitrate
0	0	0.5	0.5	0	0.5	0.5	0	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Sulfate
0	0	0.5	0.5	0	0.5	0.5	0	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Acetone
0	0	0.5	0.5	0	0.5	0.5	0	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Methylene chloride
0	0	0.5	0.5	0	0.5	0.5	0	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.0	Cadmium

APPENDIX D
TABLE D64
RED-TAILED HAWK - HQs
LONGHORN ARMY AMMUNITION PLANT - Central Creek
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
	<i>0.5/1</i>															
Aluminum		5200	2.8	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	1.60E-01	0.00E+00	0.00E+00	1.60E-01
Antimony			0.027	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	----	1.54E-03	0.00E+00	0.00E+00	1.54E-03
Arsenic		3.3	0.012	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	6.84E-04	0.00E+00	0.00E+00	6.84E-04
Barium		90	0.075	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	4.28E-03	0.00E+00	0.00E+00	4.28E-03
Beryllium		1.02		0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	----	0.00E+00	0.00E+00	0.00E+00
Calcium		1500	25	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	1.43E+00	0.00E+00	0.00E+00	1.43E+00
Chromium		24		0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	----	0.00E+00	0.00E+00	0.00E+00
Cobalt		15		0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	----	0.00E+00	0.00E+00	0.00E+00
Copper		10.3	0.009	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	5.13E-04	0.00E+00	0.00E+00	5.13E-04
Iron		20000	8.4	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	4.79E-01	0.00E+00	0.00E+00	4.79E-01
Lead		13.6	0.01	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	5.70E-04	0.00E+00	0.00E+00	5.70E-04
Magnesium		2200	19	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	1.08E+00	0.00E+00	0.00E+00	1.08E+00
Manganese		423	2.39	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	1.36E-01	0.00E+00	0.00E+00	1.36E-01
Nickel		25		0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	----	0.00E+00	0.00E+00	0.00E+00
Potassium		960		0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Selenium		1.9		0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Strontium		27	0.44	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	2.51E-02	0.00E+00	0.00E+00	2.51E-02
Vanadium		27		0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Zinc		49	0.04	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	2.28E-03	0.00E+00	0.00E+00	2.28E-03
Chloride			31.8	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	1.81E+00	0.00E+00	0.00E+00	1.81E+00
Nitrate			0.205	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	1.17E-02	0.00E+00	0.00E+00	1.17E-02
Sodium			24	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	1.37E+00	0.00E+00	0.00E+00	1.37E+00
Sulfate			110	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	6.27E+00	0.00E+00	0.00E+00	6.27E+00
Acetone			0.01	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	5.70E-04	0.00E+00	0.00E+00	5.70E-04
Methylene chloride			0.017	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	9.69E-04	0.00E+00	0.00E+00	9.69E-04
Cadmium		6.27		0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	----	0.00E+00	----	0.00E+00	0.00E+00	0.00E+00

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source
Total EDI = EDI soil/ sediment + EDI water + EDI food
Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D64 (continued)
RED-TAILED HAWK - HQs
LONGHORN ARMY AMMUNITION PLANT - Central Creek
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0E+00	NA	1.5E-03	1.5E-03	5.9E+01
NA	NA	NA	---	---	Aluminum
2.5	NA	NA	2.7E-04	---	Antimony
20.8	0.0E+00	NA	2.1E-04	2.1E-04	Arsenic
NA	---	NA	---	---	Barium
NA	---	NA	---	---	Beryllium
1	0.0E+00	NA	0.0E+00	0.0E+00	Calcium
NA	---	NA	---	---	Chromium
47	0.0E+00	NA	1.1E-05	1.1E-05	Cobalt
NA	---	NA	---	---	Copper
1.13	0.0E+00	NA	5.0E-04	5.0E-04	Iron
NA	---	NA	---	---	Lead
997	0.0E+00	NA	1.4E-04	1.4E-04	Magnesium
77.4	0.0E+00	NA	0.0E+00	0.0E+00	Manganese
NA	---	NA	---	---	Nickel
0.4	0.0E+00	NA	0.0E+00	0.0E+00	Potassium
NA	---	NA	---	---	Selenium
11.4	0.0E+00	NA	0.0E+00	0.0E+00	Strontium
14.5	0.0E+00	NA	1.6E-04	1.6E-04	Vanadium
NA	---	NA	---	---	Zinc
NA	---	NA	---	---	Chloride
NA	---	NA	---	---	Nitrate
NA	---	NA	---	---	Sodium
NA	---	NA	---	---	Sulfate
NA	---	NA	---	---	Acetone
1.45	0.0E+00	NA	0.0E+00	0.0E+00	Methylene chloride
					Cadmium

HI(sum) = 0.0 0.000 0.003 0.002

APPENDIX D
TABLE D64 (continued)
RED-TAILED HAWK - Uptake Factors and Food Concentrations
LONGHORN ARMY AMMUNITION PLANT - Central Creek
KARNACK, TEXAS

Max. Conc. Plant Uf Soil (mg/kg) 0-5 ft	% Diet NA	Est. Plant Conc (mg/kg) (A)	Worm Uf Intercept & slope	% Diet NA	Est. Worm Conc (mg/kg) (B)	Invert Uf % Diet NA	Est. Invert Conc (mg/kg) (C)	Bird Uf % Diet NA	Est. Bird Conc (mg/kg) (D)	Mammal Uf Intercept & slope	% Diet 100 (E)	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg) (A+B+C+D+E)	
0													0.00	Aluminum
0										-5.0249	0.8354	0.00	0.00	Antimony
0										0.0417		0.00	0.00	Arsenic
0												0.00	0.00	Barium
0												0.00	0.00	Beryllium
0										-0.5506	0.315	0.00	0.00	Calcium
0												0.00	0.00	Chromium
0										1.8533	0.1309	0.00	0.00	Cobalt
0										-0.7216	0.5019	0.00	0.00	Copper
0												0.00	0.00	Iron
0												0.00	0.00	Lead
0										0.1356	0.1956	0.00	0.00	Magnesium
0												0.00	0.00	Manganese
0												0.00	0.0000	Nickel
0												0.00	0.00	Potassium
0												0.00	0.00	Selenium
0										0.0123		0.00	0.00	Strontium
0										4.1204	0.01096	0.00	0.00	Vanadium
0												0.00	0.00	Zinc
0												0.00	0.00	Chloride
0												0.00	0.00	Nitrate
0												0.00	0.00	Sodium
0												0.00	0.00	Sulfate
0												0.00	0.00	Acetone
0												0.00	0.00	Methylene chloride
0												0.00	0.00	Cadmium

APPENDIX D
TABLE D65
NORTHERN BOBWHITE-HQs
LONGHORN ARMY AMMUNITION PLANT - Central Creek
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
	<i>0-3 ft</i>														
Aluminum		5200	2.8	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	0.00E+00	1.64E-01	0.00E+00	3.64E-01
Antimony			0.027	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	---	3.31E-03	0.00E+00	3.31E-03
Arsenic		3.3	0.012	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	0.00E+00	1.56E-03	0.00E+00	1.56E-03
Barium		90	0.075	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	0.00E+00	9.75E-03	0.00E+00	9.75E-03
Beryllium		1.02		0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	0.00E+00	---	0.00E+00	0.00E+00
Calcium		1500	25	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	0.00E+00	3.23E+00	0.00E+00	3.23E+00
Chromium		24		0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	0.00E+00	---	0.00E+00	0.00E+00
Cobalt		15		0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	0.00E+00	---	0.00E+00	0.00E+00
Copper		10.3	0.009	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	0.00E+00	1.17E-03	0.00E+00	1.17E-03
Iron		20000	8.4	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	0.00E+00	1.09E+00	0.00E+00	1.09E+00
Lead		13.6	0.01	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	0.00E+00	1.30E-03	0.00E+00	1.30E-03
Magnesium		2200	19	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	0.00E+00	2.47E+00	0.00E+00	2.47E+00
Manganese		423	2.39	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	0.00E+00	3.11E-01	0.00E+00	3.11E-01
Nickel		25		0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	0.00E+00	---	0.00E+00	0.00E+00
Potassium		960		0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	0.00E+00	---	0.00E+00	0.00E+00
Selenium		1.9		0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	0.00E+00	---	0.00E+00	0.00E+00
Strontium		27		0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	0.00E+00	---	0.00E+00	0.00E+00
Vanadium		27	0.44	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	0.00E+00	5.72E-02	0.00E+00	5.72E-02
Zinc		49	0.04	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	0.00E+00	5.20E-03	0.00E+00	5.20E-03
Chloride			31.8	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	---	4.13E+00	0.00E+00	4.13E+00
Nitrate			0.205	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	---	2.67E-02	0.00E+00	2.67E-02
Sodium			24	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	---	3.12E+00	0.00E+00	3.12E+00
Sulfate			110	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	---	1.43E+01	0.00E+00	1.43E+01
Acetone			0.01	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	---	1.30E-03	0.00E+00	1.30E-03
Methylene chloride			0.017	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	---	2.21E-03	0.00E+00	2.21E-03
Cadmium		6.27		0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	---	0.00E+00	---	0.00E+00	0.00E+00

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil / sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D65 (continued)
NORTHERN BOBWHITE-HQs
LONGHORN ARMY AMMUNITION PLANT - Central Creek
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0	---	3.3E-03	0.00	68.9
NA	---	---	---	---	Aluminum
2.5	0.00	---	6.2E-04	0.0	---
20.8	0.0	---	4.7E-04	0.0	Antimony
NA	---	---	---	---	Arsenic
NA	---	---	---	---	Barium
1	0.0	---	---	0.0	9.7
NA	---	---	---	---	Beryllium
47	0.0	---	---	0.0	0.0
NA	---	---	---	---	Calcium
1.13	0.0	---	---	0.0	Chromium
NA	---	---	---	---	Cobalt
997	0.0	---	2.5E-05	0.0	0.5
77.4	0.0	---	---	---	Copper
NA	---	---	1.2E-03	0.0	---
NA	---	---	---	---	Iron
997	0.0	---	---	---	Lead
77.4	0.0	---	3.1E-04	0.0	6.5
NA	---	---	---	---	Magnesium
0.4	0.0	---	---	0.0	0.0
NA	---	---	---	---	Manganese
11.4	0.0	---	---	---	Nickel
14.5	0.00	---	3.6E-04	0.0	7.5
NA	---	---	---	---	Potassium
NA	---	---	---	---	Selenium
NA	---	---	---	---	Strontium
NA	---	---	---	---	Vanadium
NA	---	---	---	---	Zinc
NA	---	---	---	---	Chloride
NA	---	---	---	---	Nitrate
NA	---	---	---	---	Sodium
NA	---	---	---	---	Sulfate
NA	---	---	---	---	Acetone
1.45	0.00	---	---	0.0	Methylene chloride
					Cadmium

HI(sum) = 0 0 0 0.01

APPENDIX D
TABLE D65(continued)
NORTHERN BOBWHITE-UPTAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - Central Creek
KARNACK, TEXAS

Max Conc. Plant UF Soil (mg/kg) 0-5 ft	% Diet 100%	Est. Plant Conc (mg/kg) (A)	Worm UF for Intercept & slope	% Diet NA	Est. Worm Conc (mg/kg) (B)	Invert UF % Diet NA	Est. Invert Conc (mg/kg)	Bird UF % Diet NA	Est. Bird Conc (mg/kg)	Mammal UF	% Diet NA	Est. Mammal Conc (mg/kg) (E)	Total Food Conc. (mg/kg) (A+B+C+D+E)	
0	1	1											0.0	Aluminum
0	1	1											0.0	Antimony
0	0.594	0.594											0.0	Arsenic
0	0.1561	0.1561											0.0	Barium
0	1	1											0.0	Beryllium
0	1	1											0.0	Calcium
0	1	1											0.0	Chromium
0	0.041	0.041											0.0	Cobalt
0	1	1											0.0	Copper
0	0.014	0.014											0.0	Iron
0	0.787	0.787											0.0	Lead
0	1	1											0.0	Magnesium
0	1	1											0.0	Manganese
0	1	1											0.0	Nickel
0	0.791	0.791											0.0	Potassium
0	1	1											0.0	Selenium
0	1	1											0.0	Strontium
0	0.0049	0.0049											0.0	Vanadium
0	0.841	0.841											0.0	Zinc
0	1	1											0.0	Chloride
0	1	1											0.0	Nitrate
0	1	1											0.0	Sodium
0	1	1											0.0	Sulfate
0	1	1											0.0	Acetone
0	1	1											0.0	Methylene chloride
0	1	1											0.0	Cadmium

Biota Conc= (soil conc)(UF) or
 $\ln(\text{Biota conc}) = \text{Intercept} + \text{Slope}(\ln(\text{soil conc}))$ except Se, where Food Conc = $\text{Intercept} + \text{slope}(\text{soil conc})$ OR (Food Conc - $\ln$)/ $\ln$ = soil conc

APPENDIX D
TABLE D66
AMERICAN WOODCOCK-HQs
LONGHORN ARMY AMMUNITION PLANT - Sanders Branch
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum		3500	1.6	0.0	7.90E+04	0.00E+00	1.00E+05	0.198	1	---	1.60E-01	0.00E+00	1.60E-01
Antimony			0.018	0.0	7.90E+04	0.00E+00	1.00E+05	0.198	1	---	1.80E-03	0.00E+00	1.80E-03
Arsenic		10.2		0.0	7.90E+04	0.00E+00	1.00E+05	0.198	1	---	---	0.00E+00	0.00E+00
Barium		147.6	0.42	0.0	7.90E+04	0.00E+00	1.00E+05	0.198	1	---	4.20E-02	0.00E+00	4.20E-02
Beryllium		1.19		0.0	7.90E+04	0.00E+00	1.00E+05	0.198	1	---	---	0.00E+00	0.00E+00
Calcium			5.5	0.0	7.90E+04	0.00E+00	1.00E+05	0.198	1	---	5.50E-01	0.00E+00	5.50E-01
Chromium		40.2		0.0	7.90E+04	0.00E+00	1.00E+05	0.198	1	---	---	0.00E+00	0.00E+00
Copper		3.56		0.0	7.90E+04	0.00E+00	1.00E+05	0.198	1	---	---	0.00E+00	0.00E+00
Iron		16000	3.4	0.0	7.90E+04	0.00E+00	1.00E+05	0.198	1	---	3.40E-01	0.00E+00	3.40E-01
Lead		29.6	0.007	0.0	7.90E+04	0.00E+00	1.00E+05	0.198	1	---	7.00E-04	0.00E+00	7.00E-04
Manganese		146	0.259	0.0	7.90E+04	0.00E+00	1.00E+05	0.198	1	---	2.59E-02	0.00E+00	2.59E-02
Nickel		13.8		0.0	7.90E+04	0.00E+00	1.00E+05	0.198	1	---	---	0.00E+00	0.00E+00
Potassium		670		0.0	7.90E+04	0.00E+00	1.00E+05	0.198	1	---	---	0.00E+00	0.00E+00
Strontium			0.06	0.0	7.90E+04	0.00E+00	1.00E+05	0.198	1	---	6.00E-03	0.00E+00	6.00E-03
Vanadium		23		0.0	7.90E+04	0.00E+00	1.00E+05	0.198	1	---	---	0.00E+00	0.00E+00
Zinc		15	0.02	0.0	7.90E+04	0.00E+00	1.00E+05	0.198	1	---	2.00E-03	0.00E+00	2.00E-03
Chloride			12.2	0.0	7.90E+04	0.00E+00	1.00E+05	0.198	1	---	1.22E+00	0.00E+00	1.22E+00
Nitrate			0.203	0.0	7.90E+04	0.00E+00	1.00E+05	0.198	1	---	2.03E-02	0.00E+00	2.03E-02
Sodium			9.6	0.0	7.90E+04	0.00E+00	1.00E+05	0.198	1	---	9.60E-01	0.00E+00	9.60E-01
Sulfide			8.9	0.0	7.90E+04	0.00E+00	1.00E+05	0.198	1	---	8.90E-01	0.00E+00	8.90E-01
Acetone		0.055	0.011	0.0	7.90E+04	0.00E+00	1.00E+05	0.198	1	---	1.05E-03	0.00E+00	1.05E-03
Toluene		0.029		0.0	7.90E+04	0.00E+00	1.00E+05	0.198	1	---	---	0.00E+00	0.00E+00

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D66 (continued)
AMERICAN WOODCOCK-HQs
LONGHORN ARMY AMMUNITION PLANT - Saunders Branch
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Seed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0	---	1.5E-03	0.00	Aluminum 34.2
NA	---	---	---	---	Antimony ---
2.5	0.00	---	---	0.0	Arsenic 0.0
20.8	0.0	---	2.0E-03	0.0	Barium 47.4
NA	---	---	---	---	Beryllium ---
NA	---	---	---	---	Calcium ---
1	0.0	---	---	0.0	Chromium 0.0
47	0.0	---	---	0.0	Copper 0.0
NA	---	---	---	---	Iron ---
1.13	0.0	---	6.2E-04	0.0	Lead 14.5
997	0.0	---	2.0E-05	0.0	Manganese 0.6
77.4	0.0	---	---	0.0	Nickel 0.0
NA	---	---	---	---	Potassium ---
NA	---	---	---	---	Strontium ---
11.4	0.0	---	---	0.0	Vanadium 0.0
14.5	0.00	---	1.4E-04	0.0	Zinc 3.2
NA	---	---	---	---	Chloride ---
NA	---	---	---	---	Nitrate ---
NA	---	---	---	---	Sodium ---
NA	---	---	---	---	Sulfate ---
NA	---	---	---	---	Acetone ---
NA	---	---	---	---	Toluene ---

HI(sum) = 0 0 0 0.004

APPENDIX D
TABLE D66 (continued)
AMERICAN WOODCOCK-UP TAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - Saunders Branch
KARNACK, TEXAS

Max Conc: Plant UF Soil (mg/kg) 0--5 ft	% Diet	Est. Plant Conc (mg/kg)	Worm UF (or Intercept & slope)	% Diet	Est. Worm Conc (mg/kg)	Invert UF	% Diet	Est. Invert Conc (mg/kg)	Bird UF	% Diet	Est. Bird Conc (mg/kg)	Mammal UF	% Diet	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg)	
	N/A	(A)		100%	(B)		NA			NA			NA	(E)	(A+B+C+D+E)	
0					1										0.0	Aluminum
0					1										0.0	Antimony
0			-1.421	0.706	1	0.0									0.0	Arsenic
0			0.091		1	0.0									0.0	Barium
0					1										0.0	Beryllium
0					1										0.0	Calcium
0			0.306		1	0.0									0.0	Chromium
0			1.675	0.264	1	0.0									0.0	Copper
0					1										0.0	Iron
0			0.266		1	0.0									0.0	Lead
0					1										0.0	Manganese
0			1.859		1	0.0									0.0	Nickel
0					1										0.0	Potassium
0					1										0.0	Selenium
0					1										0.0	Vanadium
0			4.449	0.328	1	0.0									0.0	Zinc
0					1										0.0	Chloride
0					1										0.0	Nitrate
0					1										0.0	Sodium
0					1										0.0	Sulfate
0					1										0.0	Acetone
0					1										0.0	Toluene

Birds Conc = (soil conc)/(UF) or
In Chua conc = Intercept + Slope(In soil conc) except Se, where Food Conc = Intercept + Slope(soil conc) OR (Food Conc - In)/sl = soil conc

APPENDIX D
TABLE D67
SHORT-TAILED SHREW-HQs
LONGHORN ARMY AMMUNITION PLANT - Saunders Branch
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum		3500	1.6	0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	2.40E-01	0.00E+00	2.40E-01
Antimony			0.018	0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	---	2.70E-03	0.00E+00	2.70E-03
Arsenic		10.2		0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	---	0.00E+00	0.00E+00
Barium		147.6	0.42	0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	6.30E-02	0.00E+00	6.30E-02
Beryllium		1.19		0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	---	0.00E+00	0.00E+00
Calcium			5.5	0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	---	8.25E-01	0.00E+00	8.25E-01
Chromium		40.2		0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	---	0.00E+00	0.00E+00
Copper		3.36		0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	---	0.00E+00	0.00E+00
Iron		16000	3.4	0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	5.10E-01	0.00E+00	5.10E-01
Lead		29.6	0.007	0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	1.05E-03	0.00E+00	1.05E-03
Manganese		146	0.259	0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	3.89E-02	0.00E+00	3.89E-02
Nickel		13.8		0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	---	0.00E+00	0.00E+00
Potassium		670		0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	---	0.00E+00	0.00E+00
Strontium			0.06	0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	---	9.00E-03	0.00E+00	9.00E-03
Vanadium		23		0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	---	0.00E+00	0.00E+00
Zinc		15	0.02	0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	3.00E-03	0.00E+00	3.00E-03
Chloride			12.2	0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	---	1.83E+00	0.00E+00	1.83E+00
Nitrate		0.203		0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	---	3.05E-02	0.00E+00	3.05E-02
Sodium			9.6	0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	---	1.44E+00	0.00E+00	1.44E+00
Sulfate			8.9	0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	---	1.34E+00	0.00E+00	1.34E+00
Acetone		0.055	0.011	0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	1.65E-03	0.00E+00	1.65E-03
Toluene		0.029		0.0	7.80E+04	0.00E+00	1.50E+05	6.00E+05	0.015	1	---	0.00E+00	---	0.00E+00	0.00E+00

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D67(continued)
SHORT-TAILED SHREW-HQs
LONGHORN ARMY AMMUNITION PLANT - Saunders Branch
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
2.295	0.0	---	1.0E-41	0.1	8.1E+01
0.149	---	---	1.0E-42	0	1.4E+01
0.15	---	---	---	0	0.0E+00
11.8	---	---	5.3E-43	0.0	4.2E+00
1.45	0.0E+00	---	---	0.0	0.0E+00
NA	---	---	---	---	---
7.21	0.0E+00	---	---	0.0	0.0E+00
33.4	0.0E+00	---	---	0.0	0.0E+00
NA	---	---	---	---	---
17.58	0.0E+00	---	6.0E-45	0.0	4.7E-42
193	0.0E+00	---	2.0E-44	0.0	1.4E-41
87.91	0.0E+00	---	---	0.0	0.0E+00
NA	---	---	---	---	---
578	---	---	1.4E-45	1.6E-05	1.2E-42
0.428	---	---	---	0.0	0.0E+00
351.7	---	---	8.5E-46	0.0	6.6E-43
NA	---	---	---	---	---
1395	---	---	2.2E-45	0.0	1.7E-42
NA	---	---	---	---	---
NA	---	---	---	---	---
22	---	---	7.5E-45	0.0	5.8E-42
30.9	---	---	---	0.0	0.0E+00

HI(sum) = 0 0 0 0.1

APPENDIX D
TABLE D67 (continued)
SHORT-TAILED SHREW—UPTAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - Saunders Branch
KARNACK, TEXAS

[illegible]

APPENDIX D
TABLE D68
WHITE-FOOTED MOUSE - HQs
LONGHORN ARMY AMMUNITION PLANT - Sanders Branch
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Ingestion Rate Soil (mg/kg-day)	Ingestion Rate Sed (mg/kg-day)	Ingestion Rate SW (mg/kg-day)	Ingestion Rate Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
Aluminum		3500	1.6	0.0	3.10E+03	0.00E+00	1.50E+05	1.50E+05	1.60E+05	1.60E+05	0.022	1	---	0.00E+00	2.40E-01	0.00E+00	2.40E-01
Antimony			0.018	0.0	3.10E+03	0.00E+00	1.50E+05	1.50E+05	1.60E+05	1.60E+05	0.022	1	---	---	2.70E-03	0.00E+00	2.70E-03
Arsenic		10.2		0.0	3.10E+03	0.00E+00	1.50E+05	1.50E+05	1.60E+05	1.60E+05	0.022	1	---	0.00E+00	---	0.00E+00	0.00E+00
Barium		147.6	0.42	0.0	3.10E+03	0.00E+00	1.50E+05	1.50E+05	1.60E+05	1.60E+05	0.022	1	---	0.00E+00	6.30E-02	0.00E+00	6.30E-02
Beryllium		1.19		0.0	3.10E+03	0.00E+00	1.50E+05	1.50E+05	1.60E+05	1.60E+05	0.022	1	---	---	---	0.00E+00	0.00E+00
Calcium			5.5	0.0	3.10E+03	0.00E+00	1.50E+05	1.50E+05	1.60E+05	1.60E+05	0.022	1	---	0.00E+00	8.25E-01	0.00E+00	8.25E-01
Chromium		40.2		0.0	3.10E+03	0.00E+00	1.50E+05	1.50E+05	1.60E+05	1.60E+05	0.022	1	---	0.00E+00	---	0.00E+00	0.00E+00
Copper		3.96		0.0	3.10E+03	0.00E+00	1.50E+05	1.50E+05	1.60E+05	1.60E+05	0.022	1	---	0.00E+00	---	0.00E+00	0.00E+00
Iron		1000	3.4	0.0	3.10E+03	0.00E+00	1.50E+05	1.50E+05	1.60E+05	1.60E+05	0.022	1	---	0.00E+00	5.10E-01	0.00E+00	5.10E-01
Manganese		29.6	0.007	0.0	3.10E+03	0.00E+00	1.50E+05	1.50E+05	1.60E+05	1.60E+05	0.022	1	---	0.00E+00	1.05E-03	0.00E+00	1.05E-03
Nickel		146	0.259	0.0	3.10E+03	0.00E+00	1.50E+05	1.50E+05	1.60E+05	1.60E+05	0.022	1	---	0.00E+00	3.89E-02	0.00E+00	3.89E-02
Strontium		670		0.0	3.10E+03	0.00E+00	1.50E+05	1.50E+05	1.60E+05	1.60E+05	0.022	1	---	0.00E+00	---	0.00E+00	0.00E+00
Vanadium		23	0.06	0.0	3.10E+03	0.00E+00	1.50E+05	1.50E+05	1.60E+05	1.60E+05	0.022	1	---	0.00E+00	9.00E-03	0.00E+00	9.00E-03
Zinc		15		0.0	3.10E+03	0.00E+00	1.50E+05	1.50E+05	1.60E+05	1.60E+05	0.022	1	---	0.00E+00	---	0.00E+00	0.00E+00
Chloride			0.02	0.0	3.10E+03	0.00E+00	1.50E+05	1.50E+05	1.60E+05	1.60E+05	0.022	1	---	0.00E+00	3.00E-03	0.00E+00	3.00E-03
Nitrate			12.2	0.0	3.10E+03	0.00E+00	1.50E+05	1.50E+05	1.60E+05	1.60E+05	0.022	1	---	---	1.83E+00	0.00E+00	1.83E+00
Sodium			0.203	0.0	3.10E+03	0.00E+00	1.50E+05	1.50E+05	1.60E+05	1.60E+05	0.022	1	---	---	3.05E-02	0.00E+00	3.05E-02
Sulfate			9.6	0.0	3.10E+03	0.00E+00	1.50E+05	1.50E+05	1.60E+05	1.60E+05	0.022	1	---	---	1.44E+00	0.00E+00	1.44E+00
Acetone		0.055	8.9	0.0	3.10E+03	0.00E+00	1.50E+05	1.50E+05	1.60E+05	1.60E+05	0.022	1	---	0.00E+00	1.34E+00	0.00E+00	1.34E+00
Toluene		0.029	0.011	0.0	3.10E+03	0.00E+00	1.50E+05	1.50E+05	1.60E+05	1.60E+05	0.022	1	---	0.00E+00	1.62E-03	0.00E+00	1.62E-03

Estimated Daily Intake (EDI) = (Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source)

Total EDI = EDI soil/sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; HQ value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D68 (continued)
WHITE-FOOTED MOUSE - HQs
LONGHORN ARMY AMMUNITION PLANT - Saunders Branch
KARNACK, TEXAS

RTV-injection (mg/kg day)	Food Hazard Quotient	Soluble Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
2.086	0.0E+00	---	1.2E-01	0.1	8.1E+01
0.135	0.0E+00	---	2.0E-02	0.0	14.2
0.136	0.0E+00	---	---	0.0	0.0
10.8	0.0E+00	---	5.0E-03	0.01	4.0E-01
1.32	0.0E+00	---	---	0.00	0.0
NA	---	---	---	---	---
6.55	0.0E+00	---	---	0.00	0.00
30.4	0.0E+00	---	---	0.00	0.00
NA	---	---	---	---	---
15.98	0.0E+00	---	6.6E-05	0.00	0.05
176	0.0E+00	---	2.2E-04	0.00	0.16
79.89	0.0E+00	---	---	0.00	0.00
NA	---	---	---	---	---
525	0.0E+00	---	1.7E-05	1.7E-05	0.01
0.389	0.0E+00	---	---	0.0	0.00
319.5	0.0E+00	---	9.4E-06	9.4E-06	0.007
NA	---	---	---	---	---
1268	0.0E+00	---	2.4E-05	0.00	0.02
NA	---	---	---	---	---
20	0.0E+00	---	8.3E-05	0.00	0.06
28.1	0.0E+00	---	---	0.00	0.00

HI(sum) = 0 0 0.1 0.1 0.1

APPENDIX D
TABLE D68 (continued)
WHITE-FOOTED MOUSE - Uptake Factors and Food Concentrations
LONGHORN ARMY AMMUNITION PLANT - Saunders Branch
KARNACK, TEXAS

Max Conc (mg/kg)	Plant UF (intercept & slope)	% Diet 50%	Est. Plant Conc (mg/kg)	Worm UF (intercept & slope)	% Diet 50%	Est. Worm Conc (mg/kg)	Invert UF (intercept & slope)	% Diet NA	Est. Invert Conc (mg/kg)	% Diet NA	Est. Bird Conc (mg/kg)	Mammal UF	% Diet NA	Est. Mammal Conc (mg/kg)	Total Food Conc (mg/kg)	
			(A)			(B)			(C)		(D)			(E)	(A+B+C+D+E)	
0	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Aluminum
0	-1.744	0.594	0.5	-1.421	0.706	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Antimony
0	0.1361	0.5	0.5	0.491	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Arsenic
0	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Beryllium
0	0.041	0.5	0.5	0.386	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Bismuth
0	0.014	0.423	0.5	1.075	0.264	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Calcium
0	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Chromium
0	1.866	0.787	0.5	0.266	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Copper
0	-1.927	0.791	0.5	1.059	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Iron
0	0.0949	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Lead
0	-0.452	0.841	0.5	4.449	0.328	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Manganese
0	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Nickel
0	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Potassium
0	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Selenium
0	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Silver
0	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Sulfate
0	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Toluene
0	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Vanadium
0	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Zinc
0	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Chloride
0	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Nitrate
0	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Sulfide
0	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Arsenic
0	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Toluene

APPENDIX D
TABLE D69
RED-TAILED HAWK - HQs
LONGHORN ARMY AMMUNITION PLANT - Saunders Branch
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - Sed. (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - sed. (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
	<i>0-5 ft</i>														
Aluminum		3500	1.6	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	-----	0.00E+00	9.12E-02	0.00E+00	9.12E-02
Antimony			0.018	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	-----	0.00E+00	1.03E-03	0.00E+00	1.03E-03
Arsenic		10.2		0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	-----	0.00E+00	-----	0.00E+00	0.00E+00
Barium		147.6	0.42	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	-----	0.00E+00	2.39E-02	0.00E+00	2.39E-02
Beryllium		1.19		0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	-----	0.00E+00	-----	0.00E+00	0.00E+00
Calcium			5.5	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	-----	0.00E+00	3.14E-01	0.00E+00	3.14E-01
Chromium		40.2		0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	-----	0.00E+00	-----	0.00E+00	0.00E+00
Copper		3.56		0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	-----	0.00E+00	-----	0.00E+00	0.00E+00
Iron		16000	3.4	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	-----	0.00E+00	1.94E-01	0.00E+00	1.94E-01
Lead		29.6	0.007	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	-----	0.00E+00	3.99E-04	0.00E+00	3.99E-04
Manganese		146	0.259	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	-----	0.00E+00	1.48E-02	0.00E+00	1.48E-02
Nickel		13.8		0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	-----	0.00E+00	-----	0.00E+00	0.00E+00
Potassium		670		0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	-----	0.00E+00	-----	0.00E+00	0.00E+00
Strontium			0.06	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	-----	0.00E+00	3.42E-03	0.00E+00	3.42E-03
Vanadium		23		0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	-----	0.00E+00	-----	0.00E+00	0.00E+00
Zinc		15	0.02	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	-----	0.00E+00	1.14E-03	0.00E+00	1.14E-03
Chloride			12.2	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	-----	0.00E+00	6.95E-01	0.00E+00	6.95E-01
Nitrate			0.203	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	-----	0.00E+00	1.16E-02	0.00E+00	1.16E-02
Sodium			9.6	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	-----	0.00E+00	5.47E-01	0.00E+00	5.47E-01
Sulfate			8.9	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	-----	0.00E+00	5.07E-01	0.00E+00	5.07E-01
Acetone		0.055	0.011	0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	-----	0.00E+00	6.27E-04	0.00E+00	6.27E-04
Toluene		0.029		0.000	0.00E+00	0.00E+00	5.70E+04	9.70E+04	1.126	1	-----	0.00E+00	-----	0.00E+00	0.00E+00

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source
Total EDI = EDI (soil sediment) + EDI (water) + EDI (food)
Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D69 (continued)
RED-TAILED HAWK - HQs
LONGHORN ARMY AMMUNITION PLANT - Saunders Branch
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0E+00	NA	8.3E-04	8.3E-04	3.4E+01
NA	NA	NA	---	---	Aluminum
2.5	NA	NA	0.0E+00	---	Antimony
20.8	0.0E+00	NA	1.2E-03	1.2E-03	Arsenic
NA	---	NA	---	---	Barium
NA	---	NA	---	---	Beryllium
1	0.0E+00	NA	0.0E+00	0.0E+00	Calcium
47	0.0E+00	NA	0.0E+00	0.0E+00	Chromium
NA	---	NA	---	---	Copper
1.13	0.0E+00	NA	3.5E-04	3.5E-04	Iron
997	0.0E+00	NA	1.5E-05	1.5E-05	Lead
77.4	0.0E+00	NA	0.0E+00	0.0E+00	Manganese
NA	---	NA	---	---	Nickel
NA	---	NA	---	---	Potassium
NA	---	NA	---	---	Selenium
11.4	0.0E+00	NA	0.0E+00	0.0E+00	Strontium
14.5	0.0E+00	NA	7.9E-05	7.9E-05	Vanadium
NA	---	NA	---	---	Zinc
NA	---	NA	---	---	Chloride
NA	---	NA	---	---	Nitrate
NA	---	NA	---	---	Sodium
NA	---	NA	---	---	Sulfate
NA	---	NA	---	---	Acetone
NA	---	NA	---	---	Toluene

HI(sum) = 0.0 0.000 0.002 0.002

APPENDIX D
TABLE D69 (continued)
RED-TAILED HAWK - Uptake Factors and Food Concentrations
LONGHORN ARMY AMMUNITION PLANT - Saunders Branch
KARNACK, TEXAS

Max Conc: Plant U/F	% Diet	Est. Plant Conc (mg/kg)	Worm U/F (or Intercept & slope)	% Diet	Est. Worm Conc (mg/kg)	Invert U/F	% Diet	Est. Invert Conc (mg/kg)	Bad U/F	% Diet	Est. Bird Conc (mg/kg)	Mammal U/F (or Intercept & slope)	% Diet	Est. Mammal Conc (mg/kg)	Total Food Conc. (mg/kg)	
Soil (mg/kg)	NA	(A)	NA	(B)	NA	NA	(C)	NA	NA	(D)	(E)	(F)	(G)	(H)	(I)	
0																Aluminum
0																Antimony
0																Arsenic
0																Barium
0																Beryllium
0																Calcium
0																Chromium
0																Copper
0																Iron
0																Lead
0																Manganese
0																Nickel
0																Potassium
0																Selenium
0																Vanadium
0																Zinc
0																Chloride
0																Nitrate
0																Sodium
0																Sulfate
0																Acetone
0																Toluene

APPENDIX D
TABLE D70
NORTHERN BOBWHITE-HQs
LONGHORN ARMY AMMUNITION PLANT - Saunders Branch
KARNACK, TEXAS

Constituent	Max Conc. Soil (mg/kg)	Max Conc. Sediment (mg/kg)	Max Conc. Surface Water (mg/L)	Max Conc. Food (mg/kg)	Ingestion Rate - Soil (mg/kg-day)	Ingestion Rate - SW (mg/kg-day)	Ingestion Rate - Food (mg/kg-day)	Body Weight (kg)	Fraction Ingested (unitless)	EDI - soil (mg/kg-day)	EDI - SW (mg/kg-day)	EDI - food (mg/kg-day)	EDI Total (mg/kg-day)
	<i>0.5 ft</i>												
Aluminum		3500	1.6	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.08E-01	0.00E+00	2.08E-01
Antimony			0.018	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.34E-03	0.00E+00	2.34E-03
Arsenic		10.2		0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	0.00E+00	0.00E+00	0.00E+00
Barium		147.6	0.42	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	5.46E-02	0.00E+00	5.46E-02
Beryllium		1.19		0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	0.00E+00	0.00E+00	0.00E+00
Calcium		40.2	5.5	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	7.13E-01	0.00E+00	7.13E-01
Chromium				0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	0.00E+00	0.00E+00	0.00E+00
Copper		3.56		0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	0.00E+00	0.00E+00	0.00E+00
Iron		16000	3.4	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	4.42E-01	0.00E+00	4.42E-01
Lead		29.6	0.007	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	9.10E-04	0.00E+00	9.10E-04
Manganese		146	0.259	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	3.37E-02	0.00E+00	3.37E-02
Nickel		13.8		0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	0.00E+00	0.00E+00	0.00E+00
Potassium		670		0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	0.00E+00	0.00E+00	0.00E+00
Strontium			0.06	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	7.80E-03	0.00E+00	7.80E-03
Vanadium		23		0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	0.00E+00	0.00E+00	0.00E+00
Zinc		15	0.02	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.60E-03	0.00E+00	2.60E-03
Chloride			12.2	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.59E+00	0.00E+00	1.59E+00
Nitrate			0.203	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	2.64E-02	0.00E+00	2.64E-02
Sodium			9.6	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.23E+00	0.00E+00	1.23E+00
Sulfate			8.9	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.16E+00	0.00E+00	1.16E+00
Acetone		0.055	0.011	0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	1.43E-03	0.00E+00	1.43E-03
Toluene		0.029		0.0	8.00E+04	0.00E+00	1.30E+05	7.80E+04	0.2	1	0.00E+00	0.00E+00	0.00E+00

Estimated Daily Intake (EDI) = Medium-specific concentration x Ingestion Rate x Fraction Ingested from contaminated source

Total EDI = EDI soil/sediment + EDI water + EDI food

Hazard Quotient (HQ) = Total EDI / Reference Toxicity Value; Hazard Index = Sum of HQs; boxed value indicates the HQ exceeds 1.0

APPENDIX D
TABLE D70 (continued)
NORTHERN BOBWHITE-HQs
LONGHORN ARMY AMMUNITION PLANT - Saunders Branch
KARNACK, TEXAS

NOAEL RTV-ingestion (mg/kg-day)	Food Hazard Quotient	Soil/Sed Hazard Quotient	Water Hazard Quotient	Total Hazard Quotient	Chemical Percent of Total HI (%)
109.7	0.0	---	1.9E-03	0.00	Aluminum 44.5
NA	---	---	---	---	Antimony ---
2.5	0.00	---	---	0.0	Arsenic 0.0
20.8	0.0	---	2.6E-03	0.0	Barium 61.6
NA	---	---	---	---	Beryllium ---
NA	---	---	---	---	Calcium ---
1	0.0	---	---	0.0	Chromium 0.0
47	0.0	---	---	0.0	Copper 0.0
NA	---	---	---	---	Iron ---
1.13	0.0	---	8.1E-04	0.0	Lead 18.9
997	0.0	---	3.4E-05	0.0	Manganese 0.8
77.4	0.0	---	---	0.0	Nickel 0.0
NA	---	---	---	---	Potassium ---
NA	---	---	---	---	Strontium ---
11.4	0.0	---	---	0.0	Vanadium 0.0
14.5	0.00	---	1.8E-04	0.0	Zinc 4.2
NA	---	---	---	---	Chloride ---
NA	---	---	---	---	Nitrate ---
NA	---	---	---	---	Sodium ---
NA	---	---	---	---	Sulfate ---
NA	---	---	---	---	Acetone ---
NA	---	---	---	---	Toluene ---

HI(sum) = 0 0 0 0.01

APPENDIX D
TABLE D70(continued)
NORTHERN BOBWHITE-UP TAKE AND FOOD CONCENTRATION
LONGHORN ARMY AMMUNITION PLANT - Saunders Branch
KARNACK, TEXAS

Max Conc. Plant Uf Soil (mg/kg) 0-5 ft	% Diet 100%	Est. Plant Conc (mg/kg) (A)	Worm Uf (or Intercept & slope)	% Diet NA	Est. Worm Conc (mg/kg) (B)	Invert Uf % Diet NA	Est. Invert Conc (mg/kg)	Bird Uf % Diet NA	Est. Bird Conc (mg/kg)	Mammal Uf	% Diet NA	Est. Mammal Conc (mg/kg) (E)	Total Food Conc. (mg/kg) (A+B+C+D+E)	
0	1	1											0.0	Aluminum
0	1	1											0.0	Antimony
0	-1.744	0.394	1	0.0									0.0	Arsenic
0	0.1561	1	0.0										0.0	Barium
0		1											0.0	Beryllium
0		1											0.0	Calcium
0	0.041	1	0.0										0.0	Chromium
0	0.014	1	0.0										0.0	Copper
0		1											0.0	Iron
0	1.866	0.787	1	0.0									0.0	Lead
0		1											0.0	Manganese
0	-1.927	0.791	1	0.0									0.0	Nickel
0		1											0.0	Potassium
0		1											0.0	Selenium
0	0.0049	1	0.0										0.0	Vanadium
0	-0.452	0.841	1	0.0									0.0	Zinc
0		1											0.0	Chloride
0		1											0.0	Nitrate
0		1											0.0	Sodium
0		1											0.0	Sulfate
0		1											0.0	Acetone
0		1											0.0	Toluene

Biota Conc= (soil conc)(UF) or
ln(Biota conc)= Intercept+Slope(ln soil conc) except Se, where Food Conc=Intercept+Slope(soil conc) OR (Food Conc=ln)/d = soil conc